



Assessment of National Renewable Energy Action Plans (interim status)

Authors: Mario Ragwitz, Gustav Resch,
Sebastian Busch, Florian Rudolf, Daniel Rosende,
Anne Held, Gerda Schubert

Fraunhofer Institute Systems and Innovation
Research, Karlsruhe, Germany

in cooperation with

Vienna University of Technology,
Energy Economics Group, Vienna, Austria



14 March 2011

A report compiled within the European project *REPAP2020* - www.repap2020.eu
Intelligent Energy Europe, ALTENER





Renewable Energy Policy Action Paving
the Way towards 2020

Project Description

Renewable Energy Policy Action Paving the Way towards 2020

The objective of REPAP2020 is to facilitate the implementation process at national level of the Directive on the promotion of the use of energy from renewable sources (2009/28/EC), referred to as the RES Directive. REPAP2020 aims to support the political work at national level in the field of renewable energy, mainly through the National Renewable Energy Action Plans (NREAPs), as defined in the RES Directive.

In a first phase and before the notification of the NREAPs to the European Commission (by 30 June 2010), REPAP accompanied the development of the NREAPs by offering professional advice to the relevant authorities on the design of the NREAPs. Furthermore, REPAP2020 empowered national industry associations to come up with their own individual renewable energy roadmaps which then served as an important tool to influence the drafting phase of the NREAPs.

In a second phase, the project evaluated the NREAPs in order to facilitate constant feedback between the partners in different Member States and establish a learning process. REPAP2020 showed good policy practice examples and highlight missing items in the individual NREAPs.

The European Renewable Energy Council (EREC) is the project coordinator.

Partners in the projects are:

EUFORES - The European Forum for Renewable Energy Sources

Kuhbier Law Firm

EEG - Vienna University of Technology, Energy Economics Group

Fraunhofer Institute Systems and Innovation Research

BEE - Bundesverband Erneuerbare Energie, Germany

APER - Associazione Produttori Energia da Fonti Rinnovabili, Italy

EDORA - Fédération de l'Énergie d'origine renouvelable et alternative, Belgium

REA - Renewable Energy Association, United-Kingdom

SERO - Sveriges Energiföreningars Riksorganisation, Sweden

PIGEO - Polish Economic Chamber of Renewable Energy, Poland

APREN - Associação de energias renováveis, Portugal

SER - Syndicat des Energies Renouvelables, France

Visit the project website to learn more:

www.repap2020.eu

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EACI nor the European Commission are responsible for any use that may be made of the information contained therein.

Contact details of the lead authors of this report:

Mario Ragwitz

Fraunhofer Institute for Systems
and Innovation Research
(Fraunhofer ISI)

Address: Breslauer Str. 48,
D-76139 Karlsruhe, Germany

Phone: +49(0)721/6809-157

Fax: +49(0)721/6809-272

Email: mario.ragwitz@isi.fraunhofer.de

Gustav Resch

Vienna University of Technology, Institute of energy
systems and electric drives, Energy Economics Group
(EEG)

Address: Gusshausstrasse 25 / 373-2,
A-1040 Vienna, Austria

Phone: +43(0)1/58801-37354

Fax: +43(0)1/58801-37397

Email: resch@eeg.tuwien.ac.at

Contents

	Page
1 Introduction	1
1.1 How to read this report	1
1.2 Method of approach	1
2 Summary.....	2
3 Assessment by member state	5
3.1 Austria	6
3.1.1 Summary assessment	6
3.1.2 Basic evaluation criteria.....	6
3.1.3 Assessment of non-cost barriers	6
3.1.4 Assessment of support measures	7
3.2 Belgium.....	10
3.2.1 Summary assessment	10
3.2.2 Basic evaluation criteria.....	10
3.2.3 Assessment of non-cost barriers	11
3.2.4 Assessment of support measures	12
3.3 Bulgaria.....	14
3.3.1 Summary assessment	14
3.3.2 Basic evaluation criteria.....	14
3.3.3 Assessment of non-cost barriers	14
3.3.4 Assessment of support measures	16
3.4 Cyprus	18
3.4.1 Summary assessment	18
3.4.2 Basic evaluation criteria.....	18
3.4.3 Assessment of non-cost barriers	18
3.4.4 Assessment of support measures	19
3.5 Czech Republic.....	21
3.5.1 Summary assessment	21
3.5.2 Basic evaluation criteria.....	21
3.5.3 Assessment of non-cost barriers	21
3.5.4 Assessment of support measures	22
3.6 Denmark.....	25
3.6.1 Summary assessment	25
3.6.2 Basic evaluation criteria.....	25
3.6.3 Assessment of non-cost barriers	25
3.6.4 Assessment of support measures	26
3.7 Finland.....	28
3.7.1 Summary assessment	28
3.7.2 Basic evaluation criteria.....	28
3.7.3 Assessment of non-cost barriers	28
3.7.4 Assessment of support measures	29
3.8 France	31
3.8.1 Summary assessment	31
3.8.2 Basic evaluation criteria.....	31
3.8.3 Assessment of non-cost barriers	31
3.8.4 Assessment of support measures	32
3.9 Germany	35
3.9.1 Summary assessment	35
3.9.2 Basic evaluation criteria.....	35
3.9.3 Assessment of non-cost barriers	35
3.9.4 Assessment of support measures	36
3.10 Greece	39
3.10.1 Summary assessment.....	39

3.10.2	Basic evaluation criteria	39
3.10.3	Assessment of non-cost barriers	39
3.10.4	Assessment of support measures	40
3.11	Ireland	43
3.11.1	Summary assessment	43
3.11.2	Basic evaluation criteria	43
3.11.3	Assessment of non-cost barriers	43
3.11.4	Assessment of support measures	45
3.12	Italy	47
3.12.1	Summary assessment	47
3.12.2	Basic evaluation criteria	47
3.12.3	Assessment of non-cost barriers	47
3.12.4	Assessment of support measures	49
3.13	Latvia	51
3.13.1	Summary assessment	51
3.13.2	Basic evaluation criteria	51
3.13.3	Assessment of non-cost barriers	51
3.13.4	Assessment of support measures	52
3.14	Lithuania	54
3.14.1	Summary assessment	54
3.14.2	Basic evaluation criteria	54
3.14.3	Assessment of non-cost barriers	54
3.14.4	Assessment of support measures	55
3.15	Malta	58
3.15.1	Summary assessment	58
3.15.2	Basic evaluation criteria	58
3.15.3	Assessment of non-cost barriers	58
3.15.4	Assessment of support measures	59
3.16	Portugal	61
3.16.1	Summary assessment	61
3.16.2	Basic evaluation criteria	61
3.16.3	Assessment of non-cost barriers	61
3.16.4	Assessment of support measures	62
3.17	Romania	65
3.17.1	Summary assessment	65
3.17.2	Basic evaluation criteria	65
3.17.3	Assessment of non-cost barriers	65
3.17.4	Assessment of support measures	66
3.18	Slovenia	69
3.18.1	Summary assessment	69
3.18.2	Basic evaluation criteria	69
3.18.3	Assessment of non-cost barriers	69
3.18.4	Assessment of support measures	70
3.19	Spain	73
3.19.1	Summary assessment	73
3.19.2	Basic evaluation criteria	73
3.19.3	Assessment of non-cost barriers	73
3.19.4	Assessment of support measures	75
3.20	Sweden	78
3.20.1	Summary assessment	78
3.20.2	Basic evaluation criteria	78
3.20.3	Assessment of non-cost barriers	78
3.20.4	Assessment of support measures	80
3.21	United Kingdom	82
3.21.1	Summary assessment	82
3.21.2	Basic evaluation criteria	82
3.21.3	Assessment of non-cost barriers	82
3.21.4	Assessment of support measures	84

4	References	86
5	Annex A: Detailed questionnaires on the NREAPs by member state	88
5.1	Annex for Austria	89
5.2	Annex for Belgium	94
5.3	Annex for Bulgaria	99
5.4	Annex for Cyprus	104
5.5	Annex for the Czech Republic	109
5.6	Annex for Denmark	114
5.7	Annex for Finland	120
5.8	Annex for France	125
5.9	Annex for Germany	131
5.10	Annex for Greece	139
5.11	Annex for Ireland	145
5.12	Annex for Italy	150
5.13	Annex for Latvia	156
5.14	Annex for Lithuania	162
5.15	Annex for Malta	168
5.16	Annex for Portugal	173
5.17	Annex for Romania	179
5.18	Annex for Slovenia	184
5.19	Annex for Spain	189
5.20	Annex for Sweden	196
5.21	Annex for the United Kingdom	202

1 Introduction

In June 2009 the EU Directive on the promotion of the use of energy from renewable sources (2009/28/EC), subsequently named the RES Directive, entered into force. This Directive sets binding national targets for all EU member states to reach an overall renewable energy sources (RES) contribution of 20% in the EU's gross final energy consumption by 2020 and a 10% share of renewable energy specifically in the transport sector.

Article 4 of the RES Directive requires member states to submit national renewable energy action plans (NREAPs) by 30 June 2010. These plans, to be prepared in accordance with the template published by the Commission one year ahead, provide detailed roadmaps of how each member state expects to reach its legally binding 2020 target for the share of renewable energy in its domestic gross final energy consumption. Member states are required to set out the sectoral targets, the technology mix they expect to use, the trajectory they will follow incl. the use of cooperation mechanisms and the measures and reforms they will undertake to overcome the barriers to developing RES. By January 2011, all 27 NREAPs were published (which seems quick, compared to the implementation of other EU legislations).

This report presents the outcomes of an independent assessment of the NREAPs. The approach chosen is that of a detailed analysis of the NREAPs according to well-defined criteria, from basic evaluation criteria (such as formal inconsistencies) to an assessment of proposed measures to overcome non-cost barriers to renewables. The qualitative assessment also includes an evaluation of the envisaged measures to strengthen direct financial support for meeting the 2020 RES targets. Moreover, the assessment includes a brief comparison of the RES targets proposed in the NREAPs at sectoral and technology level with the viewpoint of the RES industry as prescribed for example in national RES industry roadmaps some months ahead. This shall allow a first indication of future challenges imposed by the envisaged RES trajectories.¹

1.1 How to read this report

This report offers a concise summary of key findings derived from the assessment of the NREAPs as well as details on the assessment by country. In section 2 a short summary of the main outcomes by country is given. In section 3 the main results of the country specific assessment are presented, whereas the Annexes presented in section 5 give further details on the member state specific analysis according to a more disaggregated list of evaluation criteria.

1.2 Method of approach

The evaluation conducted in this study is based on a detailed questionnaire using a number of different assessment criteria. The following main topics were assessed: administrative procedures and spatial planning, infrastructure development and electricity network operations as well as support measures in the electricity, heat and transport sector. For each of these topics the evaluation was based on a comprehensive list of questions, which is represented in the annex together with the answers for each country. For the most relevant questions the results are shown in the main part of the report in section 3. Information as provided in the NREAPs has been contrasted to alternative sources - i.e. the assessment of non-cost barriers for RES as conducted by AEON within a recent study done on behalf of the European Commission, DG ENER. Moreover, feedback from REPAP partners has been taken into account given their expertise at country or technology level.

¹ For a comprehensive quantitative assessment of the NREAP's trajectories with the RES industry projections we refer to the "EU Roadmap: Mapping Renewable Energy Pathways towards 2020" as published by EREC & national RES Associations (EREC et al., 2011) within the REPAP2020 project.

2 Summary

The NREAPs submitted are of different quality and completeness. It appears that several countries have taken the obligation serious to provide a complete and comprehensive RES roadmap up to 2020, indicating what is in place and what needs to be done. Others drew a nice picture on the implemented measures to stimulate an enhanced RES deployment which does not in all cases match with reality. Very few countries provided a minimalistic and incomplete report.

The overall summary of the evaluations for the countries analysed up to now is presented in the table below. It can be seen that substantial optimisation potential exists for all five categories. The strongest deficits exist in the field of administrative procedures and spatial planning followed by the category support measures for RES heating and cooling. The highest optimisation potentials exist in these two areas. But even the section of support measures in the electricity sector receives only a neutral evaluation on average showing room for improvement in many EU member states.

<u>Topic</u>	Administrative procedures and spatial planning	Infrastructure development and electricity network operations	RES electricity support measures	RES heating and cooling support measures	RES transport support measures
<u>Country</u>					
Austria	☺	☺	☺	☺	☺
Belgium	☺	☺	☺	☹	☺
Bulgaria	☹	☺	☺	☹	☺
Cyprus	☹	☺	☺	☺	☹
Czech Republic	☹	☺	☺	☺	☺
Denmark	☺	☺	☺	☺	☺
Finland	☹	☺	☺	☺	☺
France	☹	☹	☺	☺	☺
Germany	☺	☺	☺	☺	☺
Greece	☺	☹	☺	☹	☹
Ireland	☺	☹	☺	☺	☺
Italy	☹	☹	☺	☺	☺
Latvia	☹	☹	☺	☺	☺
Lithuania	☹	☹	☺	☺	☹
Malta	☹	☺	☹	☹	☺
Portugal	☹	☺	☺	☹	☺
Romania	☹	☺	☺	☹	☹
Slovenia	☹	☺	☺	☺	☺
Spain	☺	☺	☺	☺	☺
Sweden	☹	☺	☺	☺	☹
United Kingdom	☺	☺	☺	☹	☺

An incomplete list of exemplary country-specific notes, comprising general observations as identified within the assessment of the NREAPs looks as follows:

Austria submitted its NREAP in time in June 2010 and produced a comprehensive action plan. Austria plans to reach its national target domestically without the use of cooperation mechanisms. Worth mentioning is the change in the statistical accounting methodology, which led to an increase of the RES share in 2005 as compared to the figures used in the RES Directive. This change led to a reduction of the ambition level for Austria. Substantial optimisation potential exists in the fields of infrastructure development as well as on support schemes for RES electricity and in the heating and cooling sector.

Belgium took some time to complete and finally submit its NREAP, which provides a comprehensive depiction of the envisaged roadmap to 2020 but still leaves some details undefined. One example for this is the role of wind energy for which the requested breakdown between onshore and offshore is missing. Both represent key future options for RES in the electricity sector - while onshore wind receives currently sufficient support, offshore lacks of that and faces long lead times. At first glance, the RES targets set in the NREAP for the heating and cooling and for the transport sector

appear comparatively challenging. This underpins the need for strong RES incentives in forthcoming years because the currently established ones are mostly insufficient.

The NREAP expresses Bulgaria's will to become an exporter of RES, being offensive in declaring their role in cooperation mechanisms. Renewable energy is a relatively new issue in Bulgaria and administrative procedures are generally inefficient at present. The NREAP draws a nice picture of laws and regulations being in place for e.g. administrative procedures or grid connection which does frequently not match well to reality. For achieving the aimed trajectory RES for heating and cooling would deserve more policy attention - i.e. the measures described in the NREAP appear insufficient.

Cyprus considered in its NREAP the formal criteria correctly. Similar to most other member states it wants to achieve the national targets with domestic resources. In this context, the RES targets set in the NREAP for the electricity and heating and cooling sector appear ambitious. Administrative procedures in Cyprus are considered to be in need for improvement, despite the fact that a one-stop shop scheme is introduced. Difficulty lies mostly in obtaining the building permit for which the applicant has to pass 19 approval steps. This leads to long permission times. Moreover, no real measure to promote the use of RES in transport fuels is introduced.

The Czech Republic delivered a comparatively complete NREAP, but several of the requested details on support schemes for heating and cooling applications as well for the transport sector are missing. The RES targets set in the NREAP for the heating and cooling sector appear ambitious and would require possibly a strengthening of corresponding RES support. In contrast to heat, the NREAP target for RES electricity can be qualified as less challenging, specifically with respect to wind energy. Administrative procedures show room for improvements, specifically with respect to the role of regional and local authorities that currently retard the development of certain RES technologies.

Denmark shows in general a very strong and consistent perspective on the future development of the RES sector. The conditions provided in the areas of administrative procedures and spatial planning as well as Infrastructure development and electricity network operations are rather positive and provide a good basis for a strong growth of the sector in the next years. Optimisation potential exists in the field of support measures for RES electricity and heating and cooling.

Finland shows strong deficits in the field of administrative procedures and spatial planning. Generally the Finnish NREAP is extremely concise and some relevant information, e.g. on non-economic barriers and on measures to attain the target seems to be missing. No information on the use of cooperation mechanisms is provided in the Finnish NREAP.

France shows a very convincing plan concerning the support schemes for RES electricity and transport but strong deficits the areas of administrative procedures and spatial planning as well as infrastructure development and electricity network operations. France is planning to achieve its target domestically without exporting any potential surplus. But France considers the participation in joint projects related to the Mediterranean Solar Plan (MSP) without however quantifying the planned commitment.

Germany plans to reach its RES target domestically. Moreover, as expressed in the NREAP it consider to transfer the currently estimated excess amount of RES production to other member states, making thereby use of the cooperation mechanisms. The NREAP offers a comparatively complete representation of measure implemented and planned to achieve the envisaged RES trajectory. Key challenges in forthcoming years comprise the timely expansion of the grid infrastructure to assure the appropriate integration of intermittent RES also in future years, given the expected expansion specifically of offshore wind energy. Besides, budget restrictions for RES heating and cooling have created some stop-and-go situations. This leaves room for improvement.

Greece presented a very ambitious NREAP in terms of the planned RES trajectory. Greece has a binding RES target of 18% by 2020, up from 6.9% in 2005. The Greek authorities have planned to overshoot the target by over 2%. Regarding the existing and planned framework conditions for RES development strong deficits still exist in the areas of as infrastructure development and electricity network operations and support measures for RES heating and cooling as well as in the transport sector.

Ireland plans a surplus as compared to the trajectory of the RES Directive during the years 2011-2018. Particularly in the field of off-shore wind energy substantial potentials exist and could be exploited before 2020. However, this would require a substantial improvement of infrastructure development and electricity network operations as compared to the measures currently existing and lined out in the NREAP. Relatively good framework conditions exist in the area of RES in transport. For the other two RES sectors a higher ambition level as compared to the NREAP appears necessary.

Italy's NREAP shows an exaggerated view of the situation concerning RES. The description of current practice, specifically with respect to administrative procedures, appears non-appropriate and unrealistic as the present reality for a RES investor is in general much more complicated. However, formally spoken the required illustration of present and future RES deployment appears consistent - i.e. all tables of the NREAP and the linkage between them are highly consistent. Key areas of policy intervention comprise administrative procedures, which are currently often described as non-transparent processes, and grid connection. Italy is assessing the possibility of using cooperation with third countries, requiring physical electricity imports from them in a comparatively significant magnitude.

Latvia presented an NREAP, which is complete but rather heterogeneous. For RES-E support measures detailed information is provided for existing and planned measures. Information on support schemes to promote RES-H and RES-T is poor and only overall information is presented. Given the development of RES-E in recent years and the current administrative situation and existing support schemes, the trajectory for off-shore wind and biogas seems very ambi-

tious. It seems that further measures, additional to the ones presented in the NREAP will be needed. Strong deficits exist in the areas of administrative procedures and spatial planning as well as infrastructure development and electricity network operations.

Lithuania provided a comprehensive NREAP, which contains complete answers for existing support measures. For new measures not yet passed, information is poor. The assumed capacity expansion for wind onshore and biogas seem to be very ambitious for the time to 2014, compared to realisable RES-development under a proactive support scenario. Given the development of RES-E in recent years and the current support level, the trajectory, especially in case of wind onshore, is not likely to be achieved. Strong deficits exist in the areas of administrative procedures and spatial planning as well as infrastructure development and electricity network operations.

Malta submitted its NREAP relatively early in July 2010. It foresees the achievement of the targets based on domestic potentials. Strong deficits exist in the areas of administrative procedures and spatial planning as well as on support measures for RES electricity as well as RES heating and cooling.

Portugal envisages fulfilling the renewables targets without making use of cooperation mechanisms. It disposes of the resource potential to surpass target in electricity sector, but existing excess capacity in MIBEL (Iberian electricity market) implies that surplus electricity would have to be exported physically. However, the Portuguese possibility to physically export RES-E is restricted by the interconnection capacity between Spain and France. Strong deficits exist in the areas of administrative procedures and spatial planning as well as on support measures for RES heating and cooling.

Romania provided a comprehensive NREAP. However, the tables included therein show various weaknesses - i.e. the requested technology breakdown for RES in the heating and cooling sector as well as for RES in the transport sector is completely missing. Administrative procedures in Romania are clearly in need of improvement - i.e. they are considered complex and unclear. Support measures for heating and cooling applications are generally qualified as inefficient as well as insufficient. A clear need for policy strengthening can be identified also for RES in the transport sector.

Slovenia aims for a domestic target fulfilment. If policy failures appear however likely it wants to get involved in joint projects. Despite the presence of a one-stop shop scheme, the administrative procedure is considered to be the main problem for RES development in Slovenia. Long lead-times of up to 24 months and the inadequate implementation of RES in spatial planning are reasons for that.

Spain plans to produce a substantial surplus for the use of cooperation mechanisms. The possibility to reach the ambitious trajectory for RES in the NREAP will strongly depend on the improvement of the grid connection with France and on the further stabilisation and strengthening of the support measures for RES electricity and RES heating and cooling. Furthermore there is substantial room for improvements in administrative procedures.

One of the key problems for RES in Sweden is the complex administrative procedure. The approval process is subject to different sources of legislation, which are administrated by different authorities. This leads to long permission times of up to 24 months for wind power plants. A lack of concrete deadlines adds complexity to this issue. Further problems are the partly comparatively high and varying permitting costs. The NREAP lacks of proposals to improve this situation. Moreover, Sweden and Norway are planning to develop a joint support scheme by creating a joint green electricity certificate market in the forthcoming year(s). This appears at least contra-dictionary to the aim expressed in the NREAP to reach the 2020 targets purely domestically.

The United Kingdom set in the NREAP comparatively challenging RES targets for the heating and cooling as well as the transport sector that emphasises the need for strong policy intervention. Support for the use of RES in heating and cooling is not provided at present. The NREAP expresses the government's will to establish a new scheme in this respect but the longer details remain unclear the risk to fail in meeting the targeted RES deployment increases. Moreover, currently prevailing barriers related to administrative procedures and infrastructure development need to be mitigated in the forthcoming years to let the RES industry deliver on time.

3 Assessment by member state

This section provides a detailed assessment of the NREAPs at member state level. Country by country we present the outcomes of our analysis, starting with a summary of the evaluation for each country. Next to this follows a detailed evaluation according to different assessment criteria which are discussed in topical order. In this context, the following main topics were assessed: administrative procedures and spatial planning, infrastructure development and electricity network operations as well as support measures for RES in the electricity, in the heating and cooling and in the transport sector.

3.1 Austria

Note: The assessment of the Danish NREAP was conducted by Fraunhofer ISI.

3.1.1 Summary assessment

The table below shows the evaluation of the Austrian NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☺
Infrastructure development and electricity network operations	☺
RES electricity support measures	☺
RES heating and cooling support measures	☺
RES transport support measures	☺

3.1.2 Basic evaluation criteria

Fulfilment of formal criteria

Austria has notified the national renewable energy action plan on June 2010 being in time. Both targets, the target of renewable energy in gross final energy as well as the target on renewable energy sources in transport, were considered correctly.

Assessment of inconsistencies

In general, the NREAP of Austria is highly consistent regarding the linkages of the tables and the tables themselves, but there is a small deviation in the renewable electricity consumption in 2005 in table 4 and 10. As the former RES development was rapid, specifically with respect to biomass and other RES for heating purposes, a modification in the corresponding statistical accounting approach led to a modification of the historical data on RES deployment. This affected also the RES share in 2005: Austria published in the NREAP 24.4% as share of RES in gross final energy consumption in 2005, while the European Commission used as basis for 2020 RES target calculation a lower figure of 23.3% - see Directive 2009/28/EC. This change in the statistics reduces the ambition level for teaching the 2020 target.

Renewable energy trajectories

According to the Renewable Energy Industry Roadmap provided within the REPAP 2020 project a more ambitious trajectory as compared to the one contained in the Austrian NREAP would be feasible. Therefore reaching a share of 50% in the gross final energy consumption by 2020 appears to be realisable if stronger efforts are implemented in all three RES sectors. A more detailed comparison of the trajectories contained in the NREAP and the REPAP 2020 roadmap are shown in Table (Appendix) 6 in the Annex of this document.

Use of cooperation mechanisms

Currently, Austria has no plans for statistical transfers, joint projects or joint support schemes with other countries and, hence, aims to reach the renewable energy target domestically.

3.1.3 Assessment of non-cost barriers

Indicator	NREAP Assessment (Administrative procedures and spatial planning)
Presence of a one-stop shop scheme?	One-stop shop scheme introduced p. 16-18
Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?	-
Is there an exception from authorization of small-scale systems?	There is an exemption for small scale systems used in private households. p. 18
Are the fees required correlated to the administration costs?	-

Administrative procedures and spatial planning

Administrative procedures and spatial planning in Austria work quite well. Four main indicators are listed in the table above. One important factor for sound administrative procedures is the presence of a one-stop shop scheme, which is described in the NREAP on page 18 by the paragraph: "In order to optimise administrative tasks, authorisation procedures are carried out along the one-stop-shop principle. This means that all necessary bureaucratic steps to achieve the plant authorisation can be taken in one place." Another impor-

tant criterion is the exception of small-scale systems from authorization in Austria, for which a simple notification at the municipality level is required. However, the NREAP does not give information on the lead time for collecting all permits or on the correlation of fees to administrative costs, but a short process until all permits are obtained and a close correlation of the fees to the administrative costs are highly recommended. The availability of information on the process is extensive and even guidelines on the general procedure and documents with the necessary project requirements are published. Other positive aspects are the availability of official guidance for local and regional administrative bodies and the consideration of renewable energy specificities in the whole process. Table (Appendix) 1 gives an overview of further indicators.

A report focusing solely on non-cost barriers in the EU is the AEON study, which shows that the administrative procedures work rather well except for some minor problems causing unnecessary delays for wind power, small hydro power, biogas and heat pumps. Spatial planning is addressed well besides large minimum distances for wind power plants.²

<i>Indicator</i>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time of grid connection adequate? If not, give examples.</i>	Federal state specific, therefore no answer p.34, 35
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	There is priority dispatch, but cross border issues need to be considered. Distribution capacities shall be ensured by early grid expansions p.35
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Related to connection costs p.36
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Extensions to Germany and Hungary are planned p.34

Infrastructure development and electricity network operations

Concerning the infrastructure development and electricity network operations, the conditions for renewable energies cannot be considered to be best-practice. According to the Austrian law, only priority dispatch is foreseen for renewables, but no priority grid access, which is the main obstacle to be tackled. On the other side, the rules of cost sharing and bearing of network technical adaptations are directly related to connection costs and the development of a trans-European electricity network works out well with extension plans to Germany and Hungary. The coordination of connections to existing electricity networks is planned to be provided with a one-stop shop scheme. In addition to the costs for the direct connection to the grid, wind power producers are charged lump sum payments for grid reinforcements and extensions. With this respect, transparent rules for the allocation of costs need to be put in place. Table (Appendix) 2 gives a detailed overview of the situation.

The AEON report has assessed this topic as well. The infrastructure development follows good proper long- and mid-term plans, but is hindered by the complexity of the authorization process, which can last eight years or longer in the case of a large expansion project. Furthermore, plant operators pay for grid expansion works, which is not their clear legal duty. Hence, precise cost sharing and bearing rules should be established.

3.1.4 Assessment of support measures

<i>Indicator</i>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Sufficiency for wind onshore and other RES categories Modifications are necessary for some biomass / biogas streams as support levels are insufficient-
<i>Is there a technology specific support?</i>	Yes, feed-in and investment subsidies are technology-specific, p.51,52 and Annex C

²Tupy, Piria (2010): Non-cost barriers to renewables - AEON study - National report Austria p. 13 - 19

<i>Is the long-term security of the support measures ensured?</i>	Only partly ensured - e.g. feed-in payments for RES installations are guaranteed for a period of 13 to 20 years (p.45, 51). Justified criticisms refers to the fact that a cap (currently 21 million € per year) is introduced for new installations, and also the level of support (for new installations) can be amended on a yearly basis.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Yes, a minimum efficiency of 60% is demanded to be eligible for feed-in tariff p.48, 50

Renewable electricity support measures

In general, the conditions for renewable electricity are reasonable. The main support mechanisms in Austria are feed-in tariffs. The design of the mechanism is adequate: Long-term security is ensured for RES installations in operation due to a guaranteed duration of support, ranging from 13 up to 15 years, the support is dependent on energy efficiency criteria (minimum of 60% energy efficiency for biomass and biogas plants to be eligible for support making CHP a necessary requirement), and the support is technology specific. Yearly amendments of the tariff are possible and in case that the cap of 21 million € is reached, a revision of the law is foreseen as well. Furthermore, photovoltaic systems up to 5 kW_{El} and self supply facilities are promoted by investment subsidies. Fraunhofer ISI has assessed in a recent report³ within the RE-Shaping project the sufficiency of the support mechanisms. In the case of Austria, the measures seem sufficient for wind onshore and most other RES categories while some adaptations appear necessary for some biomass and biogas categories.

One reason for the good structured approach in Austria is the concrete target set of 15% of supported renewable electricity by 2015, which is split into sub targets for different technologies. The fulfilment of the target and the indicative trajectories is monitored by the “Elektrizitäts- und Gasmarkt Energie-Control GmbH” (E-Control), which reports annually to the Austrian Ministry of Economics, Family and Youth. If changes become necessary, the ministry makes a new draft for the legislation, which is discussed with stakeholders and finally approved by the government. A detailed list of indicators is given Table (Appendix) 3.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	Sufficient for the analysed fuel types heat pumps, biomass, solar thermal heat and district heating
<i>Is the long-term security of the support measures ensured?</i>	As on a federal level only investment subsidies are granted, there is substantial long term security also due to the high maturity of the instrument p.53-56. Uncertainties on the provincial level cause a threat to the future security of support.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	To be eligible for a electricity feed-in tariff, an efficiency of 60% is needed, which only can be met with CHP p.56
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Several measures are introduced p.59-61
<i>Is there a RES Obligation for the building sector?</i>	Not introduced yet p.24

Renewable heating and cooling support measures

The renewable heating and cooling support mechanisms in Austria are heterogeneous and complex, a complexity which is increased by the federal state system, each province developing its own support measures for the renewable heating and cooling sector. This assessment focuses therefore on the support measures of the federal level. In general, the support measures of the renewable heating and cooling sector are designed well. Fraunhofer ISI analysed the renewable heat sector on the monetary sufficiency of the measures. In the renewable heat sector, the analyzed heat sources district heating, heat pumps, biomass and solar thermal heat are considered to be supported sufficiently.

Austria has set a target of 24 PJ additional renewable energy from heating and cooling in 2020 as compared to 2005, but no concrete sub targets for the different technologies were defined. The state level measures focus on the non-private sector and on investment subsidies. The design of the measures is adequate. The subsidies are granted as a share of the total investment, for which clear calculation rules are mentioned in the NREAP. A funding of 90 million € annually is ensured and can be extended. The subsidies are technology specific. The legislation has been extended and amended 21 times since its introduction in 1993,

³ A. Held et al: “Indicators assessing the performance of renewable energy support policies in 27 Member States”

which shows an intense revision and optimization process. Other aspects are concrete measures on CHP and district heating from RES as well as the usage of small scale and industrial systems. Public buildings have obligations for the usage of renewables in order to play an exemplary role. One recommendation could be an obligation for the usage of renewable heating and cooling in the Austrian building sector for new or renovated buildings. A more detailed list of indicators is given in Table (Appendix) 4.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	Obligation rising from 2.5% in 2005 to 5.75% in 2010 p.62 The 10% target still needs to be implemented p.64
<i>Is there a specific support for 2nd generation biofuels?</i>	n/a
<i>Is the long-term security of the support measures ensured?</i>	Yes, due to foreseen long term obligation.

Renewable transport fuel support measures

The support measures in the transport sector for renewable energies consist of an obligatory share of renewables in transport fuels and of a tax exemption of renewable energies. As the former development in this sector has shown, the achievement of a concrete target by tax measures was difficult and mostly did not work out. Thus, the introduction of an obligation is an appropriate option to achieve the target certainly. The application of the obligation is thereby monitored by the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management. As the national contribution to the biofuel production is expected to be 5 PJ, Austria already has plans for the import of biofuels after the availability of a European norm. A possible recommendation for Austria could be to put a stronger focus on the second generation biofuels by introducing special support mechanisms for such fuels. Table (Appendix) 5 gives a more detailed overview.

3.2 Belgium

Note: The assessment of the Belgian NREAP was conducted by EEG.

3.2.1 Summary assessment

The table below shows the evaluation of the Belgian NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☹
Infrastructure development and electricity network operations	☹
RES electricity support measures	☹
RES heating and cooling support measures	☹
RES transport support measures	☹

3.2.2 Basic evaluation criteria

Fulfilment of formal criteria

The Belgian NREAP was published end of November 2010 and therefore 5 months too late. Both targets, the overall target for renewable energy in gross final energy consumption as well as the sector target for renewable energy sources in transport, were considered correctly.

Assessment of inconsistencies

The tables provided in the NREAP are highly consistent. Only one small error was detected. The value for 2005 in table 10 of the NREAP showing the RES-E production at technology level deviates by 154 ktoe compared to the value expressed in table 4a.

In addition, some technology details are missing such as the breakdown between onshore and offshore wind and small and large-scale hydro as requested by the European Commission template for table 10 of the NREAP.

Minor inconsistencies in the indicated trajectories within the table 10 of the NREAP comprise the temporary de-installation of hydropower between 2014 and 2015 and the instance that for bioliquids in the electricity sector an increasing capacity coincides with a decreasing electricity production in the forthcoming years up to 2020.

Renewable energy trajectories

Compared to the Renewable Energy Industry Roadmap provided within the REPAP 2020 project the RES targets set in the NREAP for the heating and cooling and for the transport sector are of similar magnitude - thus, this underpins the need for strong RES incentives in forthcoming years. In contrast to above, the RES target for the electricity sector appears less challenging, i.e. the REPAP industry roadmap expresses a 22 % higher target for RES-E compared to the NREAP. This leads to an overall RES target of the NREAP being 10% lower than the industry projections within the REPAP2020 project. A more detailed comparison of the trajectories contained in the NREAP and the REPAP 2020 roadmap are shown in Table (Appendix) 12 at the end of this document.

According to the Belgian renewable energy federation it can be expected that the proposed measures of the Belgian NREAP are not adequate to reach the proposed renewable targets for 2020. With some exceptions, the measures mentioned in the Belgian NREAP are already implemented or are included in the political program of the governments. Necessary new incentives (specifically for the heat sector) together with a review and optimisation of the current schemes are lacking in the Belgian NREAP.

Use of cooperation mechanisms

Belgium has expressed no concrete plans for using cooperation mechanisms, but the NREAP considers the possibility of using cooperation mechanisms for a maximum of 0.5% RES (as share in gross final energy). Although Belgium aims to achieve the 13% RES target domestically, it is mentioned in the NREAP that if intermediary reports show that the targets will not be met internally, cooperation mechanism will be activated to meet the mandatory targets. According to the Belgian renewable energy federation this has to be interpreted as a lack of clarity on the envisaged domestic RES target.

3.2.3 Assessment of non-cost barriers

<i>Indicator</i>	<u>NREAP Assessment</u> (Administrative procedures and spatial planning)
<i>Presence of a one-stop shop scheme?</i>	No nationwide one-stop scheme is currently in place, but it is considered to establish such a scheme in the future for offshore wind. (NREAP ⁴ , p. 25) Wallonia and Brussels have already introduced a regional one-stop scheme. (NREAP, p. 26, 27)
<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	Lead-times for wind power projects are considered as too long and last specifically for offshore projects up to several years. In contrast to wind, for large-scale biomass installations lead times reach a maximum of 16 months and for PV installations 2 to 5 months. (AEON ⁵ , p. 10)
<i>Is there an exception from authorization of small-scale systems?</i>	Solar installations are mostly exempt from certain permits. In the Flemish region biomass boilers with a capacity of up to 300 kW do not require authorization. Overall, installations with a capacity of 25 MW or less are exempt from any Federal Authority authorisation. (NREAP, p. 28, 29)
<i>Are the fees required correlated to the administration costs?</i>	Not applicable (n/a).

Administrative procedures and spatial planning

Due to the decentralized political system, the administrative procedures in Belgium differ partly between the three regions Flanders, Wallonia and Brussels. Every region has an own regulatory framework leading to slightly different RES conditions. The Walloon and Brussels region introduced in contrary to the Flemish region a one-stop shop scheme. Some cases, for example offshore wind parks are even handled by the federal authority, where a one stop-shop scheme is also missing. The absence of such a scheme and shared competences are the reason for long lead times for offshore wind projects, which reach up to several years. As a result the estimated costs for the permitting process add up to 3 to 5 million € per project. For biomass and PV installations the procedure works faster and persists only about 5 months. Moreover, PV systems are mostly exempted from certain permits. Additionally, for the Flemish region biomass boilers with a capacity of up to 300 kW are exempt from authorization. At the federal level, RES installations with a capacity of 25 MW or less are exempt from authorisation by the federal administration - i.e. only notification is obligatory. Maximal administrative costs for (large-scale) biomass boilers vary by region, ranging from 100,000 € in Wallonia to 250,000 € in Flanders.

Time schedules for applicants are not directly published but are derivable from the applicable regulatory provision. Additional information on the process shall be provided on the homepage of the corresponding authorities. For the staff at local and regional administrative bodies no official guidelines are available, solely the Walloon region offers training for case handlers via special consultants. Table (Appendix) 7 gives an overview of further indicators.

<i>Indicator</i>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time for grid connection adequate? If not, give examples.</i>	Grid connection depends on the type of technology. <ul style="list-style-type: none"> • Onshore wind: 12 months on average • Offshore wind: 6 months to several years • Biomass: 5 months to 2 years. (AEON, 26)
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	Priority grid connection is used, but considered as insufficient because of imprecise terms in the respective laws. Priority dispatch is not guaranteed. (NREAP, p. 46)(AEON, p. 27)
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	The RES producer has to pay a connection fee, which is for the Flemish region limited to the costs of linking up to the nearest network of sufficient voltage, even if the network operator requests connection at another place or voltage level. In general, all grid-related fees as proposed by network operators have to be approved by the federal regulator CREG. (NREAP, p. 46)

⁴ Federal-Regional Energy Consultant Group CONCERE_ENOVER (2010) “National Renewable Energy Action Plan (NREAP) Belgium”

⁵ Rademaekers, Koen: (2010) “Non-cost barriers to renewable -AEON Study- National report Belgium”

<p><i>Is the Member State contributing to the development of a trans-European electricity network?</i></p>	<p>Three projects are under construction:</p> <ul style="list-style-type: none"> • 1 GW line to UK • Reinforcement of the interconnection line with Luxembourg • Direct interconnection line with Germany (NREAP, p. 44)
--	---

Infrastructure development and electricity network operations

Despite the comparatively good grid situation for RES in Belgium, two main problems concerning the electricity grid are identified: Grid connection and infrastructure development. Priority grid connection is used, but due to several conditions the process is often largely delayed. Exact predictions cannot be made, but connection times for offshore wind power plants could last several years and for biomass installations up to 2 years. Additionally, grid enhancement at local level proceeds too slowly. Referring to the AEON study, which analyzed the non-cost barrier situation in EU member states, the long lasting authorization procedure for grid enhancement could cause problems in case of further development of RES electricity. However, the expansion of the interconnection lines works quite well. Three new lines connecting Belgium with UK, Germany and Luxembourg are under construction. Despite the absence of a dispatch guaranty, no dispatching problems have been detected so far. A positive aspect on this point could be that according to the NREAP several measures are applied to minimise RES curtailment.

The RES producer has to pay a connection fee, which is in Flanders limited to the costs of linking up to the nearest network of sufficient voltage, even if the network operator requests connection at another place or voltage level. Special rules for subsequently connected producers are not in place. Information about the costs and a timetable is provided in various ways. This depends largely on the respective region. More information in this respect and further points is provided in Table (Appendix) 8.

3.2.4 Assessment of support measures

<i>Indicator</i>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Support is sufficient for wind onshore and all kind of biomass, and also for PV and small hydro financial support appears moderate, but for wind offshore current support appears insufficient. (RE-Shaping ⁶)
<i>Is there a technology specific support?</i>	The Federal Authority and the Flemish and Walloon Regions have linked a system of guaranteed minimum prices that differ by RES technology to their green certificate schemes. (NREAP, p. 72). Besides, some technology specific investment grants are existent. (NREAP, p. 65, 66)
<i>Is the long-term security of the support measures ensured?</i>	According to the NREAP (p. 63), the green certificate schemes and related provisions set up at the different public authority levels shall ensure long-term security. RES producers may participate in the certificate trading regime during the whole project lifetime in the Flemish Region, while in the Walloon Region a limit is set to 15 years and in Brussels to 10 years. (NREAP, p. 74) Moreover, the runtime of the programmes offering investment incentives is not specified.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Receiving financial support is mainly not linked to a fulfilment of specific energy efficiency standards. Solely qualifying for the certificate scheme in the Walloon or Brussels region is linked to fulfilling specific energy saving requirements. (NREAP, p. 66)

Renewable electricity support measures

Support is sufficient for wind onshore, several kinds of biomass and PV, and for small hydro financial support appears moderate - but for wind offshore, being a key option to meet the envisaged RES-E deployment by 2020, current support appears insufficient. The key support instrument for RES-E is the green certificate scheme. Every RES producer with a capacity of less than 20 MW in Wallonia or less than 10 MW in Brussels is eligible to receive certificates. The electricity suppliers have to fulfil an obligation regarding the certificate scheme. Quotas in Wallonia and Brussels are set up to 2013 and in the Flemish region till 2021. For non-fulfilment a fixed fine in the range of 100 € (Brussels and Walloon region) to 125 € (Flemish region) per lacking certificate is defined.

Additionally, some specific investment grants and minor tax deductions exist. They are mostly region specific and are not precisely explained within the NREAP. In comparison to

⁶ A. Held et al: „Indicators assessing the performance of renewable energy support policies in 27 Member States“

the green certificate scheme most of the investment grants are periodically revised. Most of the investment grants have a fixed budget per year. Table (Appendix) 9 provides more detailed information in this respect.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	Support measures for biomass plants and solar thermal installations are mediocre, while for ground-source heat pumps support appears sufficient. (RE-Shaping)
<i>Is the long-term security of the support measures ensured?</i>	Long term security is lacking, although no end date for the support measures is set. (NREAP, p. 78)
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Receiving benefits is mainly not linked to a fulfilment of specific energy efficiency criteria. (NREAP, p. 78ff)
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Several investment incentives promoting all kind of small-scale RES heating installations are in place. (NREAP, p. 76)
<i>Is there a RES Obligation for the building sector?</i>	No obligation is existent. (NREAP, p. 31)

Renewable heating and cooling support measures

Support measures for heating and cooling applications are mostly insufficient. Solely ground source heat pumps are adequately supported. The support is based on various investment grants for all kind of RES installations mostly supporting small-scale systems. Additionally, the green certificate scheme supports CHP running on RES. Specifically for industrial applications companies can benefit from a tax deduction of their investments into RES technologies.

Like the complementary investment support for RES-E, the budget for investment support of RES-H installations is set annually on national budget decisions. The government publishes a notice if the scheme is running out of money. Revision process is mostly installed and various from scheme to scheme. No scheme is equipped with a concrete target.

The Belgian government recognizes the importance of public buildings featuring best practice. Therefore the Flemish and Brussels region have adopted plans and targets for the use of RES in public buildings. The Walloon region wants to implement a detailed plan by 2012. For the residential building sector no RES obligation is implemented. More indicators on RES-H support are shown in Table (Appendix) 10.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	4% of the quantity of diesel and petrol products must be from biofuels. (NREAP, p. 81)
<i>Is there a specific support for 2nd generation biofuels?</i>	The Walloon region wants to support second-generation biofuels, but till now no concrete plans were made. (NREAP, p. 84)
<i>Is the long-term security of the support measures ensured?</i>	Tax exemptions for biofuels run out by 2013, afterwards solely the obligatory blending shall be used. (NREAP, p. 2013)

Renewable transport fuel support measures

At present, support for RES in the transport sector is limited to biofuels which are promoted by a combination of, on the one hand, a blending obligation, and, on the other hand, a tax exemption. Thus, gasoline with at least 7 % bioethanol or diesel with at least 7 % FAME is charged with a lower tax rate. This direct financial support via tax exemption is however valid only till 2013. Moreover, the Walloon region expresses its aim to support second-generation biofuels by funding new production units.

The current blending obligation on the share of biofuels in diesel and gasoline is set at 4%.

3.3 Bulgaria

Note: The assessment of the Bulgarian NREAP was conducted by EEG.

3.3.1 Summary assessment

The table below shows the evaluation of the Bulgarian NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☹
Infrastructure development and electricity network operations	☺
RES electricity support measures	☺
RES heating and cooling support measures	☹
RES transport support measures	☺

3.3.2 Basic evaluation criteria

Fulfilment of formal criteria

Bulgaria has notified the national renewable energy action plan in June 2010 being on time. Both targets, the target for renewable energy in gross final energy consumption as well as the target on renewable energy sources in transport, were considered correctly.

Assessment of inconsistencies

Consistency of the tables is mainly given. One minor deviation is detected concerning tables 4a and 10 on the gross final energy consumption of electricity in 2005. Table 10 shows a value 167 ktoe higher than in table 4a.

Renewable energy trajectories

Compared to the Green-X ACT scenario (assuming proactive RES support) as prepared within the REPAP 2020 project the NREAP seems comparably less ambitious. The ACT scenario considers a goal 1.5 times higher than the NREAP to be achievable by 2020. For the electricity sector the target is even 200 % higher. A more detailed comparison of the trajectories contained in the NREAP and the Green-X ACT scenario are shown in Table (Appendix) 18

Use of cooperation mechanisms

Bulgaria wants to benefit from joint projects in heating installations. For these technologies the cost-benefit ratio should be the best. Concrete plans about possible projects are not made. Bulgaria also wants to act as an energy exporter. Until 2020 335 ktoe of renewable energies shall be exported to other member states.

3.3.3 Assessment of non-cost barriers

<i>Indicator</i>	<u>NREAP Assessment</u> (Administrative procedures and spatial planning)
<i>Presence of a one-stop shop scheme?</i>	One-stop shop does not exist so far, but should be introduced in 2015. (NREAP ⁷ , p. 98, 48)
<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	Lead-time is difficult to forecast, because not all procedural steps need to be completed in each case. It varies widely and may take 6 months to 1 year or more. (NREAP, p. 100, 101) According to the Bulgarian association of producers of ecological energy, actual lead times amount to at least 1.5 years.
<i>Is there an exception from authorization of small-scale systems?</i>	For solar hot water collectors no building permit is required, further simplifications are not existing. It is planned to introduce simplified procedures for solar thermal systems of up to 50 kW and for photovoltaic systems of up to 30 kW. (NREAP, p. 99)

⁷ Ministry of Economy, Energy and Tourism (2010) "National Renewable Energy Action Plan (NREAP) Bulgaria"

<i>Are the fees required correlated to the administration costs?</i>	In theory, fees should be strictly regulated and are related to the administrative costs for granting permits. (NREAP, p. 100) In practice, according to the Bulgarian association of producers of ecological energy, the amount of the fees is not correlated to the primary cost of the service (despite the law requirements for that). The fees for RES installations are several times higher than those for other construction types. Each municipality decides on the size of the fees on its territory, not taking into account the actual costs.
--	---

Administrative procedures and spatial planning

Renewable energy is a relatively new issue in Bulgaria. Hence, the administrative procedure operates mostly inefficient. This leads to an exaggerated number of permits, involving many different administrative bodies. A simplified procedure is only installed for solar collectors for hot water supply. The government seems to be aware of this situation and wants to implement a one-stop shop scheme in 2015, in order to streamline the procedure.

Necessary time for obtaining all permits is determined by the type of project and averages 6 to 12 months according to the information provided in the NREAP. Furthermore, time limits depending on the complexity of the installations should be set by law. In practice, according to information from local associations, actual lead times might however be well above the official figures expressed above.

Cost calculation is linked with the expense of the administrative procedure, but concrete project costs cannot yet be determined because of too few RES plants actually installed.

Information for applicants is mainly provided through written documents. Only limited information is available online. Specific guidelines for local authorities are not mentioned within the NREAP. Furthermore no governmental training for case handlers is offered, but institutions are obligated to adopt an annual plan for mandatory training for officials. A more detailed depiction of the related information is shown in Table (Appendix) 13.

<u>Indicator</u>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time of grid connection adequate? If not, give examples.</i>	Grid connection for wind power plants has taken 3-6 months in recent years. (AEON ⁸ , p. 43) According to the Bulgarian association of producers of ecological energy, since the beginning of 2010 grid connections are however temporarily put on hold.
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	The Renewable and Alternative Energy Sources and Biofuels Act provides “priority connection” to the network for producers of electricity from RES. (NREAP, p. 133) In theory, operators are required to curtail the production of electricity from RES only as a last resort, after having used all other options. (NREAP, p. 140) According to the Bulgarian association of producers of ecological energy, common practice differs however significantly from that.
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	The costs, which are necessary to the connection of the energy facility of the producer to the respective network up to the property boundary, are borne by the producer. According to law, connection costs from the boundary of the producer to the point of the connection are borne by the transmission or the respective distribution company. (NREAP, p.134)
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Two new 400 kV interconnection lines, linking Bulgaria with Greece and Serbia are planned. (NREAP, p. 130)

Infrastructure development and electricity network operations

The power grid in Bulgaria is very old and with a very low capacity for new installations, especially in the northeast. Until now, this does not cause problems because of the small number of RES installations. Problems in the future could arise, especially because no measure for priority dispatch is in place. Network operators are only obligated to provide priority connection. Therefore connection procedure appears to work quite well and with an average time of 3-6 months it has been also relatively fast. Connections in the north-eastern region contain some problems. According to the Bulgarian association of producers of ecological energy, since the beginning of 2010 grid connections are however temporarily put on hold.

⁸ Ouwers, Jeroen; S. Tomova, D. Doytchev (2010) “Non-cost barriers to renewable -AEON Study- National report Bulgaria”

Connection costs are mainly born by the distribution company. Electricity producers only have to pay the connection line inside their property. Due to the fact costs for subsequently connected producers are the same as for initially connected users. Information on the cost and timetable are available after filling out the request. Precise timetables are published together with the final connection agreement. Table (Appendix) 14 gives an overview of further indicators.

3.3.4 Assessment of support measures

<i>Indicator</i>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Sufficiency is given for several technologies. Only the support for biogas and possibly some types of biomass installations should be improved, and also for offshore wind power changes appear necessary. (RE-Shaping ⁹)
<i>Is there a technology specific support?</i>	Feed-in tariffs differ for the technologies. (NREAP, p. 151)
<i>Is the long-term security of the support measures ensured?</i>	Feed-in tariffs for solar and geothermal sources are guaranteed for 25 years. Other renewables will receive feed-in tariffs for 15 years. Additionally it is ensured that the support may not be less than 95 per cent of its amount in the previous year. (NREAP, p. 151)
<i>Does the support depend on energy efficiency criteria of the technology?</i>	No support scheme depends on energy efficiency criteria. (NREAP, p. 152, 156, 159)

Renewable electricity support measures

Support measures for RES systems producing electricity are mostly sufficient. Only biogas and possibly some types of biomass installations should be promoted better. This success is largely based on the feed-in tariff scheme, which is guaranteed for most systems for 15 years and for solar installations for 25 years. It is possible to decrease granted tariffs at the end of the year, but the new support must be 95% of the previous one. Financing is provided through a special surcharge for electricity transmission. Furthermore Bulgaria wants make use of “joint implementation” projects under the Kyoto protocol. As complementary measure at the national level the “European National Development Plan” includes investment support for all kind of RES installations.

Financial support measures for RES installations do not require the fulfilment of any efficiency criteria. A more detailed view of the related information is shown in Table (Appendix) 15.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	Sufficiency for biomass and solar thermal installations is not given in every case. (RE-Shaping) Besides, also for geothermal systems no support is applicable in practice at present.
<i>Is the long-term security of the support measures ensured?</i>	Financing of respective funds is assured during the entire period. (NREAP, p. 165)
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Some funds are dependent on fulfilling efficiency requirements. Requirements are not announced. (NREAP, p. 165)
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	At present, no such schemes are in place. (NREAP, p. 166)
<i>Is there a RES Obligation for the building sector?</i>	No obligation for RES is included in building regulations, but plans are made to introduce such obligations. (NREAP, p. 108, 109)

Renewable heating and cooling support measures

Financial support for RES in heating and cooling applications is solely based on some minor investment grants. Description of these measures within the NREAP is not very detailed, as specific technologies or targets are not mentioned. Most of the indicated measures are external programs supported by the EU or the World Bank.

Specific measures for RES systems in building whether public or residential is not introduced, but there are plans to initiate a RES obligation for residential houses. For a detailed overview on support for RES heating and cooling refer to Table (Appendix) 16.

⁹ A. Held et al: „Indicators assessing the performance of renewable energy support policies in 27 Member States“

<i>Indicator</i>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	Obligation for Diesel is set to 4 % and for Petrol 2 % as from 1 March 2011. (NREAP, p. 168)
<i>Is there a specific support for 2nd generation biofuels?</i>	n/a
<i>Is the long-term security of the support measures ensured?</i>	Tax reduction is guaranteed only till the end of 2012. (NREAP, p. 172)

Renewable transport fuel support measures

Support for RES transport fuels is provided via a biofuel obligation. The target for 2020 is that 10 % of all fuel placed into the market should be provided by biofuels. Additionally an obligation for biofuel is set by 4 % for diesel and 2 % for petrol by March 2011. Obligation is supervised and non-fulfilment could be charged with a fine up to BGN 200,000. Besides a tax deduction for biofuels is set, which will expire 2012. Within this measure pure biofuel is exempted from excise duty and blended petrol applies to a reduced tax rate. A more detailed list of indicators is given in Table (Appendix) 17.

3.4 Cyprus

Note: The assessment of the Cypriot NREAP was conducted by EEG.

3.4.1 Summary assessment

The table below shows the evaluation of the Cyprian NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☹
Infrastructure development and electricity network operations	☺
RES electricity support measures	☺
RES heating and cooling support measures	☺
RES transport support measures	☹

3.4.2 Basic evaluation criteria

Fulfilment of formal criteria

Cyprus considered the formal criteria correctly. All claimed points were answered in the right order.

Assessment of inconsistencies

Consistency of the tables describing the national targets is generally given. Linkage between the different tables is mostly correct. Problems are found for Table 4(b) and Table 3. Table 3, describing inter alia the national target for RES in transport fuels, not taking into account the multiplication factor for specific technologies such as electricity from RES and biofuels from waste. Data in table 4b at row J are misleadingly expressed in percentage points rather than absolute values.

Renewable energy trajectories

Compared to the Green-X ACT scenario (assuming proactive RES support) as prepared within the REPAP 2020 project the RES targets set in the NREAP for the electricity and heating and cooling sector are quite ambitious. Relating to the transport sector, the feasible target for 2020 as derived in the ACT case is twice compared to the NREAP. A more detailed comparison of the trajectories contained in the NREAP and the Green-X ACT scenario is given in Table (Appendix) 24 of this document.

Use of cooperation mechanisms

Cyprus has a positive outlook towards the participation in joint projects, but no concrete measures are planned. Cyprus wants to achieve the national targets with domestic resources.

3.4.3 Assessment of non-cost barriers

Indicator	NREAP Assessment (Administrative procedures and spatial planning)
Presence of a one-stop shop scheme?	One-stop scheme is introduced. (NREAP ¹⁰ , p. 26)
Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?	Lead-time is not reasonable. Duration to get all permits varies from 36-49 months. AEON ¹¹ , p. 9, 10)
Is there an exception from authorization of small-scale systems?	Photovoltaic and biomass systems with a capacity of up to 20 kW and wind farms with a capacity of up to 30 kW are exempted from any type of licensing requirements in the responsibility of the Cyprus Energy Authority. This does not apply to permits from other authorities. Photovoltaic systems with a capacity of up to 100 kW on new or existing buildings or on ground sites are exempted from town planning license. (NREAP, p. 29, 30)
Are the fees required correlated to the administration costs?	Point is not mentioned.

¹⁰ Ministry of Commerce, Industry and Tourism (2010) "NREAP: Cyprus National Renewable Energy Action Plan"

¹¹ Ouwens, Jeroen (2010) "Non-cost barriers to renewable -AEON Study- National report Cyprus"

Administrative procedures and spatial planning

Administrative procedures in Cyprus are considered to be in need for improvement, despite the fact that a one-stop shop scheme is introduced. Difficulty lies mostly in obtaining the building permit. Before coming to a conclusion, the application has to pass 19 approval steps. This leads to long permission times. Afterwards, depending on the type of plant, three more authorities must be contacted, but in this case concrete timetables are set. Altogether the time for obtaining all permits can last 36 to 49 months. Costs are compared to other states quite low, but it is not assured that the fees are correlated to the administrative costs. Costs are adding up to 50 €/kW or 4 % of the investment.

To speed up the administrative process for specific installations, small-scale systems using PV or biomass are exempted from particular permit obligations.

According to the AEON report, civil servants are considered to be weakly informed about RES specificities. However, the NREAP mentions precise information and guidance procedures, even training for case handlers should be available. Table (Appendix) 19 gives an overview of further indicators.

<i>Indicator</i>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time of grid connection adequate? If not, give examples.</i>	Time of grid connection demands on average 12 to 24 months. (AEON, p. 19)
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	All RES installations obtain grid connection priority rights. Connection procedure should be conducted under greatest possible priority. All energy produced from RES is given priority in dispatch unless the security and reliability of the system are at risk. (NREAP, p. 46, 48)
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Methodology relating to connection costs and allocation of costs is prepared by the TSO. The costs are apportioned between Transmission system owner and the generator on a 50/50 basis. (NREAP, p. 47, 48)
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Cyprus does not have any plan to develop interconnection lines. (NREAP, p. 45)

Infrastructure development and electricity network operations

Grid connection in Cyprus works quite well. The only observed problem is the long connection time of up to 24 months. But it is important to note, that only few installations have been installed and thereof no installations in the high voltage grid were made. As a result no detailed analysis could be made. Grid connection and dispatch are guaranteed unless the security of the system is at risk. The government considers problems due to the isolated situation, and aspires new electricity storage facilities.

Costs for grid connection are divided on a 50/50 basis between the TSO and the electricity generator. For additional installations that are registered within 5 years the applicant will be credited the payments made for the first installation. Concrete information about amount of the costs is not available. Table (Appendix) 20 gives more detailed information regarding this point.

3.4.4 Assessment of support measures

<i>Indicator</i>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Sufficiency for PV, wind onshore, small hydro and liquid and solid biomass installations is given (Held et al., 2010).
<i>Is there a technology specific support?</i>	Various different support measures are installed. For instance Investment subsidies for small-scale wind farms and photovoltaic systems and fixed purchase prices for photovoltaic, wind power and biogas plants. (NREAP, p. 64-67)
<i>Is the long-term security of the support measures ensured?</i>	Feed-in tariffs are set for 20 years except for photovoltaic systems (15 years). (NREAP, p. 65-67)
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Support does not depend on energy efficiency criteria, but attaining the permit depends on fulfilling specific efficiency criteria. (NREAP, p. 68)

Renewable electricity support measures

In Cyprus various different schemes are installed, e.g. a feed in tariff for wind, solar thermal and biomass installations. Payment of the tariff is generally guaranteed for 20 years or 15 years for solar systems respectively. Furthermore investment incentives for many different small-scale systems are permitted. All these measures do not depend on any energy efficiency criteria.

To ensure stability in funding, all schemes are financed through an energy tariff of 0.44 ct/kWh. Despite these schemes the support is, according to a recent study, considered to be non-sufficient for all technologies. Missing of concrete targets, underlines the outlook that only a few installations will be made in the future. To optimize the schemes a revision processes takes place at the end of every year, taking into consideration the technology development, cost differentiations and public response. All questions concerning this point are expressed in Table (Appendix) 21.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	Support for decentralized biomass plants, solar thermal installations and ground source heat pumps is adequate. (RE-Shaping)
<i>Is the long-term security of the support measures ensured?</i>	n/a
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Support does not depend on energy efficiency criteria.
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Financial support of residential solar systems and heat pumps is installed. (NREAP, p. 83)
<i>Is there a RES Obligation for the building sector?</i>	No, there is no obligation introduced. (NREAP, p. 34)

Renewable heating and cooling support measures

Support for heating and cooling on RES is mainly based on investment incentives, which are based on the same legal framework as the support for renewable electricity. Various investment incentives addressing different technologies are installed. Especially for the promotion of small-scale systems, financial support directed to solar thermal systems and heat pumps is guaranteed. Additionally a tax exemption for fuel used in CHP plants is possible. Like for electricity, no concrete target for the annual production of heat from RES is set.

The use of district heating in Cyprus is not promoted, because of the inexistence of a heat distribution system. Generally the support for decentralized biomass and solar thermal plants technologies is adequate, according to the Re-Shaping study (Held et al., 2010). Incentives for heat pumps seem to be non-sufficient.

A RES obligation for buildings does not exist, but two programs referring to public buildings are mentioned. Therefore the use of PV and solar area cooling and heating systems is supported in a number of public buildings.

Note that a detailed list of indicators concerning Cyprus approach for supporting RES heating and cooling is given in Table (Appendix) 22.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	2% of the annual share in the gas market must come from biogas. (NREAP, p. 86)
<i>Is there a specific support for 2nd generation biofuels?</i>	n/a
<i>Is the long-term security of the support measures ensured?</i>	Only investment subsidies are granted. (NREAP, p. 87)

Renewable transport fuel support measures

No real measure to promote the use of RES in transport fuels is introduced. It is only possible to achieve an investment subsidy for purchasing low and zero emission vehicles. Hence no concrete target for the use of RES is set, but an obligation for biogas is introduced. 2% of the annual gas placed in the market must be from biogas.

3.5 Czech Republic

Note: The assessment of the Czech NREAP was conducted by EEG.

3.5.1 Summary assessment

The table below shows the evaluation of the Czech NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☹
Infrastructure development and electricity network operations	☺
RES electricity support measures	☺
RES heating and cooling support measures	☺
RES transport support measures	☺

3.5.2 Basic evaluation criteria

Fulfilment of formal criteria

The Czech Republic has notified the national renewable energy action plan in July 2010. In general, the required information was provided sufficiently within the NREAP, but several of the requested details on support schemes for heating and cooling applications as well for the transport sector (in section 4.4 and 4.5 of the NREAP) are missing.

Assessment of inconsistencies

Generally, the NREAP is consistent regarding the tables and the linkage of the tables. Nevertheless, several smaller deviations are applicable among table 4, 10, and 11 of the NREAP. Two examples are sketched below:

- The “total amount” in table 11, expressing the overall RES generation in the heating and cooling sector, ignores geothermal heat.
- Total electricity generation from RES as expressed in both table 4 and 10 differs by up to 34 ktoe.

Renewable energy trajectories

Compared to the Green-X ACT scenario (assuming proactive RES support) as prepared within the REPAP 2020 project the RES targets set in the NREAP for the heating and cooling sector are comparatively ambitious and would require possibly a strengthening of corresponding RES support. In contrast to heat, the NREAP target for RES electricity appears less ambitious, specifically with respect to wind energy. A more detailed comparison of the trajectories contained in the NREAP and the Green-X ACT case are shown in Table (Appendix) 30.

Use of cooperation mechanisms

At present, the Czech Republic does not plan to develop any cooperative RES projects jointly with another member state. The Czech Republic aims to achieve the national RES goal solely with domestic resources.

3.5.3 Assessment of non-cost barriers

<i>Indicator</i>	<u>NREAP Assessment</u> (Administrative procedures and spatial planning)
<i>Presence of a one-stop shop scheme?</i>	No one-stop shop scheme is introduced. (NREAP ¹² , p. 26)
<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead time for typical RES-E projects?</i>	Lead-time is mostly qualified as not reasonable. Average lead-times vary by technology, ranging from half a year for small-scale biomass plants up to 10 years for small hydropower installations. (AEON, p.12)
<i>Is there an exception from authorization of small-scale systems?</i>	Simplified authorization processes are possible, but only for “flawless” cases. “Energy generation and distribution license” procedure is simplified for specific small-scale RES systems. (NREAP ¹³ , p. 27, 28)
<i>Are the fees required correlated to the administration costs?</i>	Yes, the fees should be rated to actual administrative costs for permit granting. (NREAP, p. 29)

¹² Ministry of Industry and Trade (2010) “NREAP: National Renewable Energy Action Plan of the Czech Republic”

¹³ Ouwers, Jeroen (2010) “Non-cost barriers to renewable -AEON Study- National report Czech Republic”

Administrative procedures and spatial planning

Various different authorities handle the administrative procedures in the Czech republic. Linkage between these different authorities works quite well, despite the missing of a one-stop shop scheme. Referring to the AEON study, problems are considered regarding local authorities. Despite offered guidance and training for local authorities in various forms, case handlers are apparently in opposite to certain renewables. This causes inter alia long lead-times, which are reaching up to 10 years for example in the case of small hydropower. To speed up the process for small-scale systems, a simplified authorization for so called “flawless” systems is present. Additional difficulties are considered regarding spatial plans. In this context, some regions have adopted regional plans that hinder the development of wind power plants.

Permitting costs vary between 50,000 and 100,000 € depending on the size and the type of technology. Thus, it should be assured that the costs are correlated with the actual administrative costs. A more detailed discussion of various issues related to administrative procedures is shown in Table (Appendix) 25.

<u>Indicator</u>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time of grid connection adequate? If not, give examples.</i>	No explicit information on times for grid connection is applicable. As reported in the AEON study, the owner and operator of the national distribution grid (i.e. CEZ) may prolong grid connection without any due reason by 6 month. (AEON, p. 37)
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	Priority dispatch is guaranteed, due to reserved capacity for RES. Access to the grid is treated equally for all sources, hence priority access for RES is not guaranteed. However, if the specific location of the RES plant offers free capacity, priority connection is ensured. (NREAP, p. 39, 40)
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Not applicable (n/a)
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	No concrete plans are expressed. Solely a study is currently being conducted, aiming to assess the efficiency of new interconnection lines. (NREAP, p. 38)

Infrastructure development and electricity network operations

Due to the limited number of RES projects that have recently been realized it is difficult to evaluate the grid situation for RES. According to the AEON study, the arbitrariness of the national distribution grid owner (i.e. CEZ) causes some problems. Grid access for RES installations is not prioritized and therefore CEZ could cause inexplicable delays. A prediction of the average time for grid connection is not feasible for the time being.

Certainly priority dispatch for RES electricity is implemented and due to the stable grid system, there is at present no risk being dispatched. Grid enhancement regarding new interconnection lines is not envisaged, but a study is currently being conducted, examining possible benefits of a higher interconnector capacity.

Information on the costs or the cost establishment for grid connection is not provided within the NREAP. Thus, it cannot be assured, that transparent rules are actually in place. Information for project developers on the connection time or costs should be available, but the actual provision of that is not precisely explained.

More indicators related to infrastructure development and network operations are expressed in Table (Appendix) 26.

3.5.4 Assessment of support measures

<u>Indicator</u>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Support measures are sufficient for small scale hydro and all sorts of biomass. The attractive support for PV as offered in recent years led to a strong PV deployment, causing some sort of “panic” reactions at the administrative bodies. (RE-Shaping ¹⁴)

¹⁴ A. Held et al: „Indicators assessing the performance of renewable energy support policies in 27 Member States“

<i>Is there a technology specific support?</i>	The height of feed-in tariffs/premiums differs by technology. Besides, several schemes are introduced appealing to different technologies. (NREAP, p. 50, 51)
<i>Is the long-term security of the support measures ensured?</i>	Payment of feed-in tariffs is assured for 20 years (30 years for small hydro). (NREAP, p. 54) For investment grants it remains unclear how long they remain applicable.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	No. (NREAP, p. 53)

Renewable electricity support measures

Support for RES in the electricity sector is provided by several measures, but the dominant scheme is the feed-in tariff system offering technology-specific support via fixed tariffs or optional premiums. This may be accompanied by investment incentives as applicable for specific RES technologies. To ensure stability, feed-in tariffs are guaranteed for the first 20 years of operation (30 years for small scale hydro). However, it remains unclear how long accompanying investment incentives will be in place. For none of the schemes a concrete target is set, except the overall indicative trajectory for RES-electricity as expressed in the NREAP.

Funding of feed-in tariff payments is provided by a surcharge on the electricity end user price. Therefore the scheme is independent from governmental decisions. To adjust feed-in prices because of changes in technical or economical parameters, an annual revision process is installed. Regarding the investment incentives revision or funding is not declared. More information on this measure and the overall situation is shown in Table (Appendix) 27.

Overall, these measures offer sufficient support for small hydro and all kind of biomass installations. The attractive support for PV as offered in recent years led to a strong PV deployment, causing some sort of “panic” reactions at the administrative bodies.¹⁵

<i>Indicator</i>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	Support for biomass heating and solar thermal installations is moderate and possibly not always sufficient. Support for ground-source heat pumps appears adequate. (RE-Shaping)
<i>Is the long-term security of the support measures ensured?</i>	n/a
<i>Does the support depend on energy efficiency criteria of the technology?</i>	n/a
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Small-scale heating and cooling from RES is mainly supported by the “Green Saving” program, which administers a significant volume of funds, generated by the sale of unused greenhouse gas emission credits. It thereby grants investment subsidies. (NREAP, p. 62, 63)
<i>Is there a RES Obligation for the building sector?</i>	New buildings and any building over 1,000 m ² undergoing a major refurbishment have to apply an assessment of the feasibility for the use of renewable energies. The amendment of the corresponding law foresees to extend the renewable energy assessment as obligation for all buildings undergoing a major refurbishment from 2015 on. Note however that this does not constitute a formal obligation on the use of RES as economic feasibility is expressed as criteria besides technical and environmental. (NREAP, p. 31)

Renewable heating and cooling support measures

Information on the support measures for heating and cooling applications is scarce. Not all required points were answered within the NREAP. It is only mentioned that different schemes offering investment support and an income tax exemption is applicable. Detail information on these measures is however not applicable therein. For small-scale heating systems the “Green Saving” program grants special investment support.

According to a recent evaluation of implemented RES policies (RE-Shaping), support for ground-source heat pumps appears sufficient. All other RES heating and cooling applications such as centralised or decentralised biomass use or solar thermal receive moderate support.

¹⁵ Finally a unique interference in existing support contracts was exemplified - i.e. a sort of “robin hood tax” on revenues for PV plant owners was implemented. All in all, this cannot be recommended as appropriate practice.

Actual progress indicates however that support conditions for biomass appear adequate.

Additionally a sort of RES obligation for public and private buildings is implemented. New buildings and buildings over 1,000 m², which are undergoing a major refurbishment, must conduct an assessment of the usability for renewable energies. The amendment of the corresponding law foresees to extend the renewable energy assessment as obligation for all buildings undergoing a major refurbishment from 2015 on. Note however that this does not constitute a formal obligation on the use of RES as economic feasibility is expressed as criteria besides technical and environmental.

More indicators on support for RES heating and cooling are applicable in Table (Appendix) 28.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	Diesel fuel should contain 6% biofuels and petrol 4.1% biofuels by June 2010. (NREAP, p. 64)
<i>Is there a specific support for 2nd generation biofuels?</i>	n/a
<i>Is the long-term security of the support measures ensured?</i>	n/a.

Renewable transport fuel support measures

Information on the support for RES in the transport fuel sector is rudimentary. The NREAP explains some details on the biofuel obligation, but mostly from a technical viewpoint and not according to the requested information as stated in the NREAP template of the European Commission. As applicable, the obligation was increased to 6% for biodiesel fuels and stays at 4.1% for bioethanol by June 2010.

3.6 Denmark

Note: The assessment of the Danish NREAP was conducted by Fraunhofer ISI.

3.6.1 Summary assessment

The table below shows the evaluation of the Irish NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☺
Infrastructure development and electricity network operations	☺
RES electricity support measures	☺
RES heating and cooling support measures	☺
RES transport support measures	☺

3.6.2 Basic evaluation criteria

Fulfilment of formal criteria

Denmark has notified the national renewable energy action plan (NREAP) under Article 4 of Directive 2009/28/EC. The national overall 2020 target for the share of energy from renewable sources in gross final consumption of energy according to the Directive 2009/28/EC was considered correctly within the NREAP together with the renewable energy target for the transport sector.

Assessment of inconsistencies

The NREAP for Denmark is generally consistent regarding the linkages of the tables and the tables themselves, but there are some inconsistencies in table 4a from the NREAP, specifically in items A), B) and D) from this table (these figures are not identical to the total ones in tables 10 and 11).

Renewable energy trajectories

According to the Green-X ACT scenario (assuming proactive RES support) as prepared within the REPAP 2020 project a more ambitious trajectory as compared to the one contained in the Irish NREAP would be feasible. Therefore reaching a share of 42.6% in the gross final energy consumption by 2020 appears to be realisable if very strong efforts are implemented in all three RES sectors. A more detailed comparison of the trajectories contained in the NREAP and the Green-X ACT scenario is given in Table (Appendix) 36 of this document.

Use of cooperation mechanisms

The Danish government expects to be able to fulfil its obligations for expansion with renewable energy up to 2020 with domestic initiatives. Furthermore, as the expected total share of Danish renewable energy is expected to exceed the indicative trajectory, the Danish government is also prepared to make any excess renewable energy available to other countries in the years up to 2020. Regarding the participation in joint projects, Denmark has begun a clarification of technical aspects and agreements within the framework of the Nordic energy partnership including how the various types of national support schemes can be included in joint projects.

3.6.3 Assessment of non-cost barriers

Indicator	NREAP Assessment (Administrative procedures and spatial planning)
Presence of a one-stop shop scheme?	“One-stop shop” procedure is available for the administration of applications for the erection of offshore wind turbines p.37
Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?	Time to be spent for administrative process (duration to get the main permits) is less than 50 weeks.
Is there an exception from authorization of small-scale systems?	Electricity generating renewable energy installations below 10 MW do not require authorization under the Electrical Supply Act. The establishment of smaller installations must, however, fulfil the requirements of the local authority spatial planning p.39
Are the fees required correlated to the administration costs?	Any fees which may be liable are limited to covering direct administrative costs p.39

Administrative procedures and spatial planning

As seen in the Table above administrative procedures and spatial planning are evaluated as very positive in Denmark. In general, several studies indicate the satisfaction of stakeholders with the administrative procedures compared to other European countries. Especially the one-stop shopping for permits is appreciated and makes the application procedures easier (e.g. time to be spent for administrative process - duration to get the main permits - is less than 50 weeks). However, there are still areas where improvements are necessary to ensure a continuous growth and development in the use of RES. One identified barrier was the lack of public awareness and ownership to RES. This is probably a product deriving from the change from small scale RES projects to larger industrialized projects. Main barriers were identified for wind power, biomass, biogas and heat pumps. Table (Appendix) 31 gives an overview of further indicators.

<i>Indicator</i>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time of grid connection adequate? If not, give examples.</i>	The average lead time for getting grid connection (considering also approval of grid connection) is low in Denmark. Typically it takes about one month for smaller projects and about a year for larger investments p.58
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	There are rules on cost sharing and bearing of grid connection objective, and they are transparent and non-discriminatory. The Electricity Supply Act (ESA) states that the owner of the installation is solely responsible for costs associated with connection to the 10-20 kV network. Additional costs, including network reinforcement and expansion are borne by the network companies p.59
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Producers are exempted from all costs relating to network reinforcement and expansion. There are therefore no rules for the sharing of these between previous and future producers p.60
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Measures are implemented and monitored by reg. authority p.62-63

Infrastructure development and electricity network operations

The infrastructure development and electricity network operations in Denmark are in general very well developed (e.g. the average lead time for getting grid connection, considering also approval of grid connection, is low in Denmark compared to other Member States and it typically takes about one month for smaller projects and about a year for larger investments). The development of the infrastructure is highly dependent on the long term strategic plans for the development and deployment of RES technologies. Furthermore, the development of the national networks as well as the transnational networks are dependent of the long term plans. Infrastructure development is not considered as the main barrier for further development of the network, the main barrier is the lack of specific long term plans for RES deployment. The power grid in Denmark is well developed and the main bottleneck for the expansion of RES is mainly outside Denmark. These issues tend to become more administrative than technical due the legislation in the involved countries. Table (Appendix) 32 gives a detailed overview of the situation.

3.6.4 Assessment of support measures

<i>Indicator</i>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Sufficiency for biogas, wind offshore and hydro. Biomass, wind on-shore and solar support (PV and ST) should be reviewed.
<i>Is there a technology specific support?</i>	Technology specific support is defined for the different RES technologies p.72-80
<i>Is the long-term security of the support measures ensured?</i>	Long-term security of the support measures (10 years) p.75
<i>Does the support depend on energy efficiency criteria of the technology?</i>	There are no requirements for compliance with energy efficiency criteria p.74-76

Renewable electricity support measures

Denmark promotes RES electricity through a price regulation. Producers receive a variable premium on top of the market price or a fixed feed-in tariff (in case of off-shore wind combined with a tender procedure). The sum of the premium and the market price shall not exceed a certain statutory maximum, which depends on the date of grid connection of the system and the source of energy used. The design of the support mechanism is adequate: long-term security of the support measures is available (10 years) and there is technology specific support defined for the different RES technologies.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	The support levels for district heating, biomass, solar thermal and heat pumps should be increased in order to stimulate growth.
<i>Is the long-term security of the support measures ensured?</i>	The generation of RES-H is supported through tax exemptions and, in the domestic housing, subsidies for the replacement of inefficient oil-fired boilers with more energy efficient heating systems.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	In the domestic housing sector, support is dependent on energy efficiency criteria.
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Outside of district heating areas, there are three possibilities for subsidy: 1) efficient air to water heat pumps, 2) efficient liquid to water heat pumps or 3) solar installations p.81
<i>Is there a RES Obligation for the building sector?</i>	The obligations to use RES in new buildings are applied not on the building level, but on the energy system level.

Renewable heating and cooling support measures

The generation of RES-H is supported by tax exemptions. Biomass, being CO₂ neutral, is exempted from the CO₂ tax. Solar heating plants are exempted from both energy and CO₂ taxes. The design of the support mechanism should be reviewed: the support levels for district heating, biomass, solar thermal and heat pumps should be increased in order to stimulate growth. Besides the support of RES-H through tax exemptions in the domestic housing subsidies for the replacement of inefficient oil-fired boilers with more energy efficient heating systems are given. In the domestic housing sector, support is dependent on energy efficiency criteria. There are measures for the usage of small scale RES-H systems and obligations to use RES in new buildings. There is no renewable heating obligation for new or renovated buildings yet. A more detailed list of indicators is given in Table (Appendix) 34.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	0.75 % in 2010, 3.35 % in 2011 and 5.75 % in 2012 (according to energy content). Additionally, the government will ensure that in accordance with the RE Act, at least 10 % renewable energy is reached in the transport sector by 2020 p.82
<i>Is there a specific support for 2nd generation biofuels?</i>	The Energy Technology Development and Demonstration Programme (ETDDP) have contributed a total of DKK 200 million for the development and demonstration of second generation biofuels p.83
<i>Is the long-term security of the support measures ensured?</i>	n/a

Renewable transport fuel support measures

Biofuels have been exempt from the CO₂ tax imposed on ordinary petrol and diesel for transport since January 2005. This is currently the main supporting measure for biofuels. A Biofuels Obligation Scheme (BOS) is in place. The government will ensure that in accordance with the RE Act, at least 10 % renewable energy is reached in the transport sector by 2020. The Climate and Energy Minister ensures compliance. Failure to comply with the requirements is punishable by fine. The Energy Technology Development and Demonstration Programme (ETDDP) have contributed a total of DKK 200 million for the development and demonstration of second generation biofuels. Table (Appendix) 35 gives a more detailed overview.

3.7 Finland

Note: The assessment of the Finnish NREAP was conducted by Fraunhofer ISI.

3.7.1 Summary assessment

The table below shows the evaluation of the Finnish NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☹
Infrastructure development and electricity network operations	☺
RES electricity support measures	☺
RES heating and cooling support measures	☺
RES transport support measures	☺

3.7.2 Basic evaluation criteria

Fulfilment of formal criteria

Finland has notified the national renewable energy action plan (NREAP) under Article 4 of Directive 2009/28/EC. The national overall 2020 target for the share of energy from renewable sources in gross final consumption of energy according to the Directive 2009/28/EC was considered correctly within the NREAP together with the renewable energy target for the transport sector. Generally the Finnish NREAP is extremely concise and some relevant information, e.g. on non-economic barriers and on measures to attain the target seems to be missing.

Assessment of inconsistencies

The NREAP for Finland is generally consistent regarding the linkages of the tables and the tables themselves, but there are some inconsistencies in table 4a from the NREAP, specifically in the item C) (expected RES consumption in transport in table 4a vs. 4b).

Renewable energy trajectories

According to the Renewable Energy Industry Roadmap provided within the REPAP 2020 project a more ambitious trajectory as compared to the one contained in the Finnish NREAP would be feasible. Therefore reaching a share of 46.5% in the gross final energy consumption by 2020 appears to be realisable if very strong efforts are implemented in all three RES sectors. A more detailed comparison of the trajectories contained in the NREAP and the REPAP 2020 roadmap are shown in Table (Appendix) 42 of this document.

Use of cooperation mechanisms

No information about the use of cooperation mechanism is provided in the Finnish NREAP.

3.7.3 Assessment of non-cost barriers

Indicator	NREAP Assessment (Administrative procedures and spatial planning)
Presence of a one-stop shop scheme?	There is no presence of a one-stop shop scheme.
Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?	The time from the application to the receipt of permit is quite long (12-36 months), although it is possible to get a permission in 3 months, especially in biomass projects.
Is there an exception from authorization of small-scale systems?	n/a. (Building permits are required for the use of RES - not exempted from an authorization procedure).
Are the fees required correlated to the administration costs?	n/a

Administrative procedures and spatial planning

According to the NREAP assessment of Finland, several administrative barriers exist for the introduction of renewable energy technologies. There is no presence of a one-stop shopping scheme, although the way to one stop shopping has been initiated by physically merging some state administration services as of the 1st of January 2010. The complaints process is one of the major barriers in using RES, especially in biomass and wind projects. The time for collecting all permits is quite long (12-36 months). Regarding wind projects, the spatial planning is considered to be a relevant barrier. There is no national planning available for the areas of the use of wind energy. Administrative processes are not sufficient, and in wind energy processes it is not clear enough who is the responsible body in the adminis-

trative process. Also the requested requirements may not be appropriate for every RES technology. Table (Appendix) 37 gives an overview of further indicators.

<i>Indicator</i>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time of grid connection adequate? If not, give examples.</i>	Less than six months (adequate).
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	In Finland there is no priority grid access for electricity by RES.
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	In Finland the rules on cost sharing and bearing of grid connection are objective, transparent and non-discriminatory.
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	The EU Commission launched a Baltic Sea Energy strategy, which goal is the full integration of the three Baltic States into the European energy market, through the strengthening of interconnections with their EU neighbouring countries (Finland, Sweden and Poland). There is presence of an efficient plan for the reinforcement of the interconnection capacity with neighbouring countries.

Infrastructure development and electricity network operations

The infrastructure development and electricity network operations in Finland are in general very well developed. Average time of grid connection is considered adequate (less than six months). However, a priority grid access does not exist. In Finland the rules on cost sharing and bearing of grid connection are objective, transparent and non-discriminatory and there is presence of an efficient plan for the reinforcement of the interconnection capacity with neighbouring countries (Finnish electricity network is connected to the Nordic interconnected network). In general the energy utility companies and TSO has made the availability and delivery of RES energy easy, both for the industry and individuals. No major barriers were detected in this issue except the missing priority grid access. Table (Appendix) 38 gives a detailed overview of the situation.

3.7.4 Assessment of support measures

<i>Indicator</i>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Sufficiency for biomass and hydro. Biogas, wind (offshore and onshore) and solar support (PV and ST) should be reviewed.
<i>Is there a technology specific support?</i>	State grants for investments are available for all RES-E technologies. There is also an electricity tax aid which amount depends on the technology used. All technologies used in the generation of RES-E are eligible to this tax aid, except photovoltaic systems, large-scale hydropower stations, geothermal systems.
<i>Is the long-term security of the support measures ensured?</i>	The duration of these instruments are not set, and are therefore no long term security exists. These support instruments are available for both existing and new installations.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Measures for promoting energy efficient equipment are currently in place in Finland.

Renewable electricity support measures

In Finland, the main support instruments for RES-E are investment subsidies and a tax measures. The so called “energy aid” is a state grant for investments in RES. Grants are available for investment and research projects. “Tax aid” is a guaranteed payment similar to a feed-in tariff and is paid per kilowatt hour of electricity fed into the grid, however the support level is much lower than in the average European feed-in tariff scheme and it is financed through the state budget as opposed to the usual financing of feed-in systems through the electricity tariff. These support instruments for RES-E are applicable at national level. There are no other important additional instruments contributing substantially to the growth of RES-E. The level and long-term security of the different available support measures should be reviewed for several RES-E technologies. The introduction of feed-in tariffs for several RES technologies is currently being discussed. There are plans to introduce a market-based feed-in tariff scheme in 2011, to be funded from the State budget. A more detailed list of indica-

tors is given in Table (Appendix) 39.

<u>Indicator</u>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	The support level for district heating, biomass and heat pumps is sufficient. Solar thermal should be increased in order to stimulate growth.
<i>Is the long-term security of the support measures ensured?</i>	n/a
<i>Does the support depend on energy efficiency criteria of the technology?</i>	n/a
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	n/a
<i>Is there a RES Obligation for the building sector?</i>	n/a

Renewable heating and cooling support measures

There is no direct and generation based RES-H support. The generation of RES-H is supported by investment subsidies and tax reliefs. State grants are available for RES-H investment and research projects. The maximum available investment subsidy is 30%. Finnish households can benefit from Energy Grants for Residential Buildings. The maximum amount of this subsidy is 25% of eligible costs. Taxes on heat are based on the net carbon emissions from input fuels and are zero for RES. The design of the support mechanism should be reviewed specifically for solar thermal technologies. A more detailed list of indicators is given in Table (Appendix) 40.

<u>Indicator</u>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	A quota obligation (a minimum percentage of biofuels to be supplied for consumption) for the distributors of transport fuels has been set for the years 2008-2010. This minimum percentage increased annually: 2% in 2008, 4% in 2009 and 5.75% in 2010.
<i>Is there a specific support for 2nd generation biofuels?</i>	n/a
<i>Is the long-term security of the support measures ensured?</i>	n/a

Renewable transport fuel support measures

A quota obligation (a minimum percentage of biofuels to be supplied for consumption) for the distributors of transport fuels has been set for the years 2008-2010. However, there is a national target of 20% by 2020 in the use of transport biofuels (7 TWh by 2020). No specific target per technology is available. There are several financial measures for RES-T production available: vehicle tax exemption according to the Law on Vehicle Tax and grants for R&D and pilot projects under the technology programme "BioRefine - New Biomass products". Table (Appendix) 41 gives a more detailed overview.

3.8 France

Note: The assessment of the French NREAP was conducted by Fraunhofer ISI.

3.8.1 Summary assessment

The table below shows the evaluation of the French NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☹
Infrastructure development and electricity network operations	☹
RES electricity support measures	☺
RES heating and cooling support measures	☺
RES transport support measures	☺

3.8.2 Basic evaluation criteria

Fulfilment of formal criteria

In principle the French NREAP provides answers to the main questions required by the European Commission. Only some detailed sub-issues are not answered in high detail. Both targets, the target of renewable energy in gross final energy as well as the target on renewable energy sources in transport, were considered correctly.

Assessment of inconsistencies

The numbers outlined in the French NREAP are mainly consistent. We have observed some minor deviations in the total RES-E production in Table 3 and Table 10 - RES-E production in Table 10 exceeds the total in Table 4 by 4%.

Renewable energy trajectories

The renewable energy trajectory of the French NREAP by 2020 is very similar to the one of the French Industry Roadmap. In total, the NREAP 2020 states 8% less of total renewable energy consumption by 2020. Whilst both documents assume exactly the same trajectory in the heating sector, the electricity generation figures by 2020 of the NREAP exceed that of the Industry roadmap slightly by 4%. In the transport sector the expected RES-T consumption of the NREAP is 2% higher than in case of the Industry Roadmap. For further information on the RES trajectory see Table (Appendix) 48.

Use of cooperation mechanisms

France is planning to achieve its target domestically without exporting any potential surplus. But France considers the participation in joint projects related to the Mediterranean Solar Plan (MSP) without however quantifying the planned commitment. In case of exceeding national targets or successful joint projects, statistical export is being considered.

3.8.3 Assessment of non-cost barriers

Indicator	NREAP Assessment (Administrative procedures and spatial planning)
Presence of a one-stop shop scheme?	There is no one stop-shop scheme in France.
Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?	To obtain a planning permission the NREAP reports on a lead time between two months and one year. The environmental impact assessment may take between 10 and 12 months (p.24). According to AEON lead times for an onshore wind power plant may amount to between 5 and 7 years. For hydro power facilities the administrative process may take on average 6 years, but occasionally up to 18 years, although the law prescribes a maximum of 2 years for small hydro-power projects and 5 years for large projects. An additional appeal period for hydropower of 4 years causes a high uncertainty for project developers and for their financing possibilities. The system of tacit denial of a request after a certain period of months exacerbates the permission barriers.
Is there an exception from authorization of small-scale systems?	Power plants with a capacity of up to 4.5 MW only need a prior declaration to the Energy Minister to comply with electricity regulations. Small-scale PV systems with a capacity below 3 kW _{peak} may follow a simplified scheme. Authorisation for small-scale renewable heating systems tends to proceed smoothly.

<i>Are the fees required correlated to the administration costs?</i>	n/a
--	-----

Administrative procedures and spatial planning

The situation of the administrative procedures in France is heterogeneous depending on the technology. Some problems exist with regard to wind, biogas and hydro power. In addition, some delays in Solar PV permissions occurred after a cut in the FIT had been announced for 2010 since a lot of requests tried to apply for the former more beneficial feed-in tariff. There is a partly incoherent application of legal text in case of wind onshore power plants due to changing legal framework conditions within the long duration of the administrative procedure. In case of wind power additional barriers exist related to inappropriately or delayed implementation of wind development zones (ZDE) by local authorities which might be defined in a rather restrictive manner. There are no adequate rules defined for wind off-shore power plants. The system of tacit refusal exacerbates the administrative process in France. Further details on the aspects described above are given in Table (Appendix) 43.

<u>Indicator</u>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time of grid connection adequate? If not, give examples.</i>	If a new link has to be constructed, it may take between one and three years.
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	In theory, there is guaranteed feed-in for RES-E unless the safety of the network is maintained (NREAP, p. 40), but no priority access. Stakeholders report that only minimum requirements of Article 16 II b of directive 2009/28/EC is satisfied and that grid operators do not always even respect the guaranteed grid access (AEON). Transformation points have to be defined in the regional network connection plans. The capacities foreseen in these plants are reserved for RES technologies during 10 years.
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	There is a shallow cost approach in France. RES-E producers pay the costs for their connections, whilst upstream network reinforcements are paid through network use prices. There is the possibility to pool RES-E producers in order to share connection costs in areas with network constraints (Grenelle II).
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	France collaborates with other European grid managers in the European Energy Grid Initiative. The interconnection capacity to Spain is planned to be increased to 2 GW by end of 2013. Between France and Italy two projects are envisaged, the optimization of the existing network implying an additional exchange capacity of 600 MW until 2012 and the construction of a direct current link (1,000 MW) until 2017. The optimization of the connection to Belgium is foreseen to create an additional transit capacity of 400 MW by end of this year. The improvement of connection capacities to other countries are currently under evaluation.

Infrastructure development and electricity network operations

A regional plan for the connection of RES to the grid shall facilitate required reinforcements of the electricity network. The corresponding capacity is then reserved for a period of 10 years. Every two years the plan for the development of the public transport network is updated in order to identify and analyze weak points in the network. Smart grids are planned as a measure to improve grid integration of RES. The tool IPES provides monitoring and control services for wind farms and is currently being modified to the requirements of solar PV power plants. France is participating in the European Energy Grid Initiative, a European corporation on technical and financial obstacles of the electricity grid. However, insufficient grid capacity is already seen as a serious problem for RES-E development in France. Even today, a large number of projects cannot be connected to the grid. Further details on the aspects described above are given in Table (Appendix) 44.

3.8.4 Assessment of support measures

<u>Indicator</u>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Tariff levels are in general sufficient or even favourable. For biogas, biomass and wind technologies the support level appears to be sufficient. In case of wind onshore the tariff is adapted to the full-load hours of a turbine. The tariffs for solar PV are favourable, in particular for building-integrated PV.

<i>Is there a technology specific support?</i>	France applies a technology-specific feed-in tariff scheme and tenders for biomass, wind power plants and photovoltaics. In addition feed-in tariffs prices depend on performance criteria, such as energy efficiency for biomass power plants.
<i>Is the long-term security of the support measures ensured?</i>	Long-term security exists, as feed-in tariffs are paid for a duration of 15 to 20 years.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Performance criteria have to be fulfilled in order to receive support from tenders and income tax credit. Solar collectors have to fulfil CSTBat, Solar keymark certification or European standards. Biomass-based hot water production requires an efficiency of at least 70 % and a rate of carbon monoxide of not more than 0.3 %. Biomass-fueled boilers need an efficiency of at least 80 % (manual loading) or 85 % (automatic loading). Heat pumps require a performance coefficient of at least 3.4.

Renewable electricity support measures

France uses technology-specific feed-in tariffs to support renewable electricity. However, a clear commitment towards nuclear energy determines the framework conditions for RES-E support in France. There are some additional policy measures including a research demonstration fund with a budget of € 400 million from 2009-2012 and a reduced VAT rate for small PV systems in houses (less than 3 kW). Furthermore, there is support for non-grid connected RES-E (PV) available from the Fund for the Amortisation of Electrification Costs (FACE) or ADEME if cost of electrification is less than that of connection to the grid. The Energy Performance Plan for farms (PPE) to increase energy efficiency and the use of RES offers investment grants for small wind farms and PV installations. Further details on the aspects described above are given in Table (Appendix) 45.

<u>Indicator</u>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	Support levels for RES-H in France appear to be on a sufficiently high level.
<i>Is the long-term security of the support measures ensured?</i>	The support of renewable heating in France is technology-specific.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Support depends on the budget availability. Therefore, long-term security is not provided.
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	There is a feed-in tariff for electricity produced in CHP-plants.
<i>Is there a RES Obligation for the building sector?</i>	There is no RES obligation for buildings in France.

Renewable heating and cooling support measures

In the renewable heating and cooling sector the focus of French policy is also on energy efficiency policy. Accordingly, the NREAP provides detailed information on the efficiency measures that are partly linked to renewables. In general the French heating system is based on a broad use of electric heating systems resulting from the intensive use of nuclear energy. RES-H grid in France may benefit from a regional feed-in premium for large-scale installations or from a zero-interest loan for small-scale district heating. There are regional incentives for small scale projects and private owners, which are, in certain regions, a substantial supplement to national incentives. The Energy Performance Plan for farms (PPE) to increase energy efficiency and the use of RES offers investment grants for renewables. In France there is a heat fund "fond chaleur" (1 billion euro for 2009-2011) which offers a feed-in premium to eligible heat production installations such as biomass, geothermal, solar, district heating and heat recovery installations. Installations for industry or agriculture are dealt with differently than installation for public services (hospitals, school, swimming pools). With a few exceptions this support is not combinable with other support measures. Sustainable development income tax credits are available (up to € 8,000 for one person, € 16,000 for a couple plus € 400 per dependant; for rented housing up to € 8,000). Further details on the aspects described above are given in Table (Appendix) 46.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	EU-target for biofuel of 10 % by 2020
<i>Is there a specific support for 2nd generation biofuels?</i>	There is no specific support for 2nd generation biofuels.
<i>Is the long-term security of the support measures ensured?</i>	n/a

Renewable transport fuel support measures

France has established a penalty for non-compliance of the renewable transport quota. Additionally, tax exemptions exist for biofuels and bonuses are paid for vehicles with low CO₂ emissions (€ 1000 for vehicles emitting not more than 155 gCO₂/km and € 5000 for vehicles with CO₂ emissions of below 60 gCO₂/km - usually hybrid or electric). Besides, France plans to increase the share of non-road and non-aerial transport by 2022 from 14 % to 25 % by financing transport infrastructure projects, the introduction of an eco-tax starting in 2011. Up to € 16 billion may be spent for the construction of 2,000 km high speed railway tracks by 2020, for the improvement of public transport in the Paris region and other regions in France. Further details on the aspects described above are given in Table (Appendix) 47.

3.9 Germany

Note: The assessment of the German NREAP was conducted by EEG.

3.9.1 Summary assessment

The table below shows the evaluation of the German NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☺
Infrastructure development and electricity network operations	☺
RES electricity support measures	☺
RES heating and cooling support measures	☺
RES transport support measures	☺

3.9.2 Basic evaluation criteria

Fulfilment of formal criteria

Germany has notified the national renewable energy action plan (NREAP) in mid-August 2010 being slightly late. Both targets, the target for renewable energy in gross final energy consumption as well as the specific target on renewable energy sources in transport, were considered correctly.

Assessment of inconsistencies

In general, the NREAP of Germany is highly consistent regarding the linkages of the tables and the tables themselves. A minor remark regards the slight deviation from the structure of the NREAP in table 12 on page 116.

Renewable energy trajectories

According to the Renewable Energy Industry Roadmap provided within the REPAP 2020 project a more ambitious trajectory as compared to the one contained in the German NREAP would be feasible. Therefore reaching a share of 28.8% in the gross final energy consumption by 2020 appears to be achievable if stronger efforts are implemented in all three RES sectors. A more detailed comparison of the trajectories contained in the NREAP and the REPAP 2020 roadmap are shown in Table (Appendix) 54.

Use of cooperation mechanisms

Germany plans to reach its 18% target domestically. Germany also sees the cooperation mechanisms as a promising opportunity for targeted cooperation in the future and is thus interested in its further development. Germany would in that respect consider to transfer the currently estimated excess amount of 1.6% RES production to other member states, making thereby use of the cooperation mechanisms.

3.9.3 Assessment of non-cost barriers

<i>Indicator</i>	<u>NREAP Assessment</u> (Administrative procedures and spatial planning)
<i>Presence of a one-stop shop scheme?</i>	Yes, unless approval under other legislation is required
<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	n/a (not applicable)
<i>Is there an exception from authorization of small-scale systems?</i>	According to legislation small, decentralized systems do not require authorisation
<i>Are the fees required correlated to the administration costs?</i>	n/a

Administrative procedures and spatial planning

In general administrative procedures and spatial planning work very well in Germany. This view is also shared by a broad range of stakeholders. This positive evaluation is also the result of several measures that have been established in the past in order to improve administrative procedures. For instance RE systems of smaller size in many cases do not require authorization at all. Larger systems however are subject to the authorization procedure according to the Federal Immission Control Act with rather complex authorization requirements, but most of these requirements can be processed together through a so called “concentration effect”, which practically also allows for “one-stop shopping” for larger systems. (AEON). As a result lead times are in an acceptable range of 3 to 7 months and cer-

tainty for investors is improved further through the principle of “bound decision”, that is in the authorization process the administration has no discretionary power and if all requirements are met the authority has to grant the permission. However, as the responsibility for authorization procedures is situated at the federal level, it has to be assured that these favourable rules are enacted equally among the federal states, as until present the severity of administrative impact has in parts varied strongly in the different federal states.

<i>Indicator</i>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time for grid connection adequate? If not, give examples.</i>	Dependent on technology, but in general there are complaints that the necessary steps are not specifically defined in the EEG and therefore handled differently by the grid operators and may thus cause delays.
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	According to § 8(1) of the EEG, grid operators are required to purchase, transmit and distribute preferentially the total amount of electricity from renewable energy sources. Only in situations where the grid operator's requirement to purchase stands against safe and reliable power supply, the operator can down-regulate renewable energy installations with a capacity of over 100 kW through a so-called feed-in management, in accordance with § 11 EEG,
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	The costs arising from the new connection (as well as for necessary metering devices) are borne by the grid operator (§13 EEG). Furthermore, the costs for network reinforcements, grid capacity expansion and optimization of the system are covered by the grid operator as well (§ 14). In general, grid operators recover these costs by socializing them (by means of accounting for them in the determination of the charges for use of the grid system).
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Yes, planned interconnectors are documented in the Transmission Development Plan by UCTE (now: ENTSO-E). Furthermore, the <i>Energieleitungs- ausbaugesetz</i> (Law on transmission line extensions from 2009) contains a list of 24 high priority projects, which shall be updated regularly.

Infrastructure development and electricity network operations

The situation of infrastructure development and electricity network operation as it stands nowadays can be considered good. So far the infrastructure is compatible with the high growth in RES electricity production. Also rules with respect to grid access that is the priority in use for RES and the socializing of the costs for grid connection and extension are in favour for RES electricity production. However, to maintain this quite positive evaluation with respect to grid infrastructure in the future, significant action will be required now as further RES deployment will strongly challenge the existing grid infrastructure. In this respect the ongoing initiatives for the development of a trans European electricity network can be regarded as positive, but also within Germany several shortages will have to be overcome linking the major production sites of RES electricity in Germany with the demand regions. Furthermore, the rather high number of grid operators in Germany will require more enhanced communication and coordination among this group in order to develop and apply an effective long term strategy for grid development.

3.9.4 Assessment of support measures

<i>Indicator</i>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Yes, if currently effective support levels are adjusted according to future technological developments.
<i>Is there a technology specific support?</i>	Yes, the fee paid for the electricity depends on the energy source and the size of the installation, and in case of wind also the site of the installation. The remuneration also depends on the date of commissioning - usually a degression of tariffs is conditioned if technology costs continue to decline
<i>Is the long-term security of the support measures ensured?</i>	Yes, the Act is valid for an unlimited period. The feed-in tariff level is guaranteed at present over a period of 20 years (15 years for large hydro-power plants) plus start-up year.

<i>Does the support depend on energy efficiency criteria of the technology?</i>	For specific technologies, yes
---	--------------------------------

Renewable electricity support measures

The support measures for renewable electricity currently implemented in Germany can be considered to be best practice. The guaranteed tariffs for up to 20 years offer a maximum level of security for investor's, which in turn leads to easy access to financing for new projects. At the same time technology specification and tariff degression assures sufficient but not too high support levels for the individual technologies and locations. The effectiveness of the German support systems has been emphasized in many international studies (compare e.g. Re-Shaping). However, with regard to future adjustments the increasing share of RES in the electricity system will require more incentives for RES producers to sell their production on the market to achieve a higher degree of market integration and to better reflect the overall impact on the system. Overall the share among the different technologies seems to be conclusive, albeit, as also mentioned in the NREAP, there exists some uncertainty about the short term viability of currently planned wind offshore projects.

<u>Indicator</u>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	As the budget is usually fully utilized the support level is sufficient but the market for new RES-H technologies is constraint to the annual budget and potentially a higher share of RES-H could be brought into the market.
<i>Is the long-term security of the support measures ensured?</i>	The Act (EEWärmeG) is valid indefinitely, but the Market Incentive Programme (MAP) is dependent on annual budget decisions and has therefore led to stop-and-go situations in market development.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Principally yes; the MAP-guidelines include requirements for all technologies to ensure that high quality and efficient products are fostered. Heat pumps must be 'efficient' (i.e. electric heat pumps must meet predefined seasonal performance factor limiting accompanying electricity consumption) in order to receive support. In the case of solar thermal collectors the guidelines demand a minimum collector yield, and they allow for an efficiency bonus.
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	n/a
<i>Is there a RES Obligation for the building sector?</i>	Yes, owners of newly constructed buildings must cover a share of their thermal energy demand by renewable energies.

Renewable heating and cooling support measures

In general, the heating market offers a lower degree of transparency than the electricity market, due to the numerous actors and technologies with diverse areas of application. Therefore implementing an effective support structure is more challenging. The main instrument in this sector, the market incentive program has a long term aspired annual budget of € 500 million. This has in the past led to stop-and-go situations and thereby hindered a more rapid market deployment of innovative technologies in this sector. Also the diversity of this sector makes it necessary that so far largely untapped potentials are addressed through innovative solutions, like it is for example the way in the existing building stock with the user - investor dilemma.

<u>Indicator</u>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	The quota target for biofuels is for diesel fuel 4.4 % and for petrol 2.8 % (in energetic terms). From the year 2015, the reference value for biofuel quotas will be changed from the current energy rates to net greenhouse gas reduction values, starting with 3% GHG reduction of the fuel market, rising to 4.5% in 2017 and 7% in 2020
<i>Is there a specific support for 2nd generation biofuels?</i>	There is a tax exemption for Biomass-to-liquid fuels (BTL), Cellulosic ethanol and E85 until 2015. Biogas also gets a tax reduction until 2015.
<i>Is the long-term security of the support measures ensured?</i>	The German Biofuels Quota Law defines an obligation until 2020. Tax reduction for first generation biofuels run out in 2013/2015.

Renewable transport fuel

As the market for biofuels currently by its nature is mainly an artificial segment, recent changes in the regulatory environment have affected the biofuel industry in Germany quite

support measures

deeply. The tax exemptions for biofuels have been discontinued and were replaced by an overall biofuel quota. This has especially reduced the attractiveness of pure biofuel production, which has in turn led to decreased capacity utilization, i.e. there is currently a trend towards downsizing in the industry. However, with regard to reaching the 10% RES-T target the current conditions still seem to sufficient.

3.10 Greece

Note: The assessment of the Greek NREAP was conducted by Fraunhofer ISI.

3.10.1 Summary assessment

The table below shows the evaluation of the Greek NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☹
Infrastructure development and electricity network operations	☹
RES electricity support measures	☺
RES heating and cooling support measures	☹
RES transport support measures	☹

3.10.2 Basic evaluation criteria

Fulfilment of formal criteria

Greece has notified the national renewable energy action plan (NREAP) under Article 4 of Directive 2009/28/EC on July 2010. The national overall 2020 target for the share of energy from renewable sources in gross final consumption of energy according to the Directive 2009/28/EC was considered correctly within the NREAP together with the renewable energy target for the transport sector. Greece has a binding RES target of 18% by 2020, up from 6.9% in 2005. The Greek authorities have planned to overshoot the target by over 2%. The NREAP expects 39.8% of electricity consumption to be met by RES in 2020, 19.7% of heating and cooling consumption as well as 10.1% of transport fuels consumption.

Assessment of inconsistencies

The NREAP for Greece is consistent regarding the linkages of the different tables.

Renewable energy trajectories

According to the Renewable Energy Industry Roadmap provided within the REPAP 2020 project a more ambitious trajectory as compared to the one contained in the Greek NREAP would be feasible. Therefore reaching a share of 21.7% in the gross final energy consumption by 2020 appears to be realisable if very strong efforts are implemented in all three RES sectors. A more detailed comparison of the trajectories contained in the NREAP and the REPAP 2020 roadmap are shown in Table (Appendix) 60 of this document.

Use of cooperation mechanisms

Currently structures for arranging a statistical transfer or joint projects have not been formally established in Greece. Specifically for statistical transfers the criteria have not been finalized yet. It should be recalled that Greece expects to have excess amounts available for possible transfer to other parties (about 2.2% in 2020 - in percentage point of overall RES share).

3.10.3 Assessment of non-cost barriers

<i>Indicator</i>	<u>NREAP Assessment</u> (Administrative procedures and spatial planning)
<i>Presence of a one-stop shop scheme?</i>	The new government has merged several administrations into the Ministry of Environment Energy and Climate Change (MEECC) which now functions as a one-stop-shop for RES licensing.
<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	The lead time for collecting all permits depends on the technology but could be described as lengthy. The authorization procedures exceeded on average 3.5 years for small hydro plants and wind farms. For small PV stations <2MW the time was estimated to be 1 year, for larger stations about 2 years. p.38,39
<i>Is there an exception from authorization of small-scale systems?</i>	The process for small scale systems is simplified. For solar thermal systems the only license that is needed is a “small works permit”. For the installation of low-capacity PV on buildings and small wind turbines in house yards, a small works permit is needed as well and could be replaced in some cases by a “simple” notification of the works. p40,41.

<i>Are the fees required correlated to the administration costs?</i>	n/a
--	-----

Administrative procedures and spatial planning

The Law on “Acceleration of RES Development”- which came recently into force-streamlines administrative procedures and tackles local barriers to RES deployment. Furthermore, the new government has merged several administrations into the Ministry of Environment Energy and Climate Change (MEECC) which now functions as a one-stop-shop for RES licensing. With the newly adopted Physical Planning law (2008), the MEECC prioritizes RES projects over other land uses and determines restricted as well as priority areas. These modifications aims to improve the permitting procedure that has been complicated, including around 20 different authorities and sub-permits, whereas it used to be around 40 (main permitting steps include: production permit, installation permit and function permit). Furthermore, the lead time for collecting all permits has been described as lengthy (3.5 years on average). Availability of information could be improved as well. Table (Appendix) 55 gives an overview of further indicators.

<u>Indicator</u>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time for grid connection adequate? If not, give examples.</i>	The average time of getting grid approval exceeds 5 years if land expropriation time is included. p.56
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	Network capacity for a RES plant is reserved by the HTSO (Hellenic Transmission System Operator) after successful completion of the ETA (Environmental Terms Approval) procedure. If there is no more capacity available, the HTSO does not provide further connection rights. Priority access is ensured for RES power stations up to 50 MW _e , but only as long as system security and security of supply are not jeopardized. P.57,59
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Cost bearing rules are defined in the grid operation code. With regard to cost sharing rules, the HTSO has to provide the regulator a recommendation concerning rules for remuneration. The costs are attributed to the producer on a percentage basis (“shallow” connection cost charging). p.58 According to the assessment of non-cost barriers to renewable energy growth in EU Member States - AEON report, these rules are not objective, not transparent and discriminatory.
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	The Greek transmission system is interconnected to neighbouring countries Bulgaria, Macedonia, Albania, Italy, and Turkey. Another line to Bulgaria is planned. p.55,56

Infrastructure development and electricity network operations

Regarding infrastructure development and network operations, the situation in Greece could be improved. The average time for getting grid approval exceeds 5 years, no connection rights are provided if no more capacity is available and priority access is only assured if the system security is not in danger. The grid in Greece could be described as congested (in areas with high RES potential), mainly because of the islands that are not connected to a main grid. Interconnection exists with several neighbouring countries. Table (Appendix) 56 gives a detailed overview of the situation.

3.10.4 Assessment of support measures

<u>Indicator</u>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Support level for offshore wind is not sufficient; support for biogas is expected to be sufficient in most cases. The support levels for all other RES-E technologies are sufficient.
<i>Is there a technology specific support?</i>	Technology specific feed-in tariffs exist. p.69,71
<i>Is the long-term security of the support measures ensured?</i>	Long-term security is guaranteed. PPAs (Power Purchase Agreements) are valid for 20 years. For solar thermal units a support duration of 25 years is foreseen. p.76
<i>Does the support depend on energy efficiency criteria of the technology?</i>	n/a

Renewable electricity support measures

Greece has, in place, two main policy programmes supporting RES-E: a feed-in tariff and an investment subsidy. Except for off-shore wind, support levels for other technologies are sufficient. According to the Greek RES industry, achieving the renewable electricity target will not prove difficult with the measures provided in the NREAP. The design of the support mechanism is in general adequate: technology specific tariffs exist and long term security of the support measures is guaranteed. No concrete obligations exist in Greece for the share of renewable technologies and no technology specific targets are set. However, a general target of 29% for 2020 is set. A detailed list of indicators is given in Table (Appendix) 57.

<u>Indicator</u>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	Support level for RES heating and cooling (RES H&C) is not sufficient. The new investment support law L3908/2011 provides support for energy saving technologies in general. However, this type of support is not adequate for RES H&C if not in combination with other investments.
<i>Is the long-term security of the support measures ensured?</i>	There is no long-term security of the support measures ensured.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Law L3908/2011 financial investment support system is based on some energy efficiency related criteria.
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Small domestic RES H&C as investments in any energy saving measure and natural gas equipment can apply for a 20% tax deduction capped at Euro 700, but this is expected to be cancelled in 2011.
<i>Is there a RES Obligation for the building sector?</i>	The law L3851/2010 is setting new requirements that stipulate the coverage of 60% of the need of new buildings for hot water by solar thermal systems or by other energy supply systems based on RES, CHP, district heating on a large area scale/block scale as well as heat pumps after 01.01.2011. All new public buildings must cover the total of their primary energy consumption with RES, CHP, district heating on a large area scale/block scale as well as heat pumps by 31.12.2014 at the latest. From 2020 on however, all new buildings should cover their primary energy consumption with RES, CHP, district heating or heat pumps.

Renewable heating and cooling support measures

The only actual measure to support renewable heat is the law L3851/2010. This law sets new requirements that stipulate the coverage of 60% of the need of new buildings for hot water by solar thermal systems after 1 January 2011. Furthermore, L3851/2010 stipulates that by 31 December 2019, all new buildings must cover the total of their primary energy consumption with RES, CHP, district heating on a large area scale/block scale as well as heat pumps. This requirement is extended to all new public buildings by 31 December 2014 at the latest. It is foreseen the development of specific national energy policies and the establishment of new financial incentives for the support of the heat production from biomass and geothermal energy, along with the implementation of the Energy Performance of Buildings Directive (EPBD). However, the NREAP lacks measures to help fulfilling the renewable heating and cooling target. Table (Appendix) 58 gives a detailed overview of the situation.

<u>Indicator</u>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	Allocation of quota depends on a formula including weighting factors for each type of raw material. Legislation for the sustainability criteria of biofuels does not yet exist. p.63,81
<i>Is there a specific support for 2nd generation biofuels?</i>	n/a (nothing is mentioned about specific support for 2 nd generation biofuels)
<i>Is the long-term security of the support measures ensured?</i>	n/a (nothing is mentioned about long-term security)

Renewable transport fuel support measures

A quota system for biofuels is present in Greece and the quantities are allocated every year. Biodiesel is the only biofuel for transport that is currently distributed in the Greek market and is allowed to be mixed with conventional diesel up to a share of 7%. Legislation on sustainability criteria is not yet present. According to other resources, biodiesel plants could be subsidized up to 40% by investment law 3299/2004. Biofuels in general are exempt from fossil fuel taxes. The government plans regulatory actions to promote the domestic production of biodiesel. Emphasis will be put on the exploitation of the local potential and the development of supply chains. The additional development of specific policies and fiscal

instruments will facilitate both the supply and use of the biofuels in the transportation sector. Table (Appendix) 59 gives a more detailed overview.

3.11 Ireland

Note: The assessment of the Irish NREAP was conducted by Fraunhofer ISI.

3.11.1 Summary assessment

The table below shows the evaluation of the Irish NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☹
Infrastructure development and electricity network operations	☹
RES electricity support measures	☹
RES heating and cooling support measures	☹
RES transport support measures	☺

3.11.2 Basic evaluation criteria

Fulfilment of formal criteria

Ireland has notified the national renewable energy action plan (NREAP) under Article 4 of Directive 2009/28/EC. The national overall 2020 target for the share of energy from renewable sources in gross final consumption of energy according to the Directive 2009/28/EC was considered correctly within the NREAP together with the renewable energy target for the transport sector.

Assessment of inconsistencies

The NREAP for Ireland is generally consistent regarding the linkages of the different tables. However, some deviations were found within the NREAP tables (i.e. tables 2, 3 and 4 of the NREAP).

Renewable energy trajectories

According to the Green-X ACT scenario (assuming proactive RES support) as prepared within the REPAP 2020 project a more ambitious trajectory as compared to the one contained in the Irish NREAP would be feasible. Therefore reaching a share of 19% in the gross final energy consumption by 2020 appears to be realisable if stronger efforts are implemented in all three RES sectors. A more detailed comparison of the trajectories contained in the NREAP and the Green-X ACT scenario is given in Table (Appendix) 66 of this document.

Use of cooperation mechanisms

Ireland would propose to sell statistical transfer in the event that there is an excess above its national renewable energy target either in 2020 or in the years before. However, it will be necessary to ensure that Ireland's achievement of its national target is not in any way endangered by any such arrangement.

Ireland is open to participation in joint projects with other Member States (MS). However, the reaching of the national Irish target is not predicated on the use of the cooperation mechanisms under the Directive. At present, there is no plan to support a specific capacity via joint projects. Ireland has significant offshore resources which hold electricity export potential and could potentially be available for joint projects with other MS.

In Table 3 of the Irish NREAP it is estimated to have a RES surplus for cooperation mechanisms of about 1-1.9% between 2011 and 2018.

3.11.3 Assessment of non-cost barriers

<u>Indicator</u>	<u>NREAP Assessment</u> (Administrative procedures and spatial planning)
<i>Presence of a one-stop shop scheme?</i>	A one stop shop system is not present. For the final license by the Commission for Energy Regulation, several permits have to be submitted, which need to be received from different organizations p.40
<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	After all documents are submitted, the authorization is normally issued within six weeks. However, the documents have to be obtained from several authorities, situation that normally lengthens the process (e.g. Environmental Impact Statement or Waste license) p.23, 33, 40
<i>Is there an exception from authorization of small-scale systems?</i>	Installations of 1 MW or less are generally exempted from authorization processes. A new decision paper proposes a lower administrative procedure for installations up to 40 MW. The final decision has not been taken so far p.33, 37, 42

<i>Are the fees required correlated to the administration costs?</i>	The fees are not directly related to the administration costs and differ depending on the plant size p. 43
--	--

Administrative procedures and spatial planning

As seen in the Table above administrative procedures and spatial planning generate some difficulties for the efficient development of the RES sector in Ireland. A one stop shop system is not present in Ireland and, regarding the lead time for collecting all permits, documents have to be obtained from several authorities, situation that normally lengthens the authorization process. Installations of 1 MW or less are generally exempted from authorization processes and actually under evaluation is a new decision paper that proposes a lower administrative procedure for installations up to 40 MW. One negative aspect regarding the administrative process is that timetables are in general not given in advance.

The administrative process is not perceived as a major barrier for a further development of RES.¹⁶ A further limiting factor is the lack of information and motivation among the civil servants of local authorities. Table (Appendix) 61 gives an overview of further indicators.

<u>Indicator</u>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time for grid connection adequate? If not, give examples.</i>	Decisions for infrastructure projects were made in 6 months to 1 year p.82 (i.e. “Gate” process p.83).
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	No priority access is available, only non-discriminatory connection for all electricity is guaranteed p.40. A reserved connection capacity for RES generation is in place (i.e. including enough to meet the 40% RES-E target).
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Costs of the immediate connection assets to the network are born by the developer, while costs of additional reinforcements are recovered through a tariff for all the users of the system p.84
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	No direct interconnection to European electricity network is available. Direct interconnection is foreseen between Ireland and France p.35, 36, 37

Infrastructure development and electricity network operations

The infrastructure development of the power grid, especially of the transportation grid, is of highest importance for the further development of RES in Ireland. It is considered as the most important barrier at present.¹⁷ However, Ireland already has a comprehensive grid development plan until 2025. In Ireland there is no direct interconnection to the European electricity network. However, direct interconnection is foreseen between Ireland and France in the near future. The procedures for access and usage of the power grid are operating on a “Gate” regime, which is identified as a major barrier for the RES development.¹⁸ This process generates a high level of uncertainty concerning the number of projects that will effectively be realized (considerable share of the applications refer to projects that do not actually meet the requirements, and thus fail to obtain a connection, after having drawn on limited administrative capacities). In Ireland no priority access to the grid for RES is available, only non-discriminatory connection for all electricity is guaranteed. A reserved connection capacity for RES generation is in place.

Regarding the electricity network operations, there is a good perception of the distribution grid operator (ESB Networks) as well as with the transmission grid operator (Eir-Grid).¹⁹ Table (Appendix) 62 gives a detailed overview of the situation.

¹⁶ Non-cost barriers to renewables - AEON study - National report for Ireland p. 8

¹⁷ Ibid p. 9

¹⁸ Ibid

¹⁹ Ibid

3.11.4 Assessment of support measures

<i>Indicator</i>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Sufficiency for wind (offshore and onshore). Biogas, hydro and solar PV should be reviewed.
<i>Is there a technology specific support?</i>	Technology specific support is defined for the different RES technologies p.105
<i>Is the long-term security of the support measures ensured?</i>	Long-term security of the support measures (15 years) p.105
<i>Does the support depend on energy efficiency criteria of the technology?</i>	There is no dependence on energy efficiency criteria p.106

Renewable electricity support measures

The key policy instrument for the support of RES-E in Ireland is the feed-in tariff (REFIT). The REFIT scheme was launched to include support for hydro, onshore wind and biomass. An additional scheme, REFIT II, was announced for the introduction support for additional technology categories (anaerobic digestion, high efficiency CHP, ocean and offshore wind). The REFIT scheme has been successful in increasing RES-E deployment in Ireland since its introduction. The design of the support mechanism is adequate: Long-term security of the support measures (15 years) is available, and there is a technology specific support defined for the different RES technologies. Regarding the sufficiency of the support levels, sufficiency exists for wind (offshore and onshore). However, the level of support for biogas, hydro and solar PV should be reviewed. A detailed list of indicators is given Table (Appendix) 63.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	The support levels for district heating, biomass, solar thermal and heat pumps should be increased in order to stimulate growth.
<i>Is the long-term security of the support measures ensured?</i>	Long-term security is guaranteed as the support schemes comprise investments subsidies and feed-in tariffs with 15 years of duration p.115
<i>Does the support depend on energy efficiency criteria of the technology?</i>	In the CHP program, installations need to meet the terms of the 2004 Cogeneration Directive on High Efficiency CHP. For reheat, installations must meet certain boiler efficiency criteria p.116
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Measures on the usage of small-scale heating and cooling systems from RES heat are included in the Greener Homes scheme p.114
<i>Is there a RES Obligation for the building sector?</i>	There is an mandatory RES obligation for the building sector p.55, 56

Renewable heating and cooling support measures

The main support instruments for RES-H in Ireland are grant schemes: the Renewable Heat Deployment Program (ReHeat) for the industrial, commercial, public and community sectors; and the Greener Homes Scheme for domestic applications. There is also specific grant support available for biomass CHP and anaerobic digestion CHP. The design of the support mechanism should be reviewed: The support levels for district heating, biomass, solar thermal and heat pumps should be increased in order to stimulate the growth of the RES heat sector. Long-term security is guaranteed as the support schemes comprise investments subsidies and feed-in tariffs with 15 years of duration (the renewable energy feed-in tariffs announced for the biomass sector, with their emphasis on CHP, will also support renewable heating and cooling). Furthermore, measures on the usage of small-scale heating and cooling systems from RES heat are included in the Greener Homes scheme. A more detailed list of indicators is given in Table (Appendix) 64.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	Initial effective penetration rate of 4% (by volume), effective penetration rate of 6% scheduled to take place in 2012 and a 10% planned in 2020 p.120
<i>Is there a specific support for 2nd generation biofuels?</i>	There will be a double certification (two tradable certificates per unit) for biofuels produced from wastes, residues, non-food cellulosic material, lignocellulosic material and algae p.120
<i>Is the long-term security of the support measures ensured?</i>	n/a

Renewable transport fuel support measures

Ireland has a number of implemented measures to support the build-up of the growing biofuels industry in the country. A Biofuels Obligation Scheme (BOS) is in place. The initial obligation level is 4% (by volume) in 2010, moving to 6% in 2012. BOS is the main instrument to achieve the EU target of 10% renewable transport fuel at least to 2020. The National Oil Reserves Agency is the Administrator for the biofuels obligation scheme and a non-fulfilment results in a non-compliance fee. Regarding the specific support for 2nd generation biofuels, there will be a double certification (two tradable certificates per unit) for biofuels produced from wastes, residues, non-food cellulosic material, lignocellulosic material and algae. Table (Appendix) 65 gives a more detailed overview.

3.12 Italy

Note: The assessment of the Italian NREAP was conducted by EEG.

3.12.1 Summary assessment

The table below shows the evaluation of the Italian NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☹
Infrastructure development and electricity network operations	☹
RES electricity support measures	☺
RES heating and cooling support measures	☺
RES transport support measures	☹

3.12.2 Basic evaluation criteria

Fulfilment of formal criteria

Italy considered the formal criteria correctly. All claimed points were answered in the right order. Both targets, the target for renewable energy in gross final energy consumption as well as the target on renewable energy in transport, were considered correctly.

Assessment of inconsistencies

The Italian NREAP shows an exaggerated view of the situation concerning RES. The description of current practice, specifically with respect to administrative procedures, appears non-appropriate and unrealistic as the present reality for a RES investor is in general much more complicated. However, formally spoken the required illustration of present and future RES deployment appears consistent - i.e. all tables of the NREAP and the linkage between them are highly consistent. Solely, the absolute values for the RES minimum trajectories stated in Table 3 of the NREAP are too low, whereby the maximal deviation amounts to 300 ktoe.

Renewable energy trajectories

According to the Renewable Energy Industry Roadmap provided within the REPAP 2020 project the RES targets set in the NREAP for the heating and cooling sector are quite ambitious. However, relating to the transport and electricity sector, the RE Industry Roadmap target for 2020 is up to 150 % higher compared to the NREAP. Consequently, the according to the NREAP targeted overall national RES deployment is 16% below the feasible one as identified within REPAP 2020. However, due to a lower prospected energy consumption by 2020 this results in only a 10% lower RES share in gross final energy demand (i.e. 16.2% compared to 18%). A more detailed comparison of the trajectories contained in the NREAP and the REPAP 2020 roadmap are shown in Table (Appendix) 72.

Use of cooperation mechanisms

Italy is assessing the possibility of using cooperation with third countries, requiring physical electricity imports from them. The targeted amount to fill the gap between 2020 RES target and national RES deployment appears comparatively impressive: 0.8% of gross final energy demand, corresponding to 1.1 Mtoe shall be imported from abroad by 2020. Premising the necessary interconnection lines, Italy is assuming to import from Albania, Tunisia and the Balkan states.

3.12.3 Assessment of non-cost barriers

<u>Indicator</u>	<u>NREAP Assessment</u> (Administrative procedures and spatial planning)
<i>Presence of a one-stop shop scheme?</i>	Yes, one-stop shop scheme is introduced, but not well implemented. (NREAP ²⁰ , p. 47) (AEON ²¹ , p. 8, 10)
<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	Despite concrete deadlines, the lead-time is considered too long. Average time varies from 12 months for biomass plants to 42 months for wind power plants onshore. (AEON, p.12, 14)

²⁰ Italian Ministry for Economic Development (2010) "NREAP: Italian National Renewable Energy Action Plan"

²¹ Ouwers, Jeroen (2010) "Non-cost barriers to renewable -AEON Study- National report Italy"

<i>Is there an exception from authorisation of small-scale systems?</i>	Photovoltaic panels and solar thermal collectors on buildings can be installed without any authorisation. Micro-cogeneration (up to 50 kW) is subjected only to notification. (NREAP, p. 41) Moreover, there is also a simplified procedure for small-scale plants (up to 1 MW) (NREAP, p. 37ff)
<i>Are the fees required correlated to the administration costs?</i>	Unspecified

Administrative procedures and spatial planning

Administrative procedures associated with the licensing of RES projects are generally very complex in Italy, often described as non-transparent processes. The key problem is that decisions made on the national level are not implemented or adhered in the respective administrative body at the local, regional but also national level. A one-stop shop scheme for example is introduced, but its implementation is not satisfactory. No national guidelines on this procedure were published. Therefore, many different and complex interim solutions on local level were established. Another example is the fact that although in theory a comparatively strict deadline of 180 days for responses of administrative bodies exists, in practice it is largely exceeded and lead-times reach 12 to 42 months. Theoretically, all information on the process must be published on the responsible administration’s website, but the lack of national guidelines leads to problems regarding the accuracy of this information.

Positive aspects of the administrative procedure are that for example photovoltaic panels on buildings are exempted from authorisation or that permitting costs are evaluated as being adequate (according to the AEON study). Within regional energy planning renewables appear appropriately integrated, e.g. they appear reflected in spatial planning. Only for hydro installations problems are applicable in practice, which are probably not sufficiently addressed in the NREAP. Table (Appendix) 67 gives an overview of further indicators.

<u>Indicator</u>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time for grid connection adequate? If not, give examples.</i>	Lead-time for getting grid connection is very long and wide spread. Time varies between 6 and 30 months. (AEON, p. 47, 50)
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	Network operators must give priority treatment (dispatch and access) to connection requests from RES projects, but execution is not ensured. (NREAP, p. 86) (AEON, p. 47)
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Rules are not explained, but they are supposed to be objective, transparent and non-discriminatory. (NREAP, p. 87)
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Seven new interconnection lines are planned. 3 with northern countries, and 4 with countries in the east. (NREAP, p. 83, 84)

Infrastructure development and electricity network operations

Connection of RES to the grid is considered to be the main problem for RES expansion. Despite a concrete and very detailed timetable including set deadlines, lead-times are very long and can reach 30 months. The weak sanction system for grid delays leads to no improvements. To avoid such problems and to minimise RES curtailment, the TSO is obliged to define necessary monitoring tools. In support of this, network operators shall provide priority dispatch and access to the grid. Only for wind power installations dispatch cannot be assured, because of a general lack of capacity of the grid infrastructure. Concerning the costs for connection, a cost estimate is available 20 to 60 days after the connection request. The cost calculation is not fully explained, but is supposed to be objective and non-discriminatory. To ensure that costs for initially and subsequently connected producers are equal, a so-called “lump sum” cost was introduced. All questions concerning this point are answered in Table (Appendix) 68.

Italy puts emphasis on expanding interconnection to EU Member States and non-EU countries - several interconnection line projects are planned or already in development, comprising in total seven new lines. In this context, an interconnection with Tunisia is also envisaged.

3.12.4 Assessment of support measures

<i>Indicator</i>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Current support levels appear sufficient for wind onshore and offshore, solar PV, small hydro and all kinds of biomass. (RE-Shaping ²²)
<i>Is there a technology specific support?</i>	Feed-in tariffs as applicable for small-scale RES projects differ by technology. (NREAP, p. 123) Large-scale RES projects are supported by green certificates banded according to technology since 2007 (i.e. technology-specific weighting factors are applied, varying the number of certificates issued according to the renewable source used). (NREAP, p. 120)
<i>Is the long-term security of the support measures ensured?</i>	Green certificates will be issued to RES projects for the first 15 years of operation. Feed-in tariffs are guaranteed for a period of 15 years, except photovoltaic (20 years) and solar thermal power (25 years). Besides, the interregional operation plans on energy remain operational until the end of 2013. (NREAP, p. 117, 118, 122, 125)
<i>Does the support depend on energy efficiency criteria of the technology?</i>	No - but for biomass projects the introduction of energy efficiency criteria is investigated (i.e. a minimum conversion efficiency may get obligatory to qualify for certificate trading). (NREAP, p. 120)

Renewable electricity support measures

The dominant mechanism to support RES is the quota obligation with certificate trading, whereby electricity produced from RES obtains a specific amount of “green certificates” that differs by technology. The obligatory quota for electricity produced from RES is 6.05 % in 2010, and the annual increase was set to 0.75 percentage points. In order to assure target fulfilment and appropriate operation of the scheme, the energy service regulator acts as supervisor and could impose to obligated actors a penalty for non-fulfilling.

For solar energy (photovoltaic, solar thermal power) a specific programme based on premium tariffs has been established. Additionally, for other small-scale RES projects (< 1 MW in general, and < 200 kW for wind onshore) the opportunity was introduced to switch from the certificate to a feed-in tariff scheme which generally offers a higher and more stable remuneration of the electricity fed into the grid. Moreover, two small regional programmes offering investment incentives for specific RES projects in dedicated regions are operational, at least until 2013.

According to a recent survey the support measures introduced offer (more than) sufficient support for RES-E technologies like wind on- and offshore, solar PV, small hydro and all kinds of biomass. A more detailed description of the related information is shown in Table (Appendix) 69.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	Support for centralised and decentralised biomass heating plants should be approved. Support for solar thermal installations and for ground-source heat pumps is sufficient. (RE-Shaping)
<i>Is the long-term security of the support measures ensured?</i>	Tax deduction measure will expire at the end of this year. (NREAP, p. 141)
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Main goal of the “Energy Efficiency Credit” is to promote energy efficient technologies. (NREAP, p. 136) Tax deduction does not depend on efficiency criteria. (NREAP, p. 139, 140)
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Main measure is the tax deduction mechanism. Additionally the “Sun in Public Building” project promotes solar thermal systems. (NREAP, p. 143)

²² A. Held et al: “Indicators assessing the performance of renewable energy support policies in 27 Member States“

<i>Is there a RES Obligation for the building sector?</i>	New or renovated buildings must provide 50 % of the annual primary energy requirement for the production of domestic hot water by using renewable energies. Buildings in historical centres must provide 20 %. (NREAP, p. 59)
---	---

Renewable heating and cooling support measures

Support for RES in heating and cooling is based on two key schemes - i.e. the “Energy Efficiency Credit” and a Tax Rebate.

- The Tax Rebate applies not only to RES installations but also to all facilities that are improving energy efficiency. Hence for example installations of RES heating systems are promoted. This measure is financed through the national budget and will phase out by the end of 2010.
- Energy Efficiency Credit also referred to as “White Certificate” was introduced to promote energy efficient technologies. A goal is set, to decrease the use of electricity by 3.5 Mtoe/year (gas by 2.5 Mtoe/year) till 2012. The fulfilment of this goal is supervised by AEEG (Regulatory Authority for Electricity and Gas) and sanction arrangements are possible if the target is missed.

For district heating from RES an additional measure is introduced providing tax incentives for users connected to district heating systems running on RES.

Moreover, Italy has introduced an obligation for RES installations in new or renovated buildings. Therefore 50% of the annual hot water production must be generated by using renewable sources.

According to the RE-Shaping study sufficiency of these measures is guaranteed for solar thermal installations and ground source heat pumps, but the support for biomass plants should be optimized. For a detailed overview on support for RES heating and cooling we refer to Table (Appendix) 70.

<u>Indicator</u>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	Quota of renewables on transport fuels rises from 3.5 % (2010) to 4.5 % (2012). (NREAP, p. 146)
<i>Is there a specific support for 2nd generation biofuels?</i>	n/a
<i>Is the long-term security of the support measures ensured?</i>	The quota obligation is seen as key instrument and it is envisaged to keep this operational in the forthcoming years, while the excise benefit for biofuels will end this year. (NREAP, p.149)

Renewable transport fuel support measures

Besides a dedicated blending quota for renewables a tax relief for biofuels is implemented. Thereby, a specific reduction of the excise tax (as commonly applied to transport fuels) is given for biofuels. This measure runs on experimental basis and will end this year. The quota system is set by 3.5 % (2010) and will be increased by one percentage by 2011. To supervise the target, spot checks on operator’s premises are possible. Different fines are set for non-fulfilling the quota. More indicators regarding this point are shown in Table (Appendix) 71.

3.13 Latvia

Note: The assessment of the Latvian NREAP was conducted by Fraunhofer ISI.

3.13.1 Summary assessment

The table below shows the evaluation of the Latvian NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☹
Infrastructure development and electricity network operations	☹
RES electricity support measures	☺
RES heating and cooling support measures	☺
RES transport support measures	☺

3.13.2 Basic evaluation criteria

Fulfilment of formal criteria

The Latvian NREAP provides complete answers to most questions. For RES-E support measures detailed information is provided for existing and planned measures. Information on support schemes to promote RES-H and RES-T is poor and only overall information is presented.

Assessment of inconsistencies

According to the NREAP the Energy Market Law guarantees RES generators access to the grid, as it does for any other system participant. On the other hand the NREAP states that currently, guaranteed connection for new installations is not planned, mainly because of limits on grid capacity. In table 1 gross final energy consumption is higher than the sum of demand for heating and cooling, electricity and transport.

Renewable energy trajectories

The given trajectories in the NREAP meet EU-guidelines. Biogas is weighted very high, and the total contribution of biomass to RES-E exceeds realisable RES-development after 2015 according to the RES Industry Roadmap. The trajectory for wind offshore is very ambitious and exceeds realisable RES-development under a proactive support scenario provided in the RES Industry Roadmap from 2016 onwards. Given the development of RES-E in recent years and the current administrative situation and missing wind offshore support, the trajectory, is not likely to be achieved. Energy demand trajectories are very ambitious as energy demand in both NREAP scenarios is significantly lower than in the low demand scenario of the RES Industry Roadmap. For further information on the RES trajectory see Table (Appendix 78).

Use of cooperation mechanisms

Latvia envisages fulfilling the overall targets for the share of energy from renewable sources without making use of statistical transfer mechanisms.

3.13.3 Assessment of non-cost barriers

<i>Indicator</i>	NREAP Assessment (Administrative procedures and spatial planning)
<i>Presence of a one-stop shop scheme?</i>	There is no one-stop shop scheme implemented in Latvia.
<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	In Latvia there is a long lead time for RES-projects. The time to collect necessary permits is provided in the NREAP and sums up to approximately 15-20 month. This corresponds with the AEON Report that gives a minimum lead time of 18 month (8 permits) for wind and 6 month (3 permits) for biomass projects.
<i>Is there an exception from authorization of small-scale systems?</i>	Currently there are no special procedures for small-scale systems, however Latvia is drafting a net metering and a notification procedure for small-scale systems.
<i>Are the fees required correlated to the administration costs?</i>	The NREAP does not provide any information about costs or fees related to the authorisation process.

Administrative procedures and spatial planning

RES specificities are not considered in administrative procedures and RES are not yet integrated in spatial planning. As there is no official guidance for local and regional administrative bodies in charge of RES authorisations, the lack of coordination and clearly defined responsibilities are perceived as a barrier for RES developers. Additionally uncertainty in duration of the process and risk of corruption impede RES projects. Further details on the aspects described above are given in Table (Appendix) 73.

<i>Indicator</i>	NREAP Assessment (Infrastructure development and electricity network operations)
<i>Is the average time for grid connection adequate? If not, give examples.</i>	The NREAP states, that current legislation prescribes two months as the time for permits to be received. The Ministry makes a decision on the issuing of a permit within 30 days. System operators shall specify connection sites and conditions within 60 days of receiving applications. According to the AEON Report grid connection takes 6 to 12 months though very few developers apply for grid connection due to high connection costs.
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	Latvia does not stipulate any regulation that transmission system operators should give preference to the connection of generating installations using RES. System operators have to provide system connection, if the system participant fulfils the technical requirements stipulated by the system operator. The Latvian Electricity Market Law guarantees generators access to the grid, though the NREAP also states that currently, guaranteed connection for new installations is not planned, mainly because of limits on grid capacity.
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Currently the generator bears all costs related to system connection and necessary grid reconstruction. Latvia plans to oblige system operators to cover connection costs (not including line and cable construction from plant to connection point). The refund is graduated by plant size. For plants smaller than 500 kW 100% are covered within 1 year; for plants smaller than 1 MW 100% are covered within 5 years; for plants with a capacity smaller than 5 MW only 50% are covered within 5 years. For plants with a capacity higher than 5 MW connection costs shall be covered by the plant operator.
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	NREAP states that existing inter-country connections are adequate and 2020 is the earliest date for an additional Latvia-Estonia connection.

Infrastructure development and electricity network operations

As all three Baltic countries, Latvia is isolated from the European electricity grids and gas networks. The national electricity grid is outdated, though grid optimisation and expansion is not planned or behind schedule. National grid reinforcement is in process within the Kurzeme loop project funded by the EU and is planned to put into operation in 2015. Currently RES-E is not curtailed as only little capacity is installed, though only 80 MW of the applied for 834 MW wind power can be connected to the national west section of the grid. According to the AEON Report, there have been no new wind energy installations developed in the last 3 years due to national regulation instability and enormous costs for grid connection.

The energy supply system in Latvia is still monopolised and together with lack of structured market operational measures and legal framework regulating access to power grid this holds back RES-E development. Further details on the aspects described above are given in Table (Appendix) 74.

3.13.4 Assessment of support measures

<i>Indicator</i>	NREAP Assessment (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Tariffs paid appear to be sufficient for wind onshore, biomass, bio-gas, and small hydro and photovoltaic. For wind offshore the same tariff as for wind onshore is applied. Therefore the wind offshore support level is far below current electricity generation costs.
<i>Is there a technology specific support?</i>	There is a technology specific support. Tariffs are differentiated depending on RES type and installed electrical capacity.

<i>Is the long-term security of the support measures ensured?</i>	Currently feed-in tariffs are paid for 20 years. Latvia plans to change RES support to feed-in premiums that are paid for 10 to 15 years.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Cogeneration plants using RES can gain support for if the primary energy resources saving compared to separate generation is at least 1%.

Renewable electricity support measures

RES-E is supported by feed-in tariffs, but for cogeneration plants as well as agricultural and forestry biomass financial funding based on investment incentives is also available. The feed-in tariff paid for wind offshore is not sufficient because there is no differentiation between onshore and offshore wind energy. The current feed-in tariff will be replaced with a feed-in premium. Frequent policy changes in Latvia result in high investment uncertainty. Further details on the aspects described above are given in Table (Appendix) 75.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	The support level is sufficient for centralised and decentralised biomass, as well as heat pumps. The support for solar thermal heat is far to low.
<i>Is the long-term security of the support measures ensured?</i>	Support is mainly based on EU structural funds for the period 2007 to 2013. The Latvian Environmental Protection Fund announces tenders every year. There is no long-time security in support measures.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	n/a
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Currently investment support based on cohesion fund and climate change financial instrument is in force. No further specific measures to support small scale heating from RES are planned, though planned measures to support renewable heat production and increase efficiency within the draft Law on Renewable Energy may be also available for small scale installation.
<i>Is there a RES Obligation for the building sector?</i>	Building legislation does not prescribe minimum levels for the use of renewable energy. To promote the use of RES in buildings, planning, construction and building energy performance legislation will be reviewed. By 2012 the Ministry of Economics will incorporate minimum renewable energy utilisation requirements for new and refurbished buildings in the relevant construction policy guidelines.

Renewable heating and cooling support measures

Financial incentives (direct grants and soft loans) are the main category of RES-H support in Latvia. For cogeneration plants feed-in tariffs are available for generated electricity, which indirectly also supports RES-H generation. The planned implementation of the Law on Renewable Energy will include support for biomass cogeneration, biomass fuelled district heat, and small-scale RES-H. The NREAP does not provide further information about planned measures. Further details on the aspects described above are given in Table (Appendix) 76.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	There is a mandatory quota of 5% for the share of biofuels.
<i>Is there a specific support for 2nd generation biofuels?</i>	n/a
<i>Is the long-term security of the support measures ensured?</i>	n/a

Renewable transport fuel support measures

The use of Renewable Energy in the transport sector is promoted by a mandatory admixture of 5% biofuel to transport fuel and excise tax reduction. Several schemes of direct financial support were in place of which the last one expired by the end of 2010. Latvia plans to promote biofuel usage in public transport. Further details on the aspects described above are given in Table (Appendix) 77.

3.14 Lithuania

Note: The assessment of the Lithuanian NREAP was conducted by Fraunhofer ISI.

3.14.1 Summary assessment

The table below shows the evaluation of the Lithuanian NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	⊖
Infrastructure development and electricity network operations	⊖
RES electricity support measures	⊕
RES heating and cooling support measures	⊕
RES transport support measures	⊖

3.14.2 Basic evaluation criteria

Fulfilment of formal criteria

The Lithuanian NREAP provides complete answers for existing support measures. For new measures not yet passed, information is poor.

Assessment of inconsistencies

In table 1 gross final energy consumption is higher than the sum of demand for heating and cooling, electricity and transport.

The information provided on caps for fixed feed-in tariffs is confusing. On page 72 the NREAP states, that the cap will be abolished after 2010, on the following page it is stated that a cap was established only until 2009 and on page 74 caps are given for the years 2015 and 2020 but excess volumes are envisaged to get feed-in premiums.

The capacity for the planned sea cable to Sweden is 700 MW according to the constructor²³, while the NREAP claims a capacity of 7000 MW.

Renewable energy trajectories

Given trajectories meet EU-guidelines. However, assumed capacity expansion for wind on-shore and biogas seem to be very ambitious for the time to 2014, compared to realisable RES-development under a proactive support scenario. Given the development of RES-E in recent years and the current support level, the trajectory, especially in case of wind on-shore, is not likely to be achieved.

Use of cooperation mechanisms

Lithuania envisages fulfilling the renewables targets without making use of statistical transfer mechanisms. It possesses the resource potential to surpass the national target. Decisions on the participation in joint projects and support schemes will be made taking into account the specific situation. Further details on the aspects described above are given in Table (Appendix) 84.

3.14.3 Assessment of non-cost barriers

<i>Indicator</i>	<u>NREAP Assessment</u> (Administrative procedures and spatial planning)
<i>Presence of a one-stop shop scheme?</i>	There is no one-stop shop scheme implemented in Lithuania.
<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	The NREAP does not specify total lead times. As renewable energies are not considered in spatial planning, preceding spatial planning procedures take 1-2 years. According to the AEON Report the minimum lead time for the full number of permits is 3 years for wind energy and 2 years for bio-gas. Typical lead times may be longer.
<i>Is there an exception from authorization of small-scale systems?</i>	There is no general exception from authorization of small scale systems, but requirements in spatial planning procedures are reduced for small scale systems.
<i>Are the fees required correlated to the administration costs?</i>	Fees are correlated to administrative costs and are revised on a regular basis.

²³ <http://www.abb.com/industries/ap/db0003db004333/F23761B848A72638C12577F8007863B2.aspx>

Administrative procedures and spatial planning

Legal regulations and associated administrative procedures for the development of RES are missing. The existing legal framework is described in a very high number of legal documents and mostly does not consider RES specifics. Existing measures are complex and not coordinated. RES are not integrated in spatial planning and necessary spatial planning procedures are associated with corruption, gaps in legislature, and poor implementation. To improve the situation, official guidance for local and administrative bodies is envisaged within the National Strategy for the Development of Renewable Energy Sources 2010-2015. Development of RES in Lithuania requires a comprehensive and reliable legal framework and clear and transparent administrative procedures. For this reason the Draft Law on Renewable Energy could promote RES development in Lithuania. Further details on the aspects described above are given in Table (Appendix) 79.

<i>Indicator</i>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time for grid connection adequate? If not, give examples.</i>	The NREAP does not include information on the time of grid connection. According to the AEON Report grid connection takes from 12 to 24 month.
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	Currently there are no priority connection rights. Lithuania envisages an obligation for TSO and DSOs to ensure access to the grid for RES. The NREAP does not include information on priority dispatch for RES.
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Rules for cost sharing and bearing are envisaged in implementation of the National Strategy for Development of Renewable Energy Sources for 2010-2015. Producers bear 60% of the costs for grid connection, reinforcement, and extension (deep cost approach). Operators pay 40% of the costs, which are built into the grid tariffs.
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	There are two new investment projects to build interconnection capacity to Poland and Sweden. The interconnection to Poland (LitPol) with a throughput capacity of 1000 MW (400kV) is planned to be put into operation in 2015. The interconnection to Sweden (NordBalt) with a throughput capacity of 700 MW (330 kV in Lithuania and 400 kV in Sweden) ²⁴ is planned to be commissioned in 2016.

Infrastructure development and electricity network operations

As all three Baltic countries, Lithuania is isolated from the European electricity grids and gas networks. As a result, Lithuania put more emphasis on international than on national grid development. The national electricity grid is outdated, though grid optimisation and expansion is not planned or behind schedule. Currently RES-E is not curtailed as only little capacity is installed. Plans and future legislation envisages priority transmission of RES-E and promotion of electric and hybrid vehicles. Further details on the aspects described above are given in Table (Appendix) 80.

3.14.4 Assessment of support measures

<i>Indicator</i>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Tariffs paid appear to be sufficient for wind onshore, small hydro, and photovoltaic, whereas the biogas support may be a bit tight. For solid and liquid biomass the support level is below minimum generation costs. For wind offshore the same tariff as for wind onshore is applied. Therefore the wind offshore support level is far below current electricity generation costs.
<i>Is there a technology specific support?</i>	There is a technology specific support. Feed-in tariffs are technology-specific. For cogeneration biofuel power plants structural support of the European Union for 2007-2013 is provided. The Lithuanian Rural Development Programme for 2007-2013 supports various RES technologies, mostly for the construction of biogas and wind power plants. Biofuel power plants and boiler plants are released from environmental pollution tax. Supports from Lithuanian Environmental Investment Fund and excise tax exemption do not differ according to technology. Envisaged new measures are technology-specific.

²⁴ http://ec.europa.eu/energy/infrastructure/doc/2009_bemip_a9017214-cesi-interconn-ec-phase_i-final-june_2009.pdf

<i>Is the long-term security of the support measures ensured?</i>	Feed-in tariffs are guaranteed until 2020. The prepared draft Law on Energy from Renewable Sources envisages periods, during which producers are guaranteed fixed purchasing tariffs or premiums.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Currently energy efficiency criteria are not established as a condition for support. The prepared draft Law of the Republic of Lithuania on Energy from Renewable Sources establishes energy efficiency criteria for technologies which are applied for the production of electricity eligible for support.

Renewable electricity support measures

Electricity from RES is mainly supported by feed-in tariff, which can be combined with structural support and/or support from the Lithuanian Environmental Investment Fund (LEIF). For wind offshore the same feed-in tariff is applied as for wind onshore resulting in a support level far below current electricity generation costs. Further details on the aspects described above are given in Table (Appendix) 81.

<u>Indicator</u>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	The price level for decentralised heat seems to be sufficient for investments into heat pumps and lower cost decentralised biomass. The price-level for decentralised heat is far below solar thermal heat generation costs.
<i>Is the long-term security of the support measures ensured?</i>	Long-term security of support measures is not ensured. Structural funds and the Lithuanian Rural Development Programme expire in 2015. The Lithuanian Environmental Investment Fund was suspended from 04/2009 and new applications will not be accepted before spring 2011.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Support does not depend on energy efficiency criteria. For modernisation of cogeneration power plants including a switch to biomass and construction of biomass-based cogeneration power plants structural support can be requested.
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	The prepared draft Law on RES envisages a Special National Programme for the Development of RES and special municipal programmes, including municipal action plans for RES.
<i>Is there a RES Obligation for the building sector?</i>	Currently the share of energy from renewable sources in the building sector is not regulated. Requirements to the use of RES are effective from 2012 for new public buildings and for existing public buildings requiring major renovation. As from 2015 the requirements apply for all new buildings and existing buildings requiring major renovation. Within the implementation of the Programme for modernisation of Multi-Apartment as well as the implementation of the National Strategy for the Development of RES financial support for installation of RES equipment is envisaged.

Renewable heating and cooling support measures

Renewable heating and cooling is mainly supported by EU structural support, Lithuanian Rural Development Programme, and Lithuanian Environmental Investment Fund (LEIF). Environmental pollution tax exemption is also available. Lithuania plans to promote small scale RES-H as well as to support district heating modernisation including fuel change to RES. Further details on the aspects described above are given in Table (Appendix) 82.

<u>Indicator</u>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	Lithuania wants to increase share of biofuels in transport to 10% by 2020. The Government of the Republic of Lithuania or institutions authorised by the Government are obliged to fulfil the target though there are no consequences of non-fulfilment.
<i>Is there a specific support for 2nd generation biofuels?</i>	Research in 2nd generation biofuels was regulated by the Programme for Development of Industrial Biotechnology from 2007 to 2010. No further measures are planned.
<i>Is the long-term security of the support measures ensured?</i>	Financial support expires in December 2012. Special measures ensuring long-term security of support are not mentioned in the NREAP.

Renewable transport fuel support measures

Biofuel production projects can acquire financial support (expiring by the end of 2012) as well as exemption from excise duty and environmental tax. Yearly economic and financial indicators of biofuel producers are analysed in order to avoid overruns of the support. Lithuania wants to increase the share of biofuel to 10%. The Draft Law on Renewable Energies envisages supporting infrastructure development for production of biofuel and use of biofuel and electricity in transport as well as public information and education. Further details on the aspects described above are given in Table (Appendix) 83.

3.15 Malta

Note: The assessment of the Maltese NREAP was conducted by Fraunhofer ISI.

3.15.1 Summary assessment

The table below shows the evaluation of the Maltese NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☹
Infrastructure development and electricity network operations	☺
RES electricity support measures	☹
RES heating and cooling support measures	☹
RES transport support measures	☺

3.15.2 Basic evaluation criteria

Fulfilment of formal criteria

Malta has notified the national renewable energy action plan (NREAP) the 6th of July 2010 (the deadline was 30th of June 2010). The national overall 2020 target for the share of energy from renewable sources in gross final consumption of energy according to the Directive 2009/28/EC was considered correctly within the NREAP together with the renewable energy target for the transport sector.

Assessment of inconsistencies

The NREAP for Malta is consistent regarding the linkages of the tables and the tables themselves, but there are some inconsistencies in tables 4a and 4b from the NREAP, specifically for the transport sector (12.8 and 13.5 ktoe respectively).

Renewable energy trajectories

According to the Renewable Energy Industry Roadmap provided within the REPAP 2020 project a more ambitious trajectory as compared to the one contained in the Maltese NREAP would be feasible. Therefore reaching a share of 12.2% in the gross final energy consumption by 2020 appears to be realisable if stronger efforts are implemented in all three RES sectors. A more detailed comparison of the trajectories contained in the NREAP and the REPAP 2020 roadmap are shown in Table (Appendix) 90 of this document.

Use of cooperation mechanisms

Currently, Malta has no plans for statistical transfers, joint projects or joint support schemes with other countries and, hence, aims to reach the renewable energy target domestically.

3.15.3 Assessment of non-cost barriers

<i>Indicator</i>	<u>NREAP Assessment</u> (Administrative procedures and spatial planning)
<i>Presence of a one-stop shop scheme?</i>	One stop-shop systems already exist, such as in the case of building permits at MEPA.
<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	Usually long lead times are needed to obtain necessary permits (over 3 years in some cases).
<i>Is there an exception from authorization of small-scale systems?</i>	Exception from authorization of solar water heaters and PV systems (delimited by the capacity of 16 amperes per phase).
<i>Are the fees required correlated to the administration costs?</i>	n/a

Administrative procedures and spatial planning

Insufficient spatial planning has been named as a decisive barrier for the development of RES systems in Malta. Actually the regulation process does not give any importance to the inclusion of renewable energy applications in spatial planning.

So far, only solar photovoltaic and solar water heating systems have specific guidelines to be followed for authorization. One stop-shop systems already exist, such as in the case of building permits at MEPA, but it is not foreseen similar practices for other RES technologies.

Another main barrier is the long lead time involved for collecting all permits. Time needed to obtain all necessary permits for the construction of a RES plant can take many years (e.g. RES-E). Table (Appendix) 85 gives an overview of further indicators.

<i>Indicator</i>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time for grid connection adequate? If not, give examples.</i>	Dependent on the location and voltage. Increasing use of underground tunnels is leading to increased lead times (4-5 years - 132 kV circuits).
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	All users and prospective developments are treated equally (including conventional sources), based on the electricity supply regulation GN 223/1940. Only small systems (net-metering) take priority of dispatch.
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	The operator (Enemalta Corporation) charges for infrastructure reinforcement in a cost plus a standard mark-up basis (35%). The full cost is charged to medium to large projects. Small projects are covered by standard application fees or rates.
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	A High Voltage Alternating Current (HVAC) network of 225 MW is planned (sub-sea connection to Sicily) and is expected to be finished in 2012.

Infrastructure development and electricity network operations

A mayor barrier for RES development in Malta is the long lead time involved in the grid connection (4-5 years for 132 kV circuits). Another limitation is that all users and prospective developments are treated equally (including conventional sources). Only small systems (net-metering) take priority of dispatch.

Malta will be connected to the European electricity grid via a sub-marine cable through Italy by 2012. Once this cable is in place, it would be relatively easy to allow more renewable electricity systems to be installed and be given priority, without causing difficulties for the management of electricity distribution.

Due to the low penetration of RES-E, the legal framework does not currently provide special regulations on the distribution of the costs arising from these systems. Table (Appendix) 86 gives a detailed overview of the situation.

3.15.4 Assessment of support measures

<i>Indicator</i>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Sufficiency for wind onshore. Modifications appear necessary for biogas and solar PV technologies.
<i>Is there a technology specific support?</i>	There is technology specific support. The support scheme in most cases does discriminate between different technologies.
<i>Is the long-term security of the support measures ensured?</i>	There is no long-term security of the support measures. For small domestic PV systems, there is a 3-year plan of limited capital grant support and additionally the option of either feed-in tariff at 25 Euro cents per kWh guaranteed for 8 years or net-metering with spill-off price of 7 Euro cents per kWh. For small wind, there is very little capital support.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	n/a

Renewable electricity support measures

The design of the support mechanism needs to be reviewed. Sufficiency of support levels is only adequate for wind onshore. However, various modifications appear necessary for biogas, solar PV and other RES technologies.

Support for RES electricity is primarily aimed at households. Key support instruments are soft loans and grants for PV and small-scale wind for households. Small PV installations also receive a guaranteed tariff. There is technology specific support for some RES technologies, mostly focused in PV and wind systems.

The regulatory framework for RES electricity does not include concrete obligations, nor supervision, revision and optimization measures of the current support schemes. A detailed list of indicators is given in Table (Appendix) 87.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	Sufficient for the solar thermal applications, however almost always linked with the National Budget. Modifications appear necessary for heat pumps, biomass and district heating.
<i>Is the long-term security of the support measures ensured?</i>	No long term security is included.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	n/a
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	n/a
<i>Is there a RES Obligation for the building sector?</i>	n/a

Renewable heating and cooling support measures

The renewable heating and cooling support scheme in Malta is focused mainly in domestic solar water heaters (SWH). Key policy instruments for RES heat are grants and soft loans for SWH. The Maltese Ministry of Finance grants once-only investment subsidies for SWH for domestic use. There is actually no more than one grant available per technology, and the long-term security of the support measures is not guaranteed.

An analysis on the monetary sufficiency of the measures in the RES heat sector has been performed. In the renewable heat sector, the analyzed heat sources, i.e. district heating, heat pumps and biomass, have been considered to be supported insufficiently. Only adequate remuneration levels for solar thermal applications have been identified. A more detailed list of indicators is given in Table (Appendix) 88.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	Incremental obligation: 1.5% in 2011 and reach 10% in 2020.
<i>Is there a specific support for 2nd generation biofuels?</i>	n/a
<i>Is the long-term security of the support measures ensured?</i>	No long term security is included.

Renewable transport fuel support measures

The support measures in the transport sector for renewable energies consist of a biofuel obligation (1.5% in 2011 and 10% in 2020). However, no long-term security of the support measures is mentioned in the NREAP. Regarding the supervision and non-fulfillment of the obligation, a pro-rata penalty is considered for importers/wholesalers. Furthermore, there are no specific support measures for 2nd generation biofuels. Table (Appendix) 89 gives a more detailed overview.

3.16 Portugal

Note: The assessment of the Portuguese NREAP was conducted by Fraunhofer ISI.

3.16.1 Summary assessment

The table below shows the evaluation of the Portuguese NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☹
Infrastructure development and electricity network operations	☺
RES electricity support measures	☹
RES heating and cooling support measures	☹
RES transport support measures	☹

3.16.2 Basic evaluation criteria

Fulfilment of formal criteria

The Portuguese NREAP provides complete answers to all issues raised in the Commission's template.

Assessment of inconsistencies

The tables of the Portuguese NREAP show some small inconsistencies. With regard to the energy demand projections the scenario descriptions are mixed up.

Renewable energy trajectories

Given the development of RES-E in recent years and the described policy measures the Portuguese renewable energy target is likely to be achieved. It should be kept in mind that the Portuguese Renewable Industry Association judges the Portuguese renewables target of 31 % not to be very ambitious compared to the existing potential. Thus, the Renewable Energy Industry Roadmap created by APREN projects a more ambitious trajectory of RES development than the NREAP. Whilst the NREAP states a share of RES in final energy consumption of 31.0 %, the National Industry Association considers a share of 34.8 % to be feasible by 2020. The APREN roadmap foresees a stronger development in the electricity and transport sector. Renewable electricity production in the NREAP is roughly 23 % lower than in the Industry Roadmap, renewable transport even 29 %. The difference in the electricity sector is mainly due to less ambitious assumptions on the growth of Solar PV in the NREAP compared to the APREN roadmap. At the same time the NREAP expects a lower development of RES in the heating sector than the Industry Roadmap. In general the assumptions of the NREAP on the energy efficiency scenario are not very ambitious. The trajectory shown in the NREAP shows some differences compared to the Portuguese National Energy Strategy (ENE2020). Therefore the conclusions from these two important policy documents are inconsistent, which may cause confusion for investors.

Use of cooperation mechanisms

Portugal envisages fulfilling the renewables targets without making use of statistical transfer mechanisms. It disposes of the resource potential to surpass target in electricity sector, but existing excess capacity in MIBEL (Iberian electricity market) implies that surplus electricity would have to be exported physically. However, the Portuguese possibility to physically export RES-E is restricted by the interconnection capacity between Spain and France. Portugal is willing to realize joint projects with other Member States in heating and cooling (solar thermal, heat pumps) and transport. Further details on the aspects described above are given in Table (Appendix) 96.

3.16.3 Assessment of non-cost barriers

Indicator	NREAP Assessment (Administrative procedures and spatial planning)
Presence of a one-stop shop scheme?	In general there is no one-stop shop scheme implemented in Portugal. Administrative procedures required to get permits appear to be complicated. However, there is a one-stop shop scheme available for micro-generation projects (with a capacity of up to 5 kW) and mini generation projects (with a capacity of up to 250 kW).

<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	The NREAP does not specify a concrete time horizon. According to the AEON Report as well as the “Wind-Barriers” study the time required to obtain permission usually takes more than 24 months, although for micro- and mini-generation it is significantly shorter.
<i>Is there an exception from authorization of small-scale systems?</i>	Simplified regime exists for micro- and mini-generation.
<i>Are the fees required correlated to the administration costs?</i>	Fees are not associated with the administrative costs. Particularly the need for upfront payments causes a problem for investors.

Administrative procedures and spatial planning

The administrative process in Portugal is generally lengthy and complicated. Thus, the legal framework is described in a high number of legislative documents. There are problems with integrating RES projects in spatial planning instruments such as the Municipal Master Plans, (MMP) which are partly out of date. Too long response times of the licensing authorities apparently pose a problem in the administrative process in Portugal. In addition, it appears to be difficult to obtain permissions for areas that have been devastated by forest fires or in areas with a high risk of forest fires. Simplified rules for micro- and mini-generation projects improve the administrative procedures for small installations. To improve the situation, the NREAP suggests facilitating licensing procedures by the creation of an electronic platform, project managers and the reinforcement of the central responsible organization. Further details on the aspects described above are given in Table (Appendix) 91.

<u>Indicator</u>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time for grid connection adequate? If not, give examples.</i>	AEON as well as “Wind-Barriers” estimates the average time of grid connection to exceed 24 months for normal projects and 12 months for micro-generation (according to AEON).
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	There is priority access for RES-E with the exception of large hydropower plants.
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Costs for the development (reinforcement and expansion) of the grid are organized by TSO/DSO and are paid by consumers. RES-E producers pay for connecting their installation to a connection point. There may be bilateral negotiations between the producer and the grid operator.
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Portugal plans to reinforce interconnection capacity between Portugal and Spain to 3 GW by 2014, implying the construction of two 400 kV lines in the North and in the South between the Algarve and Andalusia. The NREAP says that it is important to increase connections between Spain and France.

Infrastructure development and electricity network operations

The existing grid infrastructure and the lack of connection capacities between Portugal and Spain as well as between Spain and France is considered to be an important barrier for the construction of RES-E projects. The expected installation of additional wind, solar and hydro power plants requires considerable investment in transmission infrastructure. To remediate this situation Portugal plans to improve interconnection capacities already until 2014 with the “Development and Investment Plan for the Transport Grid 2009 - 2014 (2019). Further emphasis is however needed on the reinforcement of interconnection capacities between Spain and France. Further details on the aspects described above are given in Table (Appendix) 92.

3.16.4 Assessment of support measures

<u>Indicator</u>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Tariffs paid appear to be sufficient for old wind onshore, biomass technologies and solar technologies, whereas the new wind onshore support may be a bit tight. For wind offshore plants the same tariff as for wind onshore is paid. Therefore, the offshore support level is far below current electricity generation costs.

<i>Is there a technology specific support?</i>	Fixed feed-in tariffs, investment incentives for innovative projects and R&D, tender scheme for wind onshore, biomass and other technologies in the future.
<i>Is the long-term security of the support measures ensured?</i>	Depending on the technology validity of tariffs is granted for 15 to 25 years or until a certain amount of electricity output is achieved. p. 92.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Efficiency premiums are paid according to primary energy savings only for cogeneration plants.

Renewable electricity support measures

RES electricity in Portugal is mainly supported by fixed feed-in tariffs. Determined tariffs available appear to be sufficient for old wind onshore, biomass technologies and solar technologies, whereas the new wind onshore support may be a bit tight. For wind offshore plants support no specific tariff is paid, implying that the tariff level paid for onshore wind is far below current electricity generation costs. A technology-specific feed-in tariff is not available for wave energy projects. Long-term security is provided by the guaranteed payment during a certain time period or for a fixed amount of electricity output, depending on which limit is achieved first. Besides the feed-in tariffs, support from tender auctions is available for biomass and wind power plants as well as further technologies in the future. For innovative or demonstration projects, investment incentives are available. Further details on the aspects described above are given in Table (Appendix) 93.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	The support for solar thermal heating systems was generous in past years. Decentralised biomass applications receive only limited support through particular programs (e.g. subsidies and loans for SMEs). In case of district heating systems the remuneration level is just enough for lower cost technologies.
<i>Is the long-term security of the support measures ensured?</i>	For cogeneration units the long-term security is provided. For any other use of RES for heating and cooling long term security is not provided since the support is either inexistent or depend on annual budget decisions.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	There is no dependence on energy efficiency criteria.
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	During 2009 the Portuguese government supported solar thermal collectors for hot water by providing an investment subsidy of € 1,642 per installation for domestic users. For 2010 the investments of small and medium enterprises in solar thermal heating, in passive surroundings and thermal insulation were supported. The future continuation of these programs is currently unclear.
<i>Is there a RES Obligation for the building sector?</i>	It is obligatory to install solar panels for hot water. In quantitative terms, 1m ² of solar panel is required per tenant unless more than 50 % of the total coverage area available, on terraces or the sides facing the south quadrant between the southeast and southwest, is covered with solar panels. The corresponding regulation is called "Regulations for the Characteristics of the Thermal Behaviour of Buildings" (RCCTE). Solar thermal collectors may be substituted with other RES. Moreover in order to receive the FIT for PV micro-generation it is mandatory to have 2 m ² of solar thermal panels installed.

Renewable heating and cooling support measures

Renewable heating and cooling in Portugal is mainly promoted by a solar thermal obligation for hot water production. For this kind of installations investment subsidies are available. In biomass-fueled cogeneration units heating and cooling is also supported indirectly via the feed-in tariffs for the electricity. Further details on the aspects described above are given in Table (Appendix) 94.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	EU-target for biofuel of 10 % by 2020. Obligation for biodiesel is set up until the end of 2014 while an obligation for gasoline bio-substitutes is established from 2015-2020.

<p><i>Is there a specific support for 2nd generation biofuels?</i></p>	<p>There is no specific support for 2nd generation biofuels.</p>
<p><i>Is the long-term security of the support measures ensured?</i></p>	<p>Yes, thanks to mandatory implementation of the quota, targets are defined up to 2020. However, the mandatorily implemented targets imply that from 2015 onwards it will be necessary to introduce a new generation of biofuels, meaning that significant investments will be necessary. The mechanisms to support and facilitate these investments need to be defined quite soon to allow the investors to plan ahead and guarantee the necessary infrastructures.</p>

Renewable transport fuel support measures

Besides the implemented quota for biofuels Portugal supports the use of electric mobility. Portugal plans to launch the Mobi.E programme, designed to promote the use of electric mobility. The decommissioning of vehicles that are older than eight years is subsidized. Electric vehicles are exempted of the automobile and the road tax. Further details on the aspects described above are given in Table (Appendix) 95.

3.17 Romania

Note: The assessment of the Romanian NREAP was conducted by EEG.

3.17.1 Summary assessment

The table below shows the evaluation of the Romanian NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☹
Infrastructure development and electricity network operations	☺
RES electricity support measures	☺
RES heating and cooling support measures	☹
RES transport support measures	☹

3.17.2 Basic evaluation criteria

Fulfilment of formal criteria

The Romanian NREAP was delivered late, but both targets, the target for renewable energy in gross final energy consumption as well as the target for renewable energy sources in transport, were considered correctly.

Assessment of inconsistencies

The tables provided in the NREAP are showing various weaknesses. Tables 11 (technology trajectories for RES in heating and cooling) and 12 (RES in the transport sector) are completely missing. Additionally the absolute RES trajectory 2011-12 in table 3 is too low, by 258 ktoe. The values in Table 4 and 10, both showing the RES-E amount, are deviating constantly by about 37 ktoe from 2005-20.

Renewable energy trajectories

Compared to the Green-X ACT scenario (assuming proactive RES support) as prepared within the REPAP 2020 project, the RES targets set in the NREAP are not challenging. For example, the RES electricity target provided in the NREAP is 27 % lower compared to the target in the Green-X ACT case. A more detailed comparison of the RES-E targets contained in the NREAP and the Green-X ACT case are shown in Table (Appendix) 102 at the end of this document. Since tables 11 and 12 are missing a detailed comparison of the heating and cooling and the transport sector is not possible.

Use of cooperation mechanisms

At present Romania is not planning to participate in joint projects. Romania wants to achieve its 2020 RES target via domestic production.

3.17.3 Assessment of non-cost barriers

Indicator	NREAP Assessment (Administrative procedures and spatial planning)
Presence of a one-stop shop scheme?	No one-stop shop scheme is introduced. (AEON ²⁵ , p. 15)
Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?	Average lead-time is 12 months, but varies largely according to the type of technology. (AEON, p. 11, 15)
Is there an exception from authorization of small-scale systems?	Systems with a capacity less than 1 MW are exempted from the authorization procedure. (NREAP ²⁶ , p. 42)
Are the fees required correlated to the administration costs?	In general fees are correlated to the administrative costs relevant for granting such permits. (NREAP, p. 43)

Administrative procedures and spatial planning

Administrative procedures in Romania are clearly in need of improvement. According to the AEON study, which analyses non-cost barriers in EU member states, the process is considered complex and unclear. Furthermore an agency for renewable energies is missing, as existing in other EU Member States. In concrete a one-stop shop scheme is missing, which leads to long process times, in average 12 months and in some cases even 36 months. In this time a maximum of 20 permits has to be obtained. A simplified procedure is in place for systems

²⁵ Ouwens, Jeroen; C. Popovic (2010) "Non-cost barriers to renewable -AEON Study- National report Romania"

²⁶ Ministry of Public Finances (2010) "National Renewable Energy Action Plan (NREAP) Romania"

with a capacity less than 1 MW, as they are exempt from set-up authorisation procedure. Information about the procedure is made available in various forms by the Electricity and Heat Regulatory Authority.

Costs for authorisation seem to be correlated to administrative costs, but it is not guaranteed for every case. Specific information about costs is not available, but in average they can amount up to 50,000 €.

According to the AEON study a lack of trained personnel in permitting authorities is also hindering the process. Until now no measures are in place to improve this situation, but the government wants to set up a new “Renewable Energy Action Framework-Plan”, which provides guidance for officials. Additionally a specific training for staff handling the authorisation procedure is established. Table (Appendix) 97 shows a more detailed overview on the authorisation procedure.

<u>Indicator</u>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time for grid connection adequate? If not, give examples.</i>	Average time for grid connection is 1-6 months and therefore comparatively short. (AEON, p. 35)
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	Dispatch is guaranteed as long as the safety of the grid is not at risk. Grid connection procedure is in need of improvement (NREAP, p. 66) (AEON, p. 34)
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	The electricity producer pays the costs for grid construction to a connection point. Costs for additional grid enhancement are divided between the connected producer and the grid operators. Exact rules are not explained. (NREAP, p. 65)
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Concrete plans are made for interconnection lines to Serbia (400 kV), Turkey and Moldova (400 kV). (NREPA, p. 61)

Infrastructure development and electricity network operations

According to the AEON study grid connection seems to be in need of improvement. A main point of criticism is the complex authorisation procedure. No special priority or guaranteed access is possible for RES installations. Nevertheless grid connection is approved very quickly. The procedure lasts only a maximum of 6 months. The respective DSO or TSO must publish timetables for the specific connection procedure. Dispatching of electricity is assured as long as the safety of the grid is not jeopardised. Grid capacity is not considered to be stable enough for further RES development. Due to a detailed analysis of the grid in 2007 the government is aware of the situation and plans to carry out improvements, for example 3 new interconnection lines to Serbia, Turkey and Moldova.

The electricity producer mainly covers the costs for grid enhancement. He has to pay the full costs for grid construction to a connection point and part of the costs for grid enhancement of the existent systems. Initially connected producers receive a pay-back from subsequently connected producers. According to the NREAP, cost establishment should be based on transparent rules, however the AEON study evaluated the rules as unclear and therefore considered the costs non-transparent. More indicators regarding this point are shown in Table (Appendix) 98.

3.17.4 Assessment of support measures

<u>Indicator</u>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Support measures are adequate for wind offshore, solid and liquid biomass, biogas and small-scale hydro. Support for PV is insufficient. (RE-Shaping ²⁷)
<i>Is there a technology specific support?</i>	The support system offers technology specific banding.
<i>Is the long-term security of the support measures ensured?</i>	Generally all financial support measures will expire in 2013, with exception of the “Programme on the production of energy from renewable sources” which has no end date. Systems receive certificates generally for 15 years. (NREAP, p. 93 ff., 105, 114, 126)

²⁷ A. Held et al: „Indicators assessing the performance of renewable energy support policies in 27 Member States“

<i>Does the support depend on energy efficiency criteria of the technology?</i>	Investment support for CHP applies only to not clearly specified highly efficient plants. (NREAP p. 104)
---	--

Renewable electricity support measures

RES installations in the electricity sector are mostly adequately supported. Solely PV installations are supported insufficiently. This result is mainly based on the certificate system. All kinds of RES installations are eligible to receive certificates for 15 years, except hydroelectric power plants. They receive certificates for 10 years (retrofitted) or 3 years (non-retrofitted). Within this system, every electricity supplier has to fulfil a concrete RES obligation, which is currently 8.3 % and rises to 20 % by 2020. These values are fixed and were adjusted during the 2005-10 period. Revisions of these values or the scheme itself are not foreseen. If an electricity supplier fails to fulfil the obligation, the company is obliged to pay 70 € per missing certificate. Financing is assured through the electricity consumers. Budget caps are not in place.

Additionally, various different investment incentives exist. These measures are partly financed by the European Union and are only applicable for specific projects. The contribution of these schemes is therefore of little significance. However, details on these measures can be found in Table (Appendix) 99.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	Support measures are immature for biomass and solar thermal installations. Ground source heat pumps are supported moderately. (RE-Shaping)
<i>Is the long-term security of the support measures ensured?</i>	Investment incentives under the environmental fund are not equipped with an end date. Incentives from the structural fund will end either 2013 or 2015. (NREAP, 135 ff.)
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Support does not depend on any energy efficiency criteria, except the support measures for CHP plant. CHP plants must meet specific high-efficiency criteria. (NREAP, p. 135 ff.)
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	A “Green House” program, providing support for wood biomass, solar panels and heat pumps started in July 2010. (NREAP, p. 168)
<i>Is there a RES Obligation for the building sector?</i>	No RES obligation is introduced. (NREAP, p. 48)

Renewable heating and cooling support measures

Support measures for heating and cooling applications are mostly inefficient. Decentralized and centralised biomass plants and solar thermal installations are supported insufficiently. Only the support for ground source heat pumps seems adequate. The promotion is implemented through various different investment grants. These grants are mainly divided into two groups, which are either regulated by the structural fund or by the environmental fund. The structural fund is a combined measure, partly financed by national and EU budget. The environmental fund is financed by public revenues. Depending on the income, the environmental fund is periodically revised.

In addition to the general support for electricity from biomass and geothermal through the RES trading system, dedicated support for CHP from RES is provided by an investment incentive from the structural fund. This CHP related measure is the only one linked to efficiency criteria. Measures from the environmental fund are granted without a concrete completion date, whereas incentives through the structural fund will end 2013 or 2015. Concrete targets for these measures are not set.

One problem of both funds sketched above is that they use a selection process where only a comparatively limited number of projects are actually promoted.

A new measure, which promotes RES installation in general, is the “Green House” program. It is newly introduced for the promotion of small-scale systems. The exact structure of this programme is however not explained.

An obligation for RES in private buildings or a program encouraging authorities to feature best practice in public buildings is not existent.

Table (Appendix) 100 shows a more detailed list of points regarding the support measures for RES in heating and cooling.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	No concrete target is existent. (NREAP, p. 170)
<i>Is there a specific support for 2nd generation biofuels?</i>	n/a
<i>Is the long-term security of the support measures ensured?</i>	The investment incentive will be granted until 2013. (NREAP, p. 173)

Renewable transport fuel support measures

Support for RES in transport fuels is rather weak. Solely an investment incentive is existent, supporting agricultural and forestry product processing into biofuels. This measure runs until 2013. A concrete target or a biofuel obligation for diesel or petrol does not exist.

3.18 Slovenia

Note: The assessment of the Slovenian NREAP was conducted by EEG.

3.18.1 Summary assessment

The table below shows the evaluation of the Slovenian NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☹
Infrastructure development and electricity network operations	☺
RES electricity support measures	☺
RES heating and cooling support measures	☺
RES transport support measures	☺

3.18.2 Basic evaluation criteria

Fulfilment of formal criteria

All formal criteria are met. Every listed point of the NREAP was answered correctly.

Assessment of inconsistencies

The NREAP of Slovenia is highly consistent regarding the linkage of the table and the tables themselves. No discrepancies relating to this information can be found. Only the information on the reference scenario of the energy consumption, normally stated in table 1, is missing.

Renewable energy trajectories

According to the Renewable Energy Industry Roadmap provided within the REPAP 2020 project the RES targets set in the NREAP for the transport sector are quite ambitious. Relating to the heating, cooling and electricity sectors, the industry roadmap target for 2020 is up to 50% higher compared to the NREAP. A more detailed comparison of the trajectories contained in the NREAP and the REPAP 2020 roadmap are shown in Table (Appendix) 108 of this document

Use of cooperation mechanisms

It is envisaged that the Slovenian Government will conclude agreements on joint projects with other Member States. But Slovenia wants to get involved in joint projects only, if it turns out that it will not be able to achieve the national target.

3.18.3 Assessment of non-cost barriers

<u>Indicator</u>	<u>NREAP Assessment</u> (Administrative procedures and spatial planning)
<i>Presence of a one-stop shop scheme?</i>	No one-stop shop scheme is introduced. (NREAP ²⁸ , p. 58)
<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	The lead-time for collecting all permits is considered too long. The estimated time is 12-24 months. (NREAP, p. 59)
<i>Is there an exception from authorization of small-scale systems?</i>	Small-scale installations, such as solar collectors on buildings are exempted from all authorization procedures. (NREAP, p. 61)
<i>Are the fees required correlated to the administration costs?</i>	Fees are associated with the administrative costs of approving such permits. (NREAP, p. 61, 57)

Administrative procedures and spatial planning

Despite the presence of a one-stop shop scheme, the administrative procedure is considered to be the main problem for RES development. Two main factors are identified: The long lead-time of up to 24 months and the inadequate implementation of RES in spatial planning. The government is observing these problems. Therefore a new law will come into force in order to enhance the adoption of spatial plans. To simplify the procedure for small-scale systems, such as solar collectors on buildings, these installations are exempted from all authorization steps.

The provision of information is also in need for improvement. There are for example no timetables communicated in advance. Information on the process will be available from 2015 or 2020 on, in the course of implementation of the so called “e-construction permit”.

²⁸ Ministry of the Economy (2010) “National Renewable Energy Action Plan 2010-2020 (NREAP) Slovenia”

Thereby attainment of construction permits will be available via e-business. Official guidance for administrative bodies will be likely introduced in the near future, awaiting the results of a currently conducted analysis. Training for authorities is also under revision, because of the low awareness of benefits of RES in local authorities. New training methods will be formulated between 2011 and 2013. Table (Appendix) 103 gives an overview of further indicators.

<i>Indicator</i>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time for grid connection adequate? If not, give examples.</i>	Connection time is considered too long, due to complex administrative procedures. It lasts usually 6-8 months. (AEON ²⁹ , p. 29, 30)
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	Under Article 64 of the Energy Act system operators must, within the possibility of the system, give priority dispatch to electricity produced from RES. Access to the grid is guaranteed. (NREAP, p. 75, 73)
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Costs concerning reinforcement of the transmission and distribution network are borne by the system operator. Costs for making up the equipment for connection to the grid are borne by the investor of the RES generating plant. Costs for connection to the grid are drawn up and published by the system operator. (NREAP, p. 73)
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Reinforcement with Hungarian and Italian grid has already been envisaged for a decade. The Slovenian transmission network is by now considered relatively strong. (AEON, P. 28) (NREAP, p. 71)

Infrastructure development and electricity network operations

The power network in Slovenia is considered to be relatively strong, but reinforcement does not keep up with the growing energy demand and the implementation of RES. By now, RES installations comprise only a small part of the electricity produced. Problems for new installations are resulting from complex administrative procedure. This process depends on the grid operator that the RES producer wants to connect to. Information on the process, e.g. timetables from the operators are not available.

Cost allocation is considered to be not transparent, whereby the NREAP does not describe concrete rules except for cost sharing between TSOs and electricity generator. Electricity generators have to pay the full costs for connecting to the grid. TSOs are accountable for necessary grid enhancements.

On the plus side, grid access and priority dispatch is guaranteed as long as the security of the system is not at risk. Additionally the training process for case handlers is under revision, because the awareness for RES specifics in local authorities requires improvement. Table (Appendix) 104 gives more detailed information regarding this point.

3.18.4 Assessment of support measures

<i>Indicator</i>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Support measures for most RES systems are appropriate. Only the support for PV is rather insufficient. (RE-Shaping ³⁰)
<i>Is there a technology specific support?</i>	Fixed feed-in tariffs and feed-in premiums are technology specific. (NREAP, p. 88, 87)
<i>Is the long-term security of the support measures ensured?</i>	Both feed-in schemes are granted for 15 years. (NREAP, p. 87, 88)
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Only for wood biomass efficient criteria are set. During the reporting period efficiency of 70 % has to be reached. (NREAP, p. 85)

²⁹ Ouwens, Jeroen; Ž. Živković (2010) "Non-cost barriers to renewable -AEON Study- National report Slovenia"

³⁰ A. Held et al: „Indicators assessing the performance of renewable energy support policies in 27 Member States“

Renewable electricity support measures

Support for electricity from RES is mostly adequate. Solely the promotion for PV should be adjusted. Two measures, feed-in tariffs and feed-in premiums are available. Both of them are guaranteed for 15 years. RES procurers with a capacity up to 5 MW (CHP = 1 MW) are obliged to the feed-in tariff scheme. Producers with a greater capacity are free to choose between both of these measures. Payment for both schemes is restricted to power plants with a capacity lower than 125 MW and to biomass plants with efficiency over 70%.

Every electricity customer through a special surcharge provides financing of the scheme. Conditions are set for the next 5 years. Afterwards a revision and optimization process takes place. Therefore the conditions will be adjusted in accordance with the price developments of reference fuels. Concrete targets for each technology are not set. A more detailed table on these points is shown in Table (Appendix) 105.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	Support for decentralized biomass and ground source heat pumps is adequate. Support for centralized biomass and solar thermal installations should be optimized. (RE-Shaping)
<i>Is the long-term security of the support measures ensured?</i>	The long-term stability of financial support for solar systems and biomass boilers has been considered insecure and therefore the schemes are moving to a legal basis. (NREAP, p. 90, 92)
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Support measure for wood biomass burners in households: Energy efficiency must be over 90 % and particle emission must be less than 50 milligrams per cubic meter. (NREAP, p. 93) Support for district heating systems using wood biomass and geothermal energy and support for the installation of wood biomass boiler equipment: Energy efficiency must be over 86 %. (NREAP, p. 95, 97)
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Two schemes promoting wood biomass boilers and solar collectors in households are installed. (NREAP, p. 92)
<i>Is there a RES Obligation for the building sector?</i>	N/a

Renewable heating and cooling support measures

Main instrument for the promotion of RES in heating and cooling appliances is the feed-in tariff scheme for CHP plans. Furthermore, investment support for different kinds of RES installations is possible. Thus, it is possible to combine support measures. Some investment support is linked to the fulfilment of specific efficiency criteria. The framework for financial support, especially regulation of the funding was unstable, and as a result the schemes are moving to a new legal basis. Most of the schemes are thereby financed through a surcharge on the electricity market price. In conclusion support for decentralized biomass and ground source heat pumps is, concerning to the RE-Shaping (2010) study, considered adequate. Nevertheless support for centralized biomass and solar thermal installations should be optimized.

The overall target is to increase the share of RES in the heating and cooling sector to 25% by 2010, but a penalty for non-fulfilment is not foreseen. An annual report addressed to the government reports on the progress. Special obligations for RES in public or residential building are not set. Table (Appendix) 106 shows a more detailed overview.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	Until 2015 biofuels must supply at least 7.5% of the fuel used for motor vehicles. (NREAP, p. 104)
<i>Is there a specific support for 2nd generation biofuels?</i>	n/a
<i>Is the long-term security of the support measures ensured?</i>	The tax exemption for biofuels ensures long-term stability due to its legal basis. No time limit of the schemes is designated. Operational Program for Developing Environmental and Transport Infrastructure is only a short-time measure. (NREAP, p. 106, 109, 112)

Renewable transport fuel support meas- ures

Support for transport fuels is mainly provided by a tax exemption on biofuels. Excise tax exemption applies to biofuels in pure form. Mixed fuels are only able to receive a tax exemption up to a maximum of 5%. The scheme is examined stable, due to the fact that no time limit is set. The national goal is to produce 7.5% of all transport fuel by renewables. Fuel suppliers are obligated to fulfil the target, not to be charged by a fine. More indicators regarding this point are shown in Table (Appendix) 107.

3.19 Spain

Note: The assessment of the Spanish NREAP was conducted by Fraunhofer ISI.

3.19.1 Summary assessment

The table below shows the evaluation of the Spanish NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☹
Infrastructure development and electricity network operations	☹
RES electricity support measures	☹
RES heating and cooling support measures	☹
RES transport support measures	☹

3.19.2 Basic evaluation criteria

Fulfilment of formal criteria

Spain has notified the national renewable energy action plan (NREAP) on time (June 2010). The national overall 2020 target for the share of energy from renewable sources in gross final consumption of energy according to the Directive 2009/28/EC was considered correctly within the NREAP together with the renewable energy target for the transport sector.

Assessment of inconsistencies

The NREAP for Spain is highly consistent regarding the linkages of the different tables. No deviations were found within the NREAP tables.

Renewable energy trajectories

According to the Renewable Energy Industry Roadmap provided within the REPAP 2020 project a more ambitious trajectory as compared to the one contained in the Spanish NREAP would be feasible. Therefore reaching a share of 27% in the gross final energy consumption by 2020 appears to be realisable if stronger efforts are implemented in all three RES sectors. A more detailed comparison of the trajectories contained in the NREAP and the REPAP 2020 roadmap are shown in Table (Appendix) 114 of this document.

Use of cooperation mechanisms

Of the cooperation mechanisms offered under Directive 2009/28/EC, the most attractive for Spain, as mentioned in Chapter 4.7.1 of the NREAP, are statistical transfers and joint projects with third countries. However, at this time there is no procedure in place for implementing these types of projects in Spain. In Table 3 of the Spanish NREAP (*Spain's 2020 target and estimated trajectory of energy from renewable sources (RES)*) there is no share from these cooperation mechanisms. However, this same table shows that there is a surplus for cooperation mechanism of 2.7%.

3.19.3 Assessment of non-cost barriers

Indicator	NREAP Assessment (Administrative procedures and spatial planning)
Presence of a one-stop shop scheme?	Generally, a system developer has always to deal with more than one authority (national, regional and local authorities all take part in many administrative processes) in obtaining the needed permits and other documentation. Simplified administrative procedures are not available for some small RES technologies, such as PV and geothermal applications.
Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?	Time to be spent for the administrative process (duration to get all the main permits): between 3 and 6 years (55 months in the case of PV). This is caused by highly complex authorization procedures even for small scale RES-E installations.

<p><i>Is there an exception from authorization of small-scale systems?</i></p>	<p>A simplified regime is mentioned in the NREAP for small-scale systems. Some technologies (i.e. wind, PV grid-connected) have special procedures. Heat applications, in buildings, do not have authorization requirements (only for the start up step). p.71 The Spanish NREAP proposes a “New regulation to facilitate the connection of electricity generation facilities with low-power renewable energies associated with consumption centres interconnected with the electricity grid (especially low-voltage” which already exists in a draft version for small RES-E facilities up to 100 kW of installed capacity). However, this regulation was already postponed several times, the timing of an approval is currently unclear.</p>
<p><i>Are the fees required correlated to the administration costs?</i></p>	<p>Fees are defined accordingly to the real direct and indirect costs (to guarantee an adequate level of maintenance and service).</p>

Administrative procedures and spatial planning

Administrative procedures and spatial planning generate some difficulties for the efficient development of the RES sector in Spain (four main indicators are listed in the table above). The permitting processes in Spain are in general affected by inefficient administrative procedures resulting in unnecessary bureaucratic loads, especially for small and medium RES applications. The recent introduction of RD 6/2009 has set up a homogeneous administrative process for all RES electricity technologies, based on the pre-assignment of the feed-in tariff for all. However, this has not improved the administrative process within the sector but rather introduces excessive pre-conditions, which might hinder the future RES-development. The administrative framework is further affected by several regional differences in its implementation, while spatial planning and dissimilar public interests issues increase the scenario faced by RES developers. Table (Appendix) 109 gives an overview of further indicators.

<u>Indicator</u>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<p><i>Is the average time for grid connection adequate? If not, give examples.</i></p>	<p>The connection to the grid of RES systems is mainly affected by delays in the authorization phase and in the execution of connection works. These delays can sum up to over 2 years in the case of large RES installations such as wind and PV power parks. The average lead time for getting grid connection (considering also approval of grid connection) is high in Spain.</p>
<p><i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i></p>	<p>Priority access to the grid in Spain is defined in Annex XI from the Royal Decree (RD) 661/2007. The Control Centre of Renewable Energies (Cecre), created by REE, is considered an excellent pioneering effort to increase the reliability and stability of the electricity system and giving priority to RES installations at the same time. In Spain, systems that generate electricity from RES are statutorily entitled to priority access and connection to the electrical grid.</p>
<p><i>What are the rules of cost sharing and bearing of network technical adaptations?</i></p>	<p>The developer will take care of all the grid-connection costs and the DSO and TSO will carry out the costs for expansion and upgrade of the grid. There are barriers involved. The plant operator shall bear the costs of the connection and of the eventual necessary upgrade of the grid capacity up to the connection point (RD 661/2007, Annex XI).</p>
<p><i>Is the Member State contributing to the development of a trans-European electricity network?</i></p>	<p>It is mentioned in the NREAP the development of the international interconnection. Particularly two additional interconnections between Spain and France are currently planned, however the NREAP already considers these two lines as insufficient to reach the objective regarding the interconnection capacity of 10% of the installed power capacity. Furthermore, it is not explained how and when this development will take place. According to the AEON report for Spain³¹, the current interconnection capacity with Portugal may still be adequate, but the one with France is insufficient. A further interconnection with France of 1,400 MW (additional to the two cables mentioned above) through the Bay of Biscay was announced by the Spanish and the French TSO in October 2010.</p>

³¹ Non-cost barriers to renewables - AEON study - National report for Spain p. 51

Infrastructure development and electricity network operations

Main non-cost barriers in the infrastructure development within Spain seems to be more concentrated at the level of the distribution network, operated by several DSOs and regulated by the CNE (*Comisión Nacional de Energía*), the Spanish energy market regulator. The current DSO regulation framework does not properly account for the impacts of distributed generation (including RES) on distribution network planning and costs. The regulator CNE has a low level of independence and is unable to undertake this insufficiency in an appropriate time frame. On the other hand, REE (*Red Eléctrica Española*), the Spanish TSO, is considered a best practice example at global level in its efforts for integrating and efficiently operating a large capacity of fluctuating RES systems, both wind and PV, on its transport network.

The electricity network operations issues are considered a major non-cost barrier within the Spanish renewable electricity industry. The grid connection of RES systems is affected by delays in the authorization phase and in the execution of connection works. These delays can sum up to over 2 years in the case of large RES installations such as wind and PV power parks. Some of the causes of these delays are related to competing interests of DSOs and independent power producers. This situation suggests a stronger role of the CNE. Table (Appendix) 110 gives a detailed overview of the situation.

3.19.4 Assessment of support measures

<i>Indicator</i>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Sufficiency for small hydro, solar (PV and solar thermal electricity) and wind on-shore. Marine technologies (excl. wind off-shore), biogas, biomass and small wind installations should be reviewed.
<i>Is there a technology specific support?</i>	Fixed feed-in, feed-in premium and different options of subsidies are available and technology specific. p.117-123
<i>Is the long-term security of the support measures ensured?</i>	In general 25 year of support is given in main schemes within Spain. p.118-119. Nevertheless, the planned new measures to modify the regulation for RES-E installations under the special regime (not mentioned in the NREAP directly but drafted by the ministry in July and October 2010 and approved in November and December, e.g. RD 1614/2010, RDL 14-2010) very much counteract the development of the PV sector, like the foreseen reduction of the PV tariffs within the first tender round after the coming into force of the planned regulative changes (most likely the 1st tender in 2011). Generally the newly introduced retroactive steps are very severely jeopardising the long term security of support. Another important source of insecurity is based on the current discussion around the “tariff deficit”. Due to electricity prices fixed by the government which since nearly 10 years did not cover the real electricity production and system costs (including the payments for RES electricity) a huge mismatch between real costs and income of the overall electricity system, called tariff deficit, has been accumulated, reaching approximately 15 billion € at the end of 2009. It will be important to solve this structural challenge without affecting the investment security for renewable energy sources.
<i>Does the support depend on energy efficiency criteria of the technology?</i>	Energy efficiency criteria are defined only for biomass/biogas systems. p.122

Renewable electricity support measures

The key policy instrument for the support of RES electricity is a scheme in which system operators may choose between a feed-in-tariff and a feed-in-premium. Besides the feed-in support, fiscal measures are relevant at the national level and the regional governments have an important role in RES electricity promotion policies and legislation. Premium tariffs have been promoting in particular wind and solar PV so far. Sufficiency of the support levels actually exists for wind on-shore, solar technologies and small hydro. However, support levels for marine technologies (excl. wind off-shore), biogas, biomass and small wind installations should be reviewed (wind offshore projects are not covered by the feed-in scheme, but by a tendering procedure). Furthermore, there are currently major concerns regarding the future of the support level in the Spanish solar sector (specifically within the PV sector). Long-term security is in general ensured for RES installations due to a guaranteed duration of support of 25 years. Eligible plants for support are, within other requirements, the ones using either cogeneration or other sources to produce electricity with high energy efficiency performance. A detailed list of indicators is given in Table (Appendix) 111.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	Low remuneration levels for district heating and biomass. Low to average for solar thermal and heat pumps.
<i>Is the long-term security of the support measures ensured?</i>	Long term security of the support measures is given (combined production of heat and electricity). p.128
<i>Does the support depend on energy efficiency criteria of the technology?</i>	In particular, only high efficiency cogeneration, using either biomass or biogas is considered under the regulation and awarded with special tariffs following the same scheme as presented in the RES electricity section.
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	The National State Administration has also been implementing funding programmes for small-scale heating and cooling networks set up by energy service companies. Maximum funding per project is €3.5 million and can be applied to biomass, solar and geothermal projects”. No specific measures are given.
<i>Is there a RES Obligation for the building sector?</i>	Spain has been the first European country to introduce an obligation to use renewable energy appliances in new buildings, and in those undergoing major renovations. Adoption in 2006 of a solar obligation in the national building law CTE (<i>Código Técnico de la Edificación</i>), introduced by RD 314/2006. It has to be noted however that a stronger consideration of other RES than solar thermal heat such as biomass and geothermal should be included in the obligation.

Renewable heating and cooling support measures

One key feature of the renewable heating and cooling support scheme within Spain is the RES obligation for the building sector. Since 2006, any new or renovated buildings are obliged to integrate a solar thermal energy installation. The mandatory requirement of installing solar thermal systems depends on the climatic zone, the surface (m²), and type and use of the building. The local and regional governments are allowed to reinforce the national law with regional obligations, increasing therewith the minimum of installed solar systems.

In case of cogeneration units the heating and cooling facilities are also promoted indirectly via the mentioned feed-in scheme for the electricity sector. This includes in particular CHP-high efficiency plants fuelled by either biomass or biogas. Under the promotion tool for cogeneration, favourable conditions have been created for cogeneration using biomass.

An analysis on the monetary sufficiency of the measures in the RES heat sector has been performed. In the renewable heat sector, the analyzed heat sources, i.e. district heating, heat pumps, biomass and solar thermal heat, have been considered to be supported insufficiently. Low remuneration levels for district heating and biomass, and low to average for solar thermal and heat pumps have been identified. A more detailed list of indicators is given in Table (Appendix) 112.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	Spain's RES 2020 target for the transport sector: 13.6%. Annual targets for biofuels and other renewable fuels for transport which are compulsory as from 2009, reaching 5.83% in 2010.
<i>Is there a specific support for 2nd generation biofuels?</i>	There is no specific support for 2nd generation biofuels.
<i>Is the long-term security of the support measures ensured?</i>	Although the Spanish legislation foresees an exemption of biofuels from the excise duty/tax on hydrocarbons, this exemption only applies until the end of 2012. The Spanish NREAP makes no comment on a possible prolongation on that tax exemption.

Renewable transport fuel support measures

The support measures in the transport sector for renewable energies consist of an obligatory share of renewables in transport fuels and of a tax exemption of renewable energies. Spain's RES 2020 target for the transport sector is of 13.6%. A compulsory target of 5.83% for biofuels and other renewable fuels for transport has been defined for 2010. Order ITC/2877/2008 designates the CNE as the body responsible for the issue of biofuel certificates, management of the certification and supervision mechanism and control of the mandatory commercialization of biofuels. Non-performance of the obligation shall be considered a breach of the obligations for the achievement of the annual targets set for minimum biofuel and constitute a very serious breach (Law 34/1998). The tax exemption, defined in Law

22/2005, establishes a zero tax rate for biofuels in order to improve their market position compared to fossil fuels. The scheme will remain in effect until 31st December 2012, when it will be revised. The renewable transport infrastructure is improving and some technical barriers have been removed. However, there are still some concerns of how Spain will achieve its RES transport target (doubts in the current position of the major oil companies). As an immediate measure, the industry is asking for an increase in the biofuel binding target to 10% in 2012. Table (Appendix) 113 gives a more detailed overview.

3.20 Sweden

Note: The assessment of the Swedish NREAP was conducted by EEG.

3.20.1 Summary assessment

The table below shows the evaluation of the Swedish NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☹
Infrastructure development and electricity network operations	☺
RES electricity support measures	☹
RES heating and cooling support measures	☺
RES transport support measures	☹

3.20.2 Basic evaluation criteria

Fulfilment of formal criteria

Sweden has submitted the national renewable energy action plan on time, in June 2010. Both targets, the target for renewable energy in gross final energy as well as the target on renewable energy sources in transport, were considered correctly.

Assessment of inconsistencies

In general, the tables listed in the NREAP are consistent regarding their information and the linkages. Problems are only observed regarding tables 4 and 10. Values for the expected RES energy production in electricity given in table 4 are differing from the data expressed in table 10 by up to 5%. Furthermore, table 10 adds the energy from storage power plants in a wrong way to the total produced energy from RES.

Renewable energy trajectories

According to the Renewable Energy Industry Roadmap provided within the REPAP 2020 project a more ambitious trajectory as compared to the one contained in the Swedish NREAP would be feasible. This would however require stronger support for RES than the measures currently established. A more detailed comparison of the trajectories contained in the NREAP and the REPAP 2020 roadmap are shown in Table (Appendix) 120 of this document.

Use of cooperation mechanisms

Sweden has a general interest in the use of cooperation mechanisms especially with neighbouring Northern states, but no concrete procedure has been developed so far. Sweden plans to reach its 2020 targets domestically. Moreover Sweden and Norway are planning to develop a joint support scheme by creating a joint green electricity certificate market from the first of January 2012 on. This seems at least slightly contra-dictionary with the goal to reach the 2020 targets purely domestically.

3.20.3 Assessment of non-cost barriers

Indicator	NREAP Assessment (Administrative procedures and spatial planning)
Presence of a one-stop shop scheme?	Only for small-scale installations and those need just municipal notification. (NREAP ³² , p. 32)
Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?	Time depends on the size and type of the plant. For solar plants the permission time is only 3-6 months. A permit for offshore wind power could last 15-24 month. (NREAP, p. 32) (AEON ³³ , p. 20)
Is there an exception from authorization of small-scale systems?	Municipalities decide whether specific installations are exempted of some permits. There is no specific regulation at federal level. (NREAP, p. 32)
Are the fees required correlated to the administration costs?	Costs for obtaining the permit for gas tubes and biogas installations and for geothermal heat pumps are considered to be too expensive. Fees are often set by local authorities therefore it is not guaranteed that these fees are correlated to the administrative costs. (NREAP, p. 33, 34) (AEON, p. 17, 14)

³² Government Offices of Sweden (2010) "NREAP: The Swedish National Action Plan for the promotion of the use of renewable energy"

³³ Ouwens, Jeroen (2010) "Non-cost barriers to renewable -AEON Study- National report Sweden"

Administrative procedures and spatial planning

Renewable energies in Sweden do have a long history. A great amount of gross energy demand is covered by hydro and biomass plants. Hence, the Swedish system provides sufficient support for these renewables, but there are some problems with regard to newer technologies.

The table above shows the main indicators of the administrative procedure. One of the key problems for RES in Sweden is the complex administrative procedure, as no one-stop shop scheme has been introduced so far. The approval process is subject to different sources of legislation, which are administrated by different authorities. This leads to long permission times of up to 24 months for wind power plants. A lack of concrete deadlines adds complexity to this issue. Further problems are the partly very high and varying permitting costs. Reasons are the time consuming administrative procedures and missing guidelines for the accounting of the costs. Despite the fact that the administrative procedure is considered complex, there is enough information on the process available. Corresponding authorities offer all necessary instructions on their websites.

Spatial planning can overall be judged to be sufficient. Municipalities can entitle “priority areas”, where renewable are given priority treatment over other interests. Further indicators can be found in Table (Appendix) 115.

<i>Indicator</i>	NREAP Assessment (Infrastructure development and electricity network operations)
<i>Is the average time for grid connection adequate? If not, give examples.</i>	Average time seems adequate, but government evaluated that the licensing process might take too long. It may happen that a wind farm is constructed before the connection line is ready. (NREAP, p. 61) (AEON, p. 54)
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	All generated electricity is treated equally, but grid access is guaranteed. Priority dispatch is not possible. (NREAP, p. 62, 66)
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Cost sharing depends on the grid owner. Mostly the “point tariff” is used: The charge for utilising the main grid is determined per connection point and is based on the energy and power conditions at the connection point. Connection costs to the main grid are charged corresponding to the investment costs, minus any further utility values of benefit for all users. (NREAP, p. 63)
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Three new lines connecting Sweden with Finland and Norway are planned. This will increase the capacity by 2.5 GW. (NREAP, p. 57, 58)

Infrastructure development and electricity network operations

Grid access for RES in Sweden works quite well. The Swedish grid is based on equal treatment, as a result every power plant, if running on RES or fossil fuels, has guaranteed access to the grid. On this basis no priority dispatch is guaranteed. Primary regulation of the grid is mostly provided through hydroelectric power plants. Moreover the electricity production price determines grid regulation. A positive aspect is that connection time is normally quite short in a range between 2-6 months, and large delays due to the licensing procedure only occur in rare cases. Costs for grid connection are considered transparent and adequate. Producers of electricity have to pay the connection cost to the main grid only. Cost sharing between initially and subsequently installed units is not accounted for.

Swedish main grid is esteemed stabile, despite the fact that most of the energy is produced in the north and must be transmitted to the south. RES expansion further intensifies this situation. Therefore grid expansion and enhancement should be carried out faster. To enhance the balance capacity, Sweden plans to build three new interconnection lines between Norway and Finland. Table (Appendix) 116 attached gives a detailed overview of the situation.

3.20.4 Assessment of support measures

<i>Indicator</i>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	According to a recent report funding for wind onshore and solid and liquid biomass is sufficient. Biogas funding could be optimized. Funding for PV and wind offshore is insufficient. (RE-Shaping ³⁴)
<i>Is there a technology specific support?</i>	The certificate scheme is technology neutral, but there is a dedicated measure for the market introduction of solar cells implemented. (NREAP, p. 81, 82)
<i>Is the long-term security of the support measures ensured?</i>	A plant receives certificates for 15 years. Financial support measures for solar PV and wind power are short time arrangements. Wind power investment financing will end 2012 solar PV funding ends 2011. (NREAP, p. 81)
<i>Does the support depend on energy efficiency criteria of the technology?</i>	No, there is no dependence on energy efficiency criteria. (NREAP, p.81)

Renewable electricity support measures

In Sweden support for RES-E is realised through obligation with tradable green certificates. This system came into effect in May 2003 and will be valid until the end of 2030. All technologies (wind, solar, geothermal, biogas, biomass, hydro, wave energy) used in generation of RES-E are eligible for the quota system. The support framework is stable and effective, yet technology neutral and consequently more expensive technology options like wind offshore and solar PV have hardly seen any market deployment so far. Looking solely at the 2020 targets Sweden does not have to rely on such a broad RES portfolio as other member given the good resource base, especially biomass and hydropower and the therewith associated flexibility across sectors. Additionally, coming from the highest per capita electricity consumption in the EU Sweden has already made and continues to make use of a relatively large energy savings potentials, which again eases target fulfilment. With regard to future more ambitious targets and quite large export potentials however it could be conducive to create support for a broader portfolio in the RES-E sector in Sweden. Additionally it should be mentioned that Norway and Sweden have agreed to aim for a joint green electricity certificate market from January 1st 2012. From a Swedish point of view this would ease target achievement, but possibly a significant amount of new RES-E plants paid by Sweden would be built in Norway.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	Support measures for district and biomass CHP-plants are considered optimal. Heat pump aid is satisfactory whereby solar thermal and geothermal installations support is examined immature. (RE-Shaping)
<i>Is the long-term security of the support measures ensured?</i>	Support for investment in solar energy and for converting from direct-acting electrical heating in residential properties will both end this year. (NREAP, p. 89, 90)
<i>Does the support depend on energy efficiency criteria of the technology?</i>	The solar collector must be certified in accordance with the EU SolarKey mark label. (NREAP, p. 89)
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Small-scale system can benefit from: Tax exemption for biomass feedstock, the electricity certificate scheme and aid for conversion from direct-acting electricity. However there is no scheme introduced to promote this specific point. (NREAP, p. 88)
<i>Is there a RES Obligation for the building sector?</i>	No specific requirement for RES in buildings is set. (NREAP, p. 43)

Renewable heating and cooling support measures

Conditions for renewable heating in Sweden are quite good. A report published by Fraunhofer ISI (Held et al., 2010) showed that only solar and geothermal thermal installations are esteemed to be supported insufficiently, but especially CHP installations are promoted well. Reason are the different support measures from which CHP plans could benefit. Three measures for CHP are existent, that are tax exemptions for biomass, issuance of certificates from the RES-E quota system and the support for converting from direct-acting electricity.

³⁴ A. Held et al. (2010) "Indicators assessing the performance of renewable energy support policies in 27 Member States"

The investment grants are going to expire this year and no new measures are under consideration so far. Therefore future support will be limited to the green certificate scheme and tax exemptions for biomass. Despite the fact that the government promotes energy efficient buildings, no RES obligation has been set neither for public buildings nor for residential buildings.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	No obligation is applied. (NREAP, p. 92)
<i>Is there a specific support for 2nd generation biofuels?</i>	n/a
<i>Is the long-term security of the support measures ensured?</i>	Financial support for investment in biogas production will end 2013. Financial support for investment in biogas and other renewable gases ends 2011. (NREAP, p. 93, 95)

Renewable transport fuel support measures

Main measure for the promotion of renewable transport fuels is an energy tax exemption on ethanol and biodiesel. Therefore biogas is promoted at 0.52 €/liter and diesel at 0.40 €/liter. Additionally a financial support for investment in biogas production is installed. This measure is expected to achieve an additional production of biogas of 0.6 TWh until 2013, however no supervision of this goal exists.

Generally no obligation for biofuels is installed, but an overall target for the consumption of biofuels is set, i.e. 10 % of transport fuels should be produced by renewable sources by 2020.

3.21 United Kingdom

Note: The assessment of the UK’s NREAP was conducted by EEG.

3.21.1 Summary assessment

The table below shows the evaluation of the UK NREAP according to the key evaluation criteria. The reasoning leading to this assessment is described in the sections below.

Topic	Evaluation
Administrative procedures and spatial planning	☹️
Infrastructure development and electricity network operations	☹️
RES electricity support measures	☹️
RES heating and cooling support measures	☹️
RES transport support measures	☹️

3.21.2 Basic evaluation criteria

Fulfilment of formal criteria

The UK submitted the national renewable energy action plan on time, in June 2010. The overall target for renewable energy in gross final energy consumption as well as the specific target on renewable energy sources in transport, were both considered correctly.

Assessment of inconsistencies

There are a couple of problems relating to the consistencies of the tables indicated in the NREAP. Deviations are mostly slight but frequent. For example, the values given in table 4a and 12 regarding the expected RES contribution for the transport sector are not identical. Additionally, electricity generation from hydropower plants is expressed in a different format compared to the template.

Renewable energy trajectories

According to the Renewable Energy Industry Roadmap provided within the REPAP 2020 project the RES targets set in the NREAP for the heating and cooling as well as the transport sector are comparatively ambitious. In contrast to above, the target for RES in the electricity sector shown in the industry roadmap is two times higher than the official one expressed in the NREAP. A more detailed comparison of the trajectories contained in the NREAP and the REPAP 2020 roadmap are shown in Table (Appendix) 126 at the end of this document

Use of cooperation mechanisms

There are no plans in the UK for the use of cooperation mechanism. It aims to achieve the national RES target solely through domestic actions.

3.21.3 Assessment of non-cost barriers

Indicator	NREAP Assessment (Administrative procedures and spatial planning)
Presence of a one-stop shop scheme?	There is no one-stop shop arrangement for all forms of licensing for renewable energy installations in the UK. (NREAP ³⁵ , p. 54)
Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?	According to the NREAP 71% of all large-scale RES plant were decided within 13 weeks and 76% of small-scale projects within 8 weeks. (NREAP, p. 57). In contrast to that, the AEON study indicates an average lead-time of 11 months for RES projects. (AEON ³⁶ , p. 11)
Is there an exception from authorization of small-scale systems?	Specific small-scale technologies are classified as “permitted development”. Town and Country Planning grants automatic planning permission for these systems in specific circumstances. Examples are PV, solar thermal, ground and water-coupled heat pumps and domestic microgeneration systems. (NREAP. p. 56,57)
Are the fees required correlated to the administration costs?	The Department of Communities and Local Government’s general policy is that fees should cover the cost of processing applications. Assessments indicate that if all overheads are taken into account then, a gap of about 10% occurs between actual costs and the income gained from planning fees. (NREAP, p. 58)

³⁵ Department of Energy and Climate Change (2010) “National Renewable Energy Action Plan for the United Kingdom”

³⁶ Ouwers, Jeroen (2010) “Non-cost barriers to renewable -AEON Study- National report United Kingdom”

Administrative procedures and spatial planning

According to the AEON study the major problem in the UK’s administrative procedures is the long lead-time for RES projects. Average lead-time is in size of 11 months, depending on the technology used and the location (i.e. differences between England, Wales, Scotland and Northern Ireland are becoming apparent). The Town and Country Planning Regulations indicate a timetable, but due to the fact that additional authorities are involved in the process, this tentative timetable is not representative. To expedite the procedure for small-scale systems, they are exempted from planning permission. Although no one-stop-shop scheme operates, horizontal coordination between the different authorities is not considered as problem.

The availability of information on the process is ensured through manifold approaches. The responsible authorities must provide them inter alia on their websites and in form of brochures. For local and regional administrative bodies RES specific information and guidance are provided via a companion document. Therefore, administrative procedures take the specifics of the various RES technologies into account. According to the AEON study, problems in practical implementation are not of key relevance. To ensure awareness for RES in administrative bodies, training for case handlers is offered by the Department of Energy and Climate Change.

Costs for RES installations are clearly defined, it is even possible to calculate the fee on the Planning Portal website. The actual fee sums up to about 10% of the investment costs and additionally a lump sum of 1700 £ per hectare. Please note that further information on administrative procedures is applicable in Table (Appendix) 121.

<i>Indicator</i>	<u>NREAP Assessment</u> (Infrastructure development and electricity network operations)
<i>Is the average time for grid connection adequate? If not, give examples.</i>	Grid connection could take from 1 to 3 years. (AEON, p. 35)
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	Guaranteed access to the grid is ensured for all types of technology. Priority dispatch is not implemented, but a consequence of the Renewables Obligation is that most renewable generators contract with electricity supply companies to sell all the power they are able to generate. If necessary the UK’s market arrangement determines which generator has to reduce its output. (NREAP, p. 89)
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	The Transmission System Operator (TSO) is required, under Standard License Condition C6 of its license, to prepare a statement of its connection charging and use of system charging methodologies. Similar conditions apply for connection to and the use of distribution networks (NREAP, p. 90)
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Two new lines are under construction: <ul style="list-style-type: none"> • A 1200 MW interconnector between the UK and the Netherlands, which is expected to be completed in 2011 • An interconnector across the Irish Sea between the Republic of Ireland and Wales is to be completed by 2012. Other links with Belgium, France and Ireland are planned. (NREAP, p. 87)

Infrastructure development and electricity network operations

Grid connection for RES producers is guaranteed, despite connection time takes up to 3 years. Government is aware of this situation and wants to implement a new regime on a legal basis, which presently runs only on an interim status. Information on the connection time for an individual application must not be provided within a defined time slot, but connection costs have to be published 3 months after receipt of application.

The TSO (or DNO for distribution connections) sets out the charging methodology for grid connection. Rules for this method are publically available This describes the rules for connection costs to be paid by the RES producer, but the exact procedure is not explained within the NREAP. Where a distribution connection is later shared by a subsequent user the first connectee receives an appropriate payback from the subsequent connectee, if the second connection takes place within 5 years after the first one.

Priority dispatch is not implemented. In case of energy surplus the UK’s market arrangement decides which plant has to reduce its output. To minimize these losses UK realizes the need for grid enhancement. Furthermore, two new interconnection lines, connecting the UK with the Netherlands and Ireland, are currently (2010) under construction.

More detailed information regarding infrastructure development and grid operation is provided in Table (Appendix) 122.

3.21.4 Assessment of support measures

<i>Indicator</i>	<u>NREAP Assessment</u> (RES electricity support measures)
<i>Are the support levels sufficient for each technology?</i>	Support levels are broadly sufficient for all kind of biomasses, wind farms on- and offshore and for small hydro, through the RO. PV installations currently have adequate tariffs under the Feed-In Tariff, but an emergency review was announced in February, after the NREAP was published. Wave, tidal and geothermal support is insufficient. (RE-Shaping ³⁷)
<i>Is there a technology specific support?</i>	Financial support, either via renewable certificates in the Renewables Obligation (RO) or via feed in tariffs differs by RES technology. (NREAP p. 114, 117)
<i>Is the long-term security of the support measures ensured?</i>	Most forms of RES generation can access the RO, and benefit from ROCs for 20 years of operation. The duration of feed-in tariffs for eligible small scale generators payments varies across the technologies, ranging from 20 to 25 years. The feed-in tariff scheme shall be applicable to new entrants until 2021. (NREAP, p. 115, 116)
<i>Does the support depend on energy efficiency criteria of the technology?</i>	For participating in the renewable obligation (i.e. the certificate trading scheme) CHP plants have to be accredited under the CHP Quality Assurance scheme. (NREAP, p. 111)

Renewable electricity support measures

Support measures promoting electricity produced from RES are mostly sufficient, with the exception of marine renewables and geothermal. This success is based on a novel mixture of policy schemes, where small-scale RES producers may receive support via a feed-in tariff system, while large-scale RES plants can participate in the renewable obligation (RO), i.e. the trading system for renewable obligation certificates (ROCs).

In both systems financial support differs by technology, aiming for a more balanced portfolio of technologies and a stimulation of promising future options. Duration of support is limited to 20 years under the ROCs scheme, while guaranteed duration for feed-in tariffs varies between 20 and 25 years, depending on the type of technology. CHP plants aiming to join the RO are obliged to accreditation under the CHP Quality Assurance scheme. For the feed-in tariff scheme no detailed targets are defined, but for the trading regime a specific obligation has to be met on an annual basis. Suppliers failing to achieve their obliged RES target are required to pay a buyout price which is then reimbursed to their competitors. This fact leads to actual certificate prices being well above the penalty level.

The funding for the RO and Feed-in Tariffs is treated in the same way as taxation, and was reviewed in October 2010. The RO funding remained at previously agreed levels whereas the FITs budget was reduced. For further details on support for RES-E we refer to Table (Appendix) 123.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES heating and cooling support measures)
<i>Are the support levels sufficient for each technology?</i>	No support scheme for RES in heating and cooling is currently implemented. A new measure called “Renewable Heat Incentive” (RHI) was due to come into force in April 2011 although this is now scheduled for June 2011. (NREAP, p. 121)
<i>Is the long-term security of the support measures ensured?</i>	The new scheme shall grant support for 10 to 23 years. (NREAP, p. 120)
<i>Does the support depend on energy efficiency criteria of the technology?</i>	The incentives paid to households would be calculated on the basis of certain alternative energy efficiency measures. (NREAP, p. 121)
<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	RHI will also support small-scale RES heating systems, but not support is announced for RES-based cooling systems. (NREAP, p. 123)
<i>Is there a RES Obligation for the building sector?</i>	Building regulations set functional requirements for energy efficiency as well as limits for carbon emissions for new houses and buildings. Thus, renewables are only promoted indirectly. (NREAP, p. 68)

Renewable heat- Support for the use of RES in heating and cooling is not provided at present. Solely indirect

³⁷ A. Held et al: „Indicators assessing the performance of renewable energy support policies in 27 Member States“

ing and cooling support measures

support via the ROC scheme for CHP plans is possible. Thereby good quality CHP running on RES do receive additional certificates.

The government will introduce a new measure called “Renewable Heat Incentive” (RHI) which shall come into force in April 2011. This scheme would provide long-term payments for renewable heat technologies. More information on this measure and the overall situation is shown in Table (Appendix) 124. Conditions for RHI are certainly not clearly set.

To promote RES installations in buildings specific requirements on energy efficiency and carbon emission for new houses are implemented. Especially for public buildings a range of different initiatives are applicable that are dedicated to RES installations.

<i>Indicator</i>	<u>NREAP Assessment</u> (RES transport fuel support measures)
<i>Is there an obligation for biofuels?</i>	Renewable Transport Fuel Obligation (RTFO) places a requirement that 3.5% (2010/11) of road transport fuel use is obtained from renewable fuels. Obligation will increase to 5% in 2013/14. (NREAP, p. 125)
<i>Is there a specific support for 2nd generation biofuels?</i>	n/a
<i>Is the long-term security of the support measures ensured?</i>	The RTFO shall remain in place at least until 2020. Additional support as provided via the Used Cooking Oil Duty Differential will end in March 2012. (NREAP, p. 129)

Renewable transport fuel support measures

Support for RES in the transport sector is mainly provided through the RTFO certificate scheme. Thereby every supplier who supplies more than 450,000 liters is obliged to meet a specific RES share. Actual quota is set at 3.5% and will increase to 5% until 2013. Producers have to report their biofuel volumes. In case of non-fulfilling, they are required to pay a buyout price, otherwise they are liable to a civil penalty. Revision or optimization regarding this scheme is not provided.

More indicators regarding this point are shown in Table (Appendix) 125.

4 References

General references:

EREC & national RES associations (2011), EU Roadmap: Mapping Renewable Energy Pathways towards 2020, Report published within the REPAP2020 project, Brussels, 14.03.2011.

RE-Shaping: Held, Anne; M. Ragewitz, E. Merkel, M. Rathmann, C. Klessmann (2010), Indicators assessing the performance of renewable energy support policies in 27 Member States, 31.10.2010

Belgium

AEON: Rademaekers, Koen (2010), Non-cost barriers to renewable -AEON Study- National report Belgium, 01.08.2010

NREAP: Federal-Regional Energy Consultant Group CONCERE_ENOVER (2010), National Renewable Energy Action Plan (NREAP) Belgium, 01.11.2010

Bulgaria

AEON: Ouwens, Jeroen; S. Tomova, D. Doytchev (2010), Non-cost barriers to renewable -AEON Study- National report Bulgaria, 10.05.2010

NREAP: Ministry of Economy, Energy and Tourism (2010), National Renewable Energy Action Plan (NREAP) Bulgaria, 30.06.2010

Cyprus

AEON: Ouwens, Jeroen (2010) "Non-cost barriers to renewable -AEON Study- National report Cyprus" 10.05.2010

NREAP: Ministry of Commerce, Industry and Tourism (2010) "NREAP: Cyprus National Renewable Energy Action Plan" 30.06.2010

Czech Republic

AEON: Ouwens, Jeroen (2010), Non-cost barriers to renewable -AEON Study- National report Czech Republic, 10.05.2010

NREAP: Ministry of Industry and Trade (2010), NREAP: Czech Republic National Renewable Energy Action Plan, 30.06.2010

Germany

AEON: Brückmann, R.; Piria, R.; Tupy, T. (2010), Non-cost barriers to renewables -AEON Study- National report Germany, 10.05.2010

NREAP: Ministry of the Environment (2010), National Renewable Energy Action Plan 2010-2020 (NREAP) Germany, August 2010

Italy

AEON: Ouwens, Jeroen (2010): Non-cost barriers to renewable -AEON Study- National report Italy, 10.05.2010

NREAP: Italian Ministry for Economic Development (2010): NREAP: Italian National Renewable Energy Action Plan, 30.06.2010

Romania

AEON: Ouwens, Jeroen; C. Popovici, C. Briciu, D. Ros (2010), Non-cost barriers to renewable -AEON Study- National report Romania, 10.05.2010

NREAP: Ministry of Public Finances (2010), National Renewable Energy Action Plan (NREAP) Romania, 2010

Slovenia

AEON: Ouwens, Jeroen; Ž. Živković (2010), Non-cost barriers to renewables -AEON Study- National report Slovenia, 10.05.2010

NREAP: Ministry of the Economy (2010), National Renewable Energy Action Plan 2010-2020 (NREAP) Slovenia, 30.06.2010

Sweden

AEON: Ouwens, Jeroen (2010): Non-cost barriers to renewable -AEON Study- National report Sweden, 10.05.2010

NREAP: Government Offices of Sweden (2009): The Swedish National Action Plan for the promotion of the use of renewable energy in accordance with Directive 2009/28/EC and the Commission Decision of 30.06.2009, 23.06.2010

United Kingdom

AEON: Ouwens, Jeroen (2010): Non-cost barriers to renewable -AEON Study- National report Sweden, 10.05.2010

NREAP: Government Offices of Sweden (2009): The Swedish National Action Plan for the promotion of the use of renewable energy in accordance with Directive 2009/28/EC and the Commission Decision of 30.06.2009, 23.06.2010

5 Annex A: Detailed questionnaires on the NREAPs by member state

This Annex shows complementary background information used for the assessment of the NREAPs. It provides for each member state the complete list of questionnaires on assessment criteria used for the qualitative analysis, clustered into six topical assessment categories - i.e.:

- administrative procedures and spatial planning,
- electricity infrastructure development and electricity network operation,
- support measures for electricity from renewable sources
- support measures for heat from renewable sources
- support measures for transport fuels from renewable sources
- a quantitative comparison of the technology-specific national RES deployment by 2020, indicating deviations between the RES industry viewpoint (as discussed in the REPAP industry roadmaps) and the projections of the NREAPs.

5.1 Annex for Austria

Table (Appendix) 1: Assessment criteria for administrative procedures and spatial planning (Austria)

Indicator		NREAP Assessment
4.2.1 Administrative procedures and spatial planning	<i>Presence of a one-stop shop scheme?</i>	One-stop shop scheme introduced p. 16-18
	<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	n/a
	<i>Is the estimated typical number of permits required (excl. small-scale system) adequate?</i>	n/a
	<i>Are timetables communicated in advance?</i>	n/a
	<i>Is there an exception from authorization of small-scale systems?</i>	There is an exemption for small scale systems used in private households. Only a notification at the community and at the directly neighbouring houses is required. Additionally, the project plans need to be publicly displayed for insight at the community for 4 weeks j) p. 18
	<i>What is the level of permitting costs of a large project?</i>	n/a
	<i>Are the fees required correlated to the administration costs?</i>	n/a
	<i>Are renewables integrated in spatial planning?</i>	n/a
	<i>Is it assured that during the authorization process, the administration has no discretionary power? (e.g. denial or delay can be subject to legal options to the applicant)</i>	n/a
	<i>Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time? (e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)</i>	Partly: For small scale systems in private households, a 4 week insight at the community offices in the project plants needs to be granted p. 18
	<i>Is information available on the process?</i>	The information on the process is extensive. Even guidelines on the general procedure and documents with the necessary project documents are published p. 18
	<i>Do administrative procedures consider RES specificities?</i>	For each energy source, different approvals are needed p. 18
	<i>Is there official guidance for local and regional administrative bodies?</i>	Guidelines get developed, initiatives on a regional and local level exist additionally p. 18
	<i>Are trainings planned for authorities in charge of authorization?</i>	No educational measures for case handlers are planned but praxis orientated trainings p. 19

Table (Appendix) 2: Electricity infrastructure development and electricity network operation (Austria)

Indicator		NREAP Assessment
4.2.6 Electricity infrastructure development & 4.2.7 Electricity network operation	<i>Is the average time for grid connection adequate? If not, give examples.</i>	Federal state specific p.34, 35
	<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	There is no priority grid access. Distribution capacities shall be ensured by early grid expansions p.35
	<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Related to connection costs p.36
	<i>What are the costs for subsequently connected producers?</i>	Same costs for all producers p.36
	<i>Is the connection to existing electricity networks coordinated?</i>	Is regulated by several laws, a one-stop scheme is planned p.35
	<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Extensions to Germany and Hungary are planned p.34
	<i>Are there grid-market related measures to minimize RES-E curtailment?</i>	n/a
	<i>Is information on costs and connection timetable available?</i>	n/a
	<i>Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?</i>	n/a
	<i>Are there simple administrative procedures for grid connection?</i>	n/a
	<i>Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?</i>	n/a
	<i>Is the average time of grid connection adequate? If not, give examples.</i>	n/a

Table (Appendix) 3: Electricity from renewable sources support measure assessment (Austria)

Indicator		NREAP Assessment	
4.3 RES-E support measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Sufficiency for biomass, biogas Wind onshore and solar photovoltaic should be amended
		<i>Is there a technology specific support?</i>	Yes, feed-in and investment subsidies are tech-specific, p. 51, 52 and annex C
		<i>Is the long-term security of the support measures ensured?</i>	Partly ensured - e.g. feed-in payments for RES installations are guaranteed for a period of 13 to 20 years (p.45, 51). Criticisms refers to the fact that a cap (currently 21 million € per year) is introduced for new installations, and also the height of support levels (for new installations) can be amended on a yearly basis.
		<i>Is there a maximum or minimum size for support?</i>	Partly, p. 49
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	Yes, a minimum efficiency of 60% is demanded to be eligible for feed-in tariff in case of fuel-based RES (i.e. biomass and biogas) p. 48, 50
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	As mostly no overlaps exist, no possibility of multiple measures per project is given. Exception: CHP and federal state support p. 49

Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	Yes, a target is set for 2015 being as well technology specific p. 45, 48
	<i>How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?</i>	Supervised by E-Control, but non-fulfilment results not in direct sanctions p. 45
	<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	There is no project limit, but a total budget of yearly 21 M€ p. 47
	<i>How are revision and optimization performed?</i>	A yearly evaluation by E-Control is foreseen being addressed to the Ministry of Economic, Family and Youth. The ministry may make a draft of a new law, which gets discussed and amended with stakeholders. Finally, a formal decision of the national government and an approval of the EU-Commission are needed p. 46

Table (Appendix) 4: Heat from renewable sources support measure assessment (Austria)

Indicator		NREAP Assessment	
4.3 RES-H support measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Sufficient for the analyzed fuel types heat pumps, biomass, solar thermal heat and district heating
		<i>Is there a technology specific support?</i>	Yes, different technologies are addressed e.g. p.53
		<i>Is the long-term security of the support measures ensured?</i>	As on a federal level only investment subsidies are granted, there is no need for a long term security p.53-56
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	To be eligible for a electricity feed-in tariff, an efficiency of 60% is needed, which only can be met with CHP p.56
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	Usually, an exclusive support is targeted, but combined measures can be possible p.56
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	There is a concrete overall target of 24 PJ additional RES-H&C as compared to 2005, but not technological specific p.55
		<i>How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?</i>	As no concrete annual target is set, no monitoring authority and no sanction for non-fulfilment are introduced
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	There is an annual funding of 90 million €, which could even be extended in the context of economic stimulus packages p.54
		<i>How is revision and optimization performed?</i>	21 extensions and amendments were conducted since the introduction in 1993 showing an effective optimization process p. 5
	Support scheme specific indicators:	<i>What measures are planned on the use of CHP from RES?</i>	As the feed-in tariffs for electricity are only granted for an efficiency level of 60%, CHP is a necessary requirement p.56
		<i>What measures are planned on the use of district heating from RES?</i>	Several measures are introduced p.56-59
		<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Several measures are introduced p.59-61
<i>What measures are planned on the use of heat from RES in in-</i>		Several measures are introduced p.61	

	<i>dustrial applications?</i>	
	<i>Is there a RES Obligation for the building sector?</i>	Not introduced yet p.24
	<i>Do public buildings feature best practices?</i>	Yes, best practice in public buildings is forced p.24

Table (Appendix) 5: Transport fuels from renewable sources support measure assessment (Austria)

<u>Indicator</u>		<u>NREAP Assessment</u>
4.5 RES-T support measures	<i>Is the long-term security of the support measures ensured?</i>	Not needed for a direct obligation
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ obligation etc...)?</i>	Yes, an obligation and tax exceptions p.62, 64, 65
	<i>Is there a concrete obligation/target per year (technology)?</i>	n/a
	<i>How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?</i>	Supervised by the Austrian federal Ministry of Agriculture, Forestry, Environment and Water Management. If fuel does not fulfil the requirement, it may not be sold.
	<i>How is revision and optimization performed?</i>	n/a
	<i>Is there an obligation for biofuels?</i>	Obligation rising from 2.5% in 2005 to 5.75% in 2010 p.62 The 10% target still needs to be implemented p.64
	<i>Is there a specific support for 2nd generation biofuels?</i>	Not mentioned in the NREAP

Table (Appendix) 6: Comparison of technology-specific national RES deployment by 2020 (Austria)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
REPAP industry roadmap (proactive RES support)	50.0%	12,575	5,927	36	912	4,633	96	0	250	68,809	47,590	200	6,819	0	0	7,300	0	4,900	2,000	0	1,028	180	390	0	298	160
NREAP	34.2%	9,266	4,179	40	269	3,591	16	0	263	52,377	42,112	2	306	0	0	4,811	0	4,530	581	36	856	80	410	0	272	94
Difference	-32%	-26%	-30%	11%	-71%	-22%	-84%	n.a.	5%	-24%	-12%	-99%	-96%	n.a.	n.a.	-34%	n.a.	-8%	-71%	n.a.	-17%	-56%	5%	n.a.	-9%	-42%

5.2 Annex for Belgium

Table (Appendix) 7: Assessment criteria for administrative procedures and spatial planning (Belgium)

Indicator	NREAP Assessment
<i>Presence of a one-stop shop scheme?</i>	No nationwide one-stop shop scheme is introduced, but it is considered to establish such a scheme for offshore wind. (NREAP, p. 25) Walloon and Brussels region introduced a regional one-stop scheme. (NREAP, p. 26, 27)
<i>Is the lead time for collecting all permits reasonable? If not, what is the lead time for typical RES-E projects?</i>	Lead-times for wind power projects are considered too long and last, especially for offshore projects, several years. In contrast to wind, lead-times for large-scale biomass installations reach a maximum of 16 months and for PV installations 2 to 5 months. (AEON, p. 10)
<i>Is the estimated typical number of permits required (excl. small-scale system) adequate?</i>	Typical number averages 7 permits. (AEON, p. 10)
<i>Are timetables communicated in advance?</i>	Time schedules for handling the applications for the different permits are derived from the applicable regulatory provision. (NREAP, p. 25)
<i>Is there an exception from authorization of small-scale systems?</i>	Solar installations are mostly exempted from certain permits. In the Flemish Region biomass boilers with a capacity of up to 300 kW do not require authorization. Additionally, RES installations with a capacity of 25 MW or less are exempt from any authorization from the Federal Authority. (NREAP, p. 28, 29)
<i>What is the level of permitting costs of a large project?</i>	Permitting costs for large onshore wind power and biomass plants can reach up to 250,000 €. For offshore wind these costs can reach 3 to 5 million € per project. (AEON, p. 11)
<i>Are the fees required correlated to the administration costs?</i>	n/a
<i>Are renewables integrated in spatial planning?</i>	n/a
<i>Is it assured that during the authorization process, the administration has no discretionary power?(e.g. denial or delay can be subject to legal options to the applicant)</i>	n/a
<i>Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time? (e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)</i>	n/a
<i>Is information available on the process?</i>	Responsible authorities are obligated to disseminate all relevant information. (NREAP, p. 24)
<i>Do administrative procedures consider RES specificities?</i>	Flemish and Walloon Region adjust the administrative procedure in various ways to take RES specificities into account. Brussels region considers technology characteristics but not RES specificities in particular. (NREAP, p. 27, 28)
<i>Is there official guidance for local and regional administrative bodies?</i>	No official guidelines are available. (NREAP, p. 29)
<i>Are trainings planned for authorities in charge of authorization?</i>	Training in the Walloon Region is provided via a limited number of consultants.

4.2.1 Administrative procedures and spatial planning

Training in other regions is not specified. (NREAP, p. 29)

Table (Appendix) 8: Electricity infrastructure development and electricity network operation (Belgium)

Indicator		NREAP Assessment
4.2.6 Electricity infrastructure development & 4.2.7 Electricity network operation	<i>Is the average time for grid connection adequate? If not, give examples.</i>	Grid connection depends on the type of technology. <ul style="list-style-type: none"> • Onshore wind: 12 months on average • Offshore wind: 6 months to several years • Biomass: 5 months up to 2 years.
	<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	Priority grid connection is in place, but considered insufficient because of imprecise terms in the respective laws. Priority dispatch is not guaranteed. (NREAP, p. 46)(AEON, p. 27)
	<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	The system operator bears the connection costs. Connectee pays a connection fee, which is related to the connection cost. Levels of the fees are set by legislation. (NREAP, p. 46)
	<i>What are the costs for subsequently connected producers?</i>	There are no rules on sharing the costs between initially and subsequently connected producers. (NREAP, p. 47)
	<i>Is the connection to existing electricity networks coordinated?</i>	n/a
	<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Three projects are under construction: <ul style="list-style-type: none"> • 1 GW line to UK • Reinforcement of the interconnection line with Luxemburg • Direct interconnection line with Germany (NREAP, p. 44)
	<i>Are there grid- market related measures to minimize RES-E curtailment?</i>	Several measures are installed, for example a “production deviation” measure for offshore wind farms, aiming on changes in the predicted electricity from wind farms. (NREAP, p. 51)
	<i>Is information on costs and connection timetable available?</i>	Flemish Region: Detailed information about costs and timetables must be provided within 30 or 40 working days. Walloon Region: Information about cost is available on the federal regulators website. Brussels Region: Distribution and transmission system operators must publish the relevant information about costs on their website. (NREAP, 48)
	<i>Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?</i>	Not mentioned.
	<i>Are there simple administrative procedures for grid connection?</i>	n/a
<i>Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?</i>	n/a	

Table (Appendix) 9: Electricity from renewable sources support measure assessment (Belgium)

Indicator		NREAP Assessment
4.3 RES-E support measures	All support measures	
	<i>Are the support levels sufficient for each technology?</i>	Support is sufficient for wind onshore and PV, and also for several kinds of biomass financial incentives appears sufficient. Small hydro installations are supported mediocre and wind offshore is promoted insufficient. (RE-Shaping)
	<i>Is there a technology specific support?</i>	Some technology specific investment grants exist. (NREAP, p. 65, 66)
	<i>Is the long-term security of the support measures ensured?</i>	Runtime of the investment incentives is not declared. Green certificates are in the Flemish Region valid during the complete lifetime of the installation. Duration time in the Walloon Region is 15 years and in Brussels 10 years. (NREAP, p. 74)

Regulatory framework	<i>Is there a maximum or minimum size for support?</i>	Maximum size for systems, that want to receive Green certificates, is 20 MW in the Walloon region and 10 MW in Brussels. (NREAP, p. 68)	
	<i>Does the support depend on energy efficiency criteria of the technology?</i>	Receiving benefits is generally not linked to the fulfilment of specific energy efficiency. Solely receiving a green certificate in the Walloon or Brussels region is only possible by fulfilling specific energy saving requirements. (NREAP, p. 66)	
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits + feed-in etc...)?</i>	Yes, green certificates, tax-credit, investment aids are in general combinable. (NREAP, p. 69)	
	<i>Is there a concrete obligation/target per year (technology)?</i>	Green certificates are connected to a concrete quota. Flemish Region sets out the data until 2021. Quota for Walloon Region and Brussels are set until 2013. (NREAP, p. 71)	
	<i>How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?</i>	A fine is levied if the respective electricity supplier does not fulfil the obligation. (NREAP, p. 73)	
	<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Costs of the green certificate scheme are borne by the electricity consumer via a surcharge on the electricity price. Many investment incentives have a fix budget per year. (NREAP, p. 62, 63)	
	<i>How are revision and optimization performed?</i>	Most of the investment incentives are periodically revised. No revision and optimisation is planned for the green certificate scheme. (NREAP, p. 64, 65)	

Table (Appendix) 10: Heat from renewable sources support measure assessment (Belgium)

Indicator		NREAP Assessment	
4.3 RES-H sup-port measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Support measures for biomass plants and solar thermal installations are mediocre. Sufficient for ground source heat pumps. (RE-Shaping)
		<i>Is there a technology specific support?</i>	Every region has own investment grants for specific technologies. (NREAP, p. 77)
		<i>Is the long-term security of the support measures ensured?</i>	No end date for the support measures is set. (NREAP, p. 78)
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	The support for biomass boilers in Walloon is only granted if the efficiency is higher than 80 %. (NREAP, p. 79)
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	A project can benefit from the certificate scheme and from investment incentives. (NREAP, p. 75)
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	No concrete target is existent. (NREAP, p. 77)
		<i>How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?</i>	n/a
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Investment incentives are funded by the national budget. The amount is set for one year. (NREAP, p. 77)
		<i>How is revision and optimization performed?</i>	Most of the schemes are periodically revised. (NREAP, p. 77)

Support scheme specific indicators:	<i>What measures are planned on the use of CHP from RES?</i>	The green certificate scheme in the Flemish and the Brussels region do support the use of RES in CHP plants. (NREAP, p. 75)
	<i>What measures are planned on the use of district heating from RES?</i>	No specific measure promoting the use of RES in district heating is installed. (NREAP, p. 76)
	<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Several investment incentives promoting all kind of small-scale heating installations are in place. (NREAP, p. 76)
	<i>What measures are planned on the use of heat from RES in industrial applications?</i>	A tax deduction on investment costs for companies is possible. (NREAP, p. 80)
	<i>Is there a RES Obligation for the building sector?</i>	No obligation is existent. (NREAP, p. 31)
	<i>Do public buildings feature best practices?</i>	The Flemish and The Brussels Region adopted concrete plans and target for the use of RES in public buildings. The Walloon region wants to implement concrete norms for public buildings by 2012. (NREAP, p. 32)

Table (Appendix) 11: Transport fuels from renewable sources support measure assessment (Belgium)

<u>Indicator</u>		<u>NREAP Assessment</u>
4.5 RES-T support measures	<i>Is the long-term security of the support measures ensured?</i>	Tax exemption measure lasts till 2013. (NREAP, p. 2013)
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ obligation etc...)?</i>	The current support for biofuels consists of a tax exemptions and an obligation. (NREAP, p. 82)
	<i>Is there a concrete obligation/target per year (technology)?</i>	n/a
	<i>How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?</i>	n/a
	<i>How is revision and optimization performed?</i>	n/a
	<i>Is there an obligation for biofuels?</i>	The current obligation for the share of biofuels on diesel and gasoline consumption is set at 4%. (NREAP, p. 81)
	<i>Is there a specific support for 2nd generation biofuels?</i>	The Walloon region wants to support second-generation biofuels, but till now no concrete plans were made. (NREAP, p. 84)

Table (Appendix) 12: Comparison of technology-specific national RES deployment by 2020 (Belgium)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
Unit																										
REPAP industry roadmap (proactive RES support)	18%	5985	2603	31.7	241	1942.5	45.5	0	342.1	29532	480	494	2924	0	0.4	7700	9061	5683	3190	n/a ^o	842.7	144.1	614.3	0	0	0
NREAP	13%	5374	2589	5.7	198.7	1947	55	32	350	23121	440	29	1139	0	0	10474*	0	9575	1439	25	886.3	91.2	697.9	0	97.2	0
Difference	-27%	-9%	-1%	-82%	-18%	0%	17%	-	2%	-22%	-8%	-94%	-61%	-	-100%	-38%**	-	68%	-55%	n/a	5%	-37%	12%	-	100%	-

^o n/a ... Not applicable. In the REPAP industry roadmap no separate category is applied to “liquid biomass” used for power generation - i.e. for modelling purposes they are included in the category “solid biomass”.

* Value is not separated into offshore and onshore wind

** Percentage variation includes offshore and onshore wind

5.3 Annex for Bulgaria

Table (Appendix) 13: Assessment criteria for administrative procedures and spatial planning (Bulgaria)

Indicator	NREAP Assessment
<i>Presence of a one-stop shop scheme?</i>	Not yet existent, but should be introduced in 2015. (NREAP, p. 98, 48)
<i>Is the lead time for collecting all permits reasonable? If not, what is the lead time for typical RES-E projects?</i>	Lead-time is difficult to forecast, because not all procedural steps need to be completed in each case. It varies widely and may take 6 month to 1 year or more. (NREAP, p. 100, 101) According to the Bulgarian association of producers of ecological energy, actual lead times amount to at least 1.5 years.
<i>Is the estimated typical number of permits required (excl. small-scale system) adequate?</i>	According to the information provided in the NREAP, typically there are 20 permits required. (NREAP, p. 98) According to the Bulgarian association of producers of ecological energy, in practice the actual number of permits may well exceed a level of 20.
<i>Are timetables communicated in advance?</i>	The rules of procedure of the different administrative bodies also include indicative timetables for processing applications. (NREAP, p. 98)
<i>Is there an exception from authorization of small-scale systems?</i>	For solar hot water collectors no building permit is required, further simplifications are not installed. It is planned to introduce simplified procedures for solar thermal systems of up to 50 kW and for photovoltaic systems of up to 30 kW. (NREAP, p. 99)
<i>What is the level of permitting costs of a large project?</i>	Exact data is missing, because of too few installations. Building permit costs around € 15.000. (AEON, p. 7, 15)
<i>Are the fees required correlated to the administration costs?</i>	In theory, fees should be strictly regulated and are related to the administrative costs for granting permits. (NREAP, p. 100) In practice, according to the Bulgarian association of producers of ecological energy, the amount of the fees is not correlated to the primary cost of the service (despite the law requirements for that). The fees for RES installations are several times higher than those for other construction types. Each municipality decides on the size of the fees on its territory, not taking into account the actual costs.
<i>Are renewables integrated in spatial planning?</i>	Spatial planning is considered complex. In specific “key agricultural land”, permission for RES plants is generally not obtained. (AEON, p. 14)
<i>Is it assured that during the authorization process, the administration has no discretionary power?(e.g. denial or delay can be subject to legal options to the applicant)</i>	In practice, according to the Bulgarian association of producers of ecological energy, the processes are often delayed.
<i>Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time?(e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)</i>	n/a
<i>Is information available on the process?</i>	Information is mainly provided by written communication with applicants, only some procedures and applications are published on the website of the government departments and companies. (NREAP, p. 97, 98)
<i>Do administrative procedures consider RES specificities?</i>	Procedures take into account technical capacity. Therefore, renewables are classified in 3 categories: The 1 st for plants over 100 MW capacity, 2 nd for installation of 25 to 100 MW, 3 rd for plants of less than 25 MW. Furthermore plants of less than 5 MW installed capacity are exempt

4.2.1 Administrative procedures and spatial planning

		from licensing by the State Energy and Water Regulatory. (NREAP, p. 99)
	<i>Is there official guidance for local and regional administrative bodies?</i>	There was one issued by the Ministry of Economy, Energy and Tourism, but according to the Bulgarian association of producers of ecological energy it is already outdated.
	<i>Are trainings planned for authorities in charge of authorization?</i>	No governmental trainings are organized, but each institution adopts an annual plan for mandatory and specialized training for its officials. (NREAP, p. 102)

Table (Appendix) 14: Electricity infrastructure development and electricity network operation (Bulgaria)

Indicator		NREAP Assessment
4.2.6 Electricity infrastructure development & 4.2.7 Electricity network operation	<i>Is the average time for grid connection adequate? If not, give examples.</i>	Grid connection for wind power plants has taken 3-6 months. (AEON, p. 43). According to the Bulgarian association of producers of ecological energy, since the beginning of 2010 grid connections are however temporarily put on hold.
	<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	The Renewable and Alternative Energy Sources and Biofuels Act provides “priority connection” to the network for producers of electricity from RES. (NREAP, p. 133) In theory, operators are required to curtail the production of electricity from RES only as a last resort, after having used all other options. (NREAP, p. 140) According to the Bulgarian association of producers of ecological energy, common practice differs however significantly from that.
	<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	The costs necessary to the connection of the energy facility of the producer to the respective network up to the property boundary are borne by the producer. According to law, connection costs from the boundary of the producer to the point of the connection are borne by the transmission or the respective distribution company. (NREAP, p.134)
	<i>What are the costs for subsequently connected producers?</i>	There are no rules for sharing the costs between users of the network in the order in which they have been connected to the network. (NREAP, p. 137)
	<i>Is the connection to existing electricity networks coordinated?</i>	n/a
	<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Two new 400 kV interconnection lines, linking Bulgaria with Greece and Serbia are planned. (NREAP, p. 130)
	<i>Are there grid-market related measures to minimize RES-E curtailment?</i>	The problem is considered, but due to minor capacity of RES power plants there have been no cases of curtailment. Only a few soft measures are introduced e.g. network operators must include the nominated production capacity from RES producers in the dispatching schedule for production. (NREAP, p. 140)
	<i>Is information on costs and connection timetable available?</i>	Investors can obtain information on costs and timetables for processing the permit and the grid connection, after filling a request for examining the prospective connection. A precise timetable for the execution of the connection is laid down in the final connection agreement. This agreement is signed after obtaining the permit. (NREAP, p. 137)
	<i>Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?</i>	According to the Bulgarian association of producers of ecological energy, there are none.
	<i>Are there simple administrative procedures for grid connection?</i>	n/a
<i>Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?</i>	According to the Bulgarian association of producers of ecological energy, there is no such system in place.	

Table (Appendix) 15: Electricity from renewable sources support measure assessment (Bulgaria)

Indicator		NREAP Assessment	
4.3 RES-E sup-port measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Sufficiency is given for several technologies. Only the support for biogas and possibly some types of biomass installations should be improved, and also for offshore wind power changes appear necessary. (RE-Shaping)
		<i>Is there a technology specific support?</i>	Feed-in tariffs differ for the different technologies.. (NREAP, p. 151)
		<i>Is the long-term security of the support measures ensured?</i>	Feed-in tariffs for solar and geothermal sources are guaranteed for 25 years. Other renewables will receive feed-in tariffs for 15 years. Additionally it is ensured that the support may not be less than 95 per cent of its amount in the previous year. (NREAP, p. 151)
		<i>Is there a maximum or minimum size for support?</i>	To receive the feed-in tariff biomass plants must have a capacity of less than 5 MW, hydropower plants are eligible with a capacity of up to 10 MW. (NREAP, p. 153) The European Regional Development Fund provides support only to small or medium size installations. (NREAP, p. 154)
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	No support scheme depends on energy efficiency criteria. (NREAP, p. 152, 156, 159)
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	Wind, hydro, photovoltaic and biomass systems can benefit from feed-in tariffs and investment grants due to the “European Regional Development Plan”. (NREAP, p. 161, 154)
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	No concrete target is set. (NREAP, p. 152, 156, 159)
		<i>How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?</i>	n/a
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	All customers finance the feed-in tariffs, because the costs are included in the price for electricity transmission. (NREAP, p. 151) “European Regional Development Plan” is financed by the EU (NREAP, p. 155)
		<i>How are revision and optimization performed?</i>	Until the end of March, the regulator (SEWRC) sets new feed-in tariffs for all RES systems. Adjustments fall within the competence of the SEWRC. (NREAP, p. 151) The managing authorities provide feedback on the “European Regional Development Plan”. (NREAP, p. 155)

Table (Appendix) 16: Heat from renewable sources support measure assessment (Bulgaria)

Indicator		NREAP Assessment	
4.3 RES-H sup-port measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Sufficiency for biomass and solar thermal installations is not given in every case. (RE-Shaping) Besides, also for geothermal systems no support is applicable in practice at present.
		<i>Is there a technology specific support?</i>	No, there is no technology specific support measure established. (NREAP, p. 165, 164)
		<i>Is the long-term security of the support measures ensured?</i>	Financing of respective funds is assured during the entire period. (NREAP, p. 165)
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	Some funds are dependent on fulfilling efficiency requirements. Requirements are not announced. (NREAP, p. 165)
		<i>Are there multiple measures of</i>	No, only investments grants are possible. (NREAP, p. 164)

		<i>which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	
Regulatory framework		<i>Is there a concrete obligation/target per year (technology)?</i>	No concrete target is set. (NREAP, p. 165)
		<i>How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?</i>	n/a
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Funding is provided mainly externally by the European Union, the World Bank, the European Bank of Reconstruction and Development and the European Investment Bank. (NREAP, p. 165)
		<i>How is revision and optimization performed?</i>	Managing authorities can periodically revise the rules. (NREAP, p. 165)
		<i>What measures are planned on the use of CHP from RES?</i>	CHP is supported with special funding programs, but without taking into account whether the plant uses renewable or other fuels. (NREAP, p. 166)
Support scheme specific indicators:		<i>What measures are planned on the use of district heating from RES?</i>	No specific measure is introduced, but five different funding programs, mostly introduced for promoting energy efficiency, can be used. (NREAP, p. 166)
		<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	At present, no such schemes are in place. (NREAP, p. 166)
		<i>What measures are planned on the use of heat from RES in industrial applications?</i>	No specific measure is introduced, but five different funding programs, mostly introduced for promoting energy efficiency, can be used. (NREAP, p. 166)
		<i>Is there a RES Obligation for the building sector?</i>	No obligation for RES is laid down in building regulations, but plans are made to introduce such obligations. (NREAP, p. 108, 109)
		<i>Do public buildings feature best practices?</i>	No plans for ensuring the exemplary role of public buildings have been developed. (NREAP, p. 110)

Table (Appendix) 17: Transport fuels from renewable sources support measure assessment (Bulgaria)

Indicator		NREAP Assessment
4.5 RES-T support measures	<i>Is the long-term security of the support measures ensured?</i>	Tax reduction is guaranteed only until the end of 2012. (NREAP, p. 172)
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ obligation etc...)?</i>	Only tax reduction is possible. (NREAP, p. 171)
	<i>Is there a concrete obligation/target per year (technology)?</i>	The target for the consumption of biofuels in the transport sector is 10 % for 2020. (NREAP, p. 168)
	<i>How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?</i>	Supervision is established only for the biofuel obligation. Fines up to BGN 200000 are set for companies that are not fulfilling the obligation. (NREAP, p. 170)
	<i>How is revision and optimization performed?</i>	Due to the short lifetime of the tax reduction measure no revision took place, neither is revision foreseen. (NREAP, p. 171)
	<i>Is there an obligation for biofuels?</i>	Obligation for Diesel is set to 4 % and for Petrol 2 % as from 1 March 2011. (NREAP, p. 168)
	<i>Is there a specific support for 2nd generation biofuels?</i>	n/a

Table (Appendix) 18: Comparison of technology-specific national RES deployment by 2020 (Bulgaria)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
Unit	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
Green-X ACT scenario (proactive RES support) (prepared within the REPAP project)	22.6 %	3183	1610	125	77	1393*	3	0	11	14687	5288	393	309	0	0	5938	68	2178*	513	n/a°	310	296	26	0	0	-11**
NREAP	16 %	1956	1103	9	21	1053	20	0	0	7537	3951	0	454	0	0	2260	0	514	357	0	205	42	154	0	5	4
Difference	-29.2%	-39%	-31%	-93%	-73%	-24%	85%	-	-100%	-49%	-25%	-100%	32%	-	-	-62%	-100%	-76%	-30%	n/a	-34%	-86%	83%	-	100%	-

° n/a ... Not applicable. In the REPAP industry roadmap no separate category is applied to “liquid biomass” used for power generation - i.e. for modelling purposes they are included in the category “solid biomass”.

* Includes solid and liquid biomass and biomass from MSW. Outlook is not itemized between solid and liquid biomass.

** Exported biofuels plus 2nd generation biofuels

5.4 Annex for Cyprus

Table (Appendix) 19: Assessment criteria for administrative procedures and spatial planning (Cyprus)

Indicator		NREAP Assessment
4.2.1 Administrative procedures and spatial planning	<i>Presence of a one-stop shop scheme?</i>	One-stop scheme is introduced. (NREAP, p. 26)
	<i>Is the lead time for collecting all permits reasonable? If not, what is the lead time for typical RES-E projects?</i>	Lead-time is not reasonable. Duration to get all permits varies from 36-49 months. (AEON, p. 9, 10)
	<i>Is the estimated typical number of permits required (excl. small-scale system) adequate?</i>	Estimated number of permits could reach 40. Therefore it is not considered adequate. (AEON, p. 10)
	<i>Are timetables communicated in advance?</i>	Timetables are available for the licensing procedures for the Cyprus Energy Regulatory, the Town Planning Authority and the Environmental Authority. (NREAP, p. 26)
	<i>Is there an exception from authorization of small-scale systems?</i>	Photovoltaic and biomass systems with a capacity of up to 20 kW and wind farms with a capacity of up to 30 kW are exempted from any type of license regarding to the Cyprus Energy Authority. This does not affect permits from other authorities. Photovoltaic systems with a capacity of up to 100 kW on new or existing buildings or on ground sites are exempted from town planning license. (NREAP, p. 29, 30)
	<i>What is the level of permitting costs of a large project?</i>	Permitting costs adding up to 50 €/kW or 4 % of investment costs. (AEON, p. 10)
	<i>Are the fees required correlated to the administration costs?</i>	Point is not mentioned.
	<i>Are renewables integrated in spatial planning?</i>	Areas are determined where RES development is allowed, considering protection of environmental sensitive regions. (NREAP, p. 16)
	<i>Is it assured that during the authorization process, the administration has no discretionary power?(e.g. denial or delay can be subject to legal options to the applicant)</i>	Not applicable (n/a)
	<i>Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time? (e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)</i>	n/a
	<i>Is information available on the process?</i>	Cyprus Energy Authority, Department of Town Planning and Housing and the Environmental Department are publishing information regarding to the specific permitting process. (NREAP, p. 25, 26)
	<i>Do administrative procedures consider RES specificities?</i>	Particularities of various RES should be considered, but clear instructions are not mentioned. (NREAP, p. 29)
	<i>Is there official guidance for local and regional administrative bodies?</i>	The Energy service issues guides for Energy Investments each year. This Guide contains information on the required action and licenses. The Ministry of Commerce, Industry and Tourism visits municipalities and communities in order to provide information and guidance. (NREAP, p. 31)
<i>Are trainings planned for authorities in charge of authorization?</i>	Special training for employees handling authorities and licensing procedures for renewable installations is introduced. Detailed description on training process is absent. (NREAP, p. 31)	

Table (Appendix) 20: Electricity infrastructure development and electricity network operation (Cyprus)

Indicator		NREAP Assessment
4.2.6 Electricity infrastructure development & 4.2.7 Electricity network operation	<i>Is the average time for grid connection adequate? If not, give examples.</i>	Time of grid connection lasts an average of 12 to 24 months. (AEON p. 19)
	<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	All RES installations obtain grid connection priority rights. Connection procedure should be managed under greatest possible priority. All energy produced from RES is given priority in dispatch unless the security and reliability of the system are at risk. (NREAP, p. 46, 48)
	<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Methodology relating to connection costs and allocation of costs is prepared by the TSO. The costs are apportioned between Transmission system owner and the generator on a 50/50 basis. (NREAP, p. 47, 48)
	<i>What are the costs for subsequently connected producers?</i>	If the TSO receives a connection application within 5 years from when the first generator connected, these applicants will proportionately assume part of the cost paid by the first applicant. (NREAP, p. 48)
	<i>Is the connection to existing electricity networks coordinated?</i>	n/a
	<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Cyprus does not have any plan to develop interconnection lines. (NREAP, p. 45)
	<i>Are there grid-market related measures to minimize RES-E curtailment?</i>	The electricity authority is obliged to purchase all electricity generated from RES. Problems based on the isolated electricity grid are considered. The TSO encourages the use of energy storage systems in order to allow more production facilities using RES. (NREAP, p. 50)
	<i>Is information on costs and connection timetable available?</i>	TSO has to submit information on costs and time within a certain number of days after the request. Grid construction should be assured within 18 month from the date all necessary permits are issued. (NREAP, p. 48)
	<i>Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?</i>	n/a
	<i>Are there simple administrative procedures for grid connection?</i>	n/a
<i>Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?</i>	n/a	

Table (Appendix) 21: Electricity from renewable sources support measure assessment (Cyprus)

Indicator		NREAP Assessment	
4.3 RES-E support measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Sufficiency for PV, wind onshore, small hydro and liquid and solid biomass installations is given. (RE-Shaping)
		<i>Is there a technology specific support?</i>	Various different support measures are installed. e.g. Investment subsidies for small-scale wind farms and photovoltaic systems and fixed purchase prices for photovoltaic systems and biogas plants. (NREAP, p. 64-67)
		<i>Is the long-term security of the support measures ensured?</i>	Feed-in tariffs are set for 20 years except for photovoltaic systems (15 years). (NREAP, p. 65-67)
		<i>Is there a maximum or minimum size for support?</i>	Solar systems must not exceed 150 kW per applicant (Wind farms 30 kW). (NREAP, p. 69 p. 64-67)
		<i>Does the support depend on energy efficiency criteria of the</i>	Support does not depend on energy efficiency criteria, but attaining the permit depends on fulfilling specific efficiency criteria. (NREAP,

Regulatory framework	<i>technology?</i>	p. 68)
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	Yes, feed-in tariffs and investment incentive. (NREAP, p. 64-67)
	<i>Is there a concrete obligation/target per year (technology)?</i>	No concrete target is set. (NREAP, 68)
	<i>How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?</i>	Due to absence of targets, no supervision of fulfilling a goal is introduced.
	<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	System is founded through energy tariff. Energy Service proposed an increase from 0.22 €ct/kWh to 0.44 €ct/kWh. (NREAP, p. 61)
	<i>How are revision and optimization performed?</i>	Every support scheme is revised at the end of the year taking into consideration the technological development, cost differentiations and public response to each technology. (NREAP, p. 62)

Table (Appendix) 22: Heat from renewable sources support measure assessment (Cyprus)

Indicator		NREAP Assessment	
4.3 RES-H support measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Support for decentralized biomass plants, solar thermal installations and ground source heat pumps is adequate. (RE-Shaping)
		<i>Is there a technology specific support?</i>	Yes, specific measures are addressed to biomass plants, heat pumps, residential solar systems and CHP. (NREAP, p. 80)
		<i>Is the long-term security of the support measures ensured?</i>	n/a
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	Support does not depend on energy efficiency criteria.
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	Fuel used for cogeneration is exempt from tax. Electricity produced in CHP plants obtains feed-in tariff. Several projects receive investment incentives. (NREAP, p. 79-82)
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	No concrete target is installed.
		<i>How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?</i>	Due to absence of target, no supervision is introduced.
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Same as for electricity from renewable sources. (NREAP, p. 79)
		<i>How is revision and optimization performed?</i>	Same as for electricity from renewable sources. (NREAP, p. 79)
	Support scheme specific indicators	<i>What measures are planned on the use of CHP from RES?</i>	CHP from RES receive financial support of 40% of the eligible budget (up to € 300,000 per unit), while CHP from natural gas obtains only 30% of the eligible budget (a maximum of € 100.000). (NREAP, p. 81, 82)
		<i>What measures are planned on the use of district heating from RES?</i>	No district heating and cooling systems are installed in Cyprus, and there are no measures planned to put emphasis on district heating and cooling. (NREAP, p. 83)

	<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Financial support of residential solar systems and heat pumps is installed. (NREAP, p. 83)
	<i>What measures are planned on the use of heat from RES in industrial applications?</i>	Financial support is installed for Solar systems, heat pumps with geothermal heat exchanger and biomass utilization. These are specific measures for legal entities engaged in economic activity. (NREAP, p. 81, 82)
	<i>Is there a RES Obligation for the building sector?</i>	No, there is no obligation introduced. (NREAP, p. 34)
	<i>Do public buildings feature best practices?</i>	Two measures are introduced: Installation of solar area cooling and heating systems equipped with a total budget of € 1 million for two buildings. Installations of photovoltaic systems on 13 public buildings, 48 schools, and 4 military camps are planned. (NREAP, p. 35, 36)

Table (Appendix) 23: Transport fuels from renewable sources support measure assessment (Cyprus)

<u>Indicator</u>		<u>NREAP Assessment</u>
4.5 RES-T support measures	<i>Is the long-term security of the support measures ensured?</i>	Only investment subsidies are granted. (NREAP, p. 87)
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ obligation etc...)?</i>	No, only investment subsidies for purchasing different low or zero emission vehicles are possible. (NREAP, p. 87)
	<i>Is there a concrete obligation/target per year (technology)?</i>	No concrete target is set.
	<i>How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?</i>	n/a
	<i>How is revision and optimization performed?</i>	n/a
	<i>Is there an obligation for biofuels?</i>	2 % of the annual gas placed in the market must be from biogas. (NREAP, p. 86)
	<i>Is there a specific support for 2nd generation biofuels?</i>	n/a

Table (Appendix) 24: Comparison of technology-specific national RES deployment by 2020 (Cyprus)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
Green-X ACT scenario (proactive RES support) (prepared within the REPAP project)	14.4 %	287	113	0	96	13*	1	0	3	1174	2	0	101	0	0	621	228	105*	117	n/a°	73	0	1	0	0	72**
NREAP	13 %	263	123.6	0	90.5	30.2	0	0	3	1175	0	0	309	224	0	499	0	0	143	0	38.4	14.7	23.2	0	0.6	0
Difference	-10%	-8%	9%	-	-6%	57%	-100%	-	0%	0%	-	-	67%	100%	-	-20%	-100%	-100%	18%	n/a°	-47%	100%	96%	-	100%	-100%

° n/a ... Not applicable. In the REPAP industry roadmap no separate category is applied to “liquid biomass” used for power generation - i.e. for modelling purposes they are included in the category “solid biomass”.

* Includes solid and liquid biomass and biomass from MSW. Outlook is not itemized between solid and liquid biomass.

** Imported biofuel

5.5 Annex for the Czech Republic

Table (Appendix) 25: Assessment criteria for administrative procedures and spatial planning (Czech Republic)

Indicator	NREAP Assessment
<i>Presence of a one-stop shop scheme?</i>	No one-stop shop scheme is introduced. (NREAP, p. 26)
<i>Is the lead time for collecting all permits reasonable? If not, what is the lead time for typical RES-E projects?</i>	Lead-time is mostly qualified as not reasonable. Average lead-times vary by technology, ranging from half a year for small-scale biomass plants up to 10 years for small hydropower installations. (AEON, p.12)
<i>Is the estimated typical number of permits required (excl. small-scale system) adequate?</i>	Minimum amount of permits concerning biogas and biomass installations is five. For Wind power onshore six permits are necessary. (AEON, p. 16)
<i>Are timetables communicated in advance?</i>	Not applicable (n/a)
<i>Is there an exception from authorization of small-scale systems?</i>	Simplified authorization processes are possible, but only for “flawless” cases. “Energy generation and distribution license” procedure is simplified for specific small-scale RES systems. (NREAP ³⁸ , p. 27, 28)
<i>What is the level of permitting costs of a large project?</i>	Permitting costs vary from € 70,000 to € 120,000 for large-scale biomass installations. Receiving a permit for wind power plants could cost up to € 100,000. (NREAP, p. 15)
<i>Are the fees required correlated to the administration costs?</i>	Yes, the fees should be rated to the actual administrative costs for permit granting. (NREAP, p. 29)
<i>Are renewables integrated in spatial planning?</i>	The integration of renewable in spatial planning appears insufficient. Several regions have adopted regional plans that hinder the development of wind power plants. (AEON, p 12)
<i>Is it assured that during the authorization process, the administration has no discretionary power?(e.g. denial or delay can be subject to legal options to the applicant)</i>	According to the AEON study, one reason for long permitting times is the antagonism of certain officials and local politicians. (AEON, p. 12)
<i>Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time? (e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)</i>	n/a
<i>Is information available on the process?</i>	Information is available only for certain permitting processes. (NREAP, p. 24)
<i>Do administrative procedures consider RES specificities?</i>	The current legislation does not consider RES specificities. (NREAP, p. 27)
<i>Is there official guidance for local and regional administrative bodies?</i>	Guidance is provided by a variety of training sessions and courses. (NREAP, p. 29)
<i>Are trainings planned for authorities in charge of authorization?</i>	Trainings are introduced for the planning and building permit procedure, for permits and licenses issues and for the environmental impact assessment statements. (NREAP, p. 29)

³⁸ Ouwens, Jeroen (2010) “Non-cost barriers to renewable -AEON Study- National report Czech Republic”

Table (Appendix) 26: Electricity infrastructure development and electricity network operation (Czech Republic)

Indicator		NREAP Assessment
4.2.6 Electricity infrastructure development & 4.2.7 Electricity network operation	<i>Is the average time for grid connection adequate? If not, give examples.</i>	No explicit information on times for grid connection is applicable. As reported the owner and operator of the national distribution grid (i.e. CEZ) may prolong grid connection without any due reason by 6 months. (AEON, p. 37)
	<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	Priority dispatch is guaranteed, due to reserved capacity for RES. Access to the grid is treated equally for all sources, hence priority access for RES is not guaranteed. However, if the specific location of the RES plant offers free capacity, priority connection is ensured. (NREAP, p. 39, 40)
	<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	n/a
	<i>What are the costs for subsequently connected producers?</i>	n/a
	<i>Is the connection to existing electricity networks coordinated?</i>	n/a
	<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	No concrete plans are expressed. Solely a study is currently being conducted, aiming to assess the efficiency of new interconnection lines. (NREAP, p. 38)
	<i>Are there grid-market related measures to minimize RES-E curtailment?</i>	DSO and TSO shall actively support, in compliance with law, the development of a market environment promoting the integration of various types of electricity generating installations into the transmission and distribution system. (NREAP, p. 41)
	<i>Is information on costs and connection timetable available?</i>	Information should be available, but it is not described where or how this can be accessed. (NREAP, p. 39)
	<i>Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?</i>	n/a
	<i>Are there simple administrative procedures for grid connection?</i>	n/a
<i>Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?</i>	n/a	

Table (Appendix) 27: Electricity from renewable sources support measure assessment (Czech Republic)

Indicator		NREAP Assessment	
4.3 RES-E support measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Support measures are sufficient for small scale hydro and all sorts of biomass. The attractive support for PV as offered in recent years led to a strong PV deployment, causing some sort of “panic” reactions at the administrative bodies. (RE-Shaping)
		<i>Is there a technology specific support?</i>	The height of feed-in tariffs/premiums differs by technology. Besides, several schemes are introduced appealing to different technologies. (NREAP, p. 50, 51)
		<i>Is the long-term security of the support measures ensured?</i>	Payment of feed-in tariffs is assured for 20 years (30 years for small hydro). (NREAP, p. 54) For investment grants it remains unclear how long they are applicable.
		<i>Is there a maximum or minimum size for support?</i>	As common practice in several countries, feed-in tariffs are provided only for small-scale hydropower (with a capacity of up to 10 MW). Wind power farms must cover an area of 1 km ² and must have a capacity over 20 MW. (NREAP, p. 54)

Regulatory framework	<i>Does the support depend on energy efficiency criteria of the technology?</i>	No. (NREAP, p. 53)
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits + feed-in etc...)?</i>	Most RES projects can receive investment support and an income tax exemption additionally to the feed-in tariff. (NREAP, p. 54)
	<i>Is there a concrete obligation/target per year (technology)?</i>	No concrete targets are set. (NREAP, p. 49)
	<i>How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?</i>	n/a
	<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Funding of feed-in tariff payments is provided by a surcharge on the electricity end user price. Therefore the scheme is independent from governmental decisions.. (NREAP, p. 52) The funding of schemes offering investment grants or tax exemptions is not declared.
	<i>How are revision and optimization performed?</i>	The feed-in tariff system is annually revised. Thus, support for new RES plants shall follow the development of technical and economic parameters for the specific RES technologies. (NREPA, p. 53) The revision process for the schemes offering investment incentives and for the tax exemption is not declared.

Table (Appendix) 28: Heat from renewable sources support measure assessment (Czech Republic)

Indicator		NREAP Assessment	
4.3 RES-H support measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Support for biomass heating and solar thermal installations is moderate and possibly not always sufficient. Support for ground-source heat pumps appears adequate. (RE-Shaping)
		<i>Is there a technology specific support?</i>	The height of investment grants differs by technology. (AEON, p. 57)
		<i>Is the long-term security of the support measures ensured?</i>	n/a
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	n/a
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	Most projects can receive investment support and an income tax exemption. (NREAP, p. 50, 51)
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	No concrete target is set.
		<i>How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?</i>	n/a
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Financing of investment grants and tax exemptions is not declared.
		<i>How is revision and optimization performed?</i>	Revision process for the schemes offering investment incentives and for the tax exemption is not declared.
	S U	<i>What measures are planned on</i>	A special bonus to the default feed-in tariff is applicable, but it is

	<i>the use of CHP from RES?</i>	considered being not sufficient to stimulate RES-based CHP deployment. (NREAP, p. 62)
	<i>What measures are planned on the use of district heating from RES?</i>	Three measures are possible(NREAP, p. 62): <ul style="list-style-type: none"> • Investment support from the European Union Structural Funds • Exemption of earnings from income tax. • Exemption from property tax.
	<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Small-scale heating and cooling from RES is mainly supported by the “Green Saving” program, which administers a significant volume of funds, generated by the sale of unused greenhouse gas emission credits. It thereby grants investment subsidies. (NREAP, p. 62, 63)
	<i>What measures are planned on the use of heat from RES in industrial applications?</i>	Same measures as for district heating, but private companies are not allowed to apply for investment subsidies. (NREAP, p. 63)
	<i>Is there a RES Obligation for the building sector?</i>	New buildings and any building over 1,000 m ² undergoing a major refurbishment have to apply an assessment of the feasibility for the use of renewable energies. The amendment of the corresponding law foresees to extend the renewable energy assessment as obligation for all buildings undergoing a major refurbishment from 2015 on. Note however that this does not constitute a formal obligation on the use of RES as economic feasibility is expressed as criteria besides technical and environmental. (NREAP, p. 31)
	<i>Do public buildings feature best practices?</i>	No further measures as the ones mentioned above are designated to public buildings. (NREAP, p. 31)

Table (Appendix) 29: Transport fuels from renewable sources support measure assessment (Czech Republic)

<u>Indicator</u>		<u>NREAP Assessment</u>
4.5 RES-T support measures	<i>Is the long-term security of the support measures ensured?</i>	n/a
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ obligation etc...)?</i>	n/a
	<i>Is there a concrete obligation/target per year (technology)?</i>	Diesel fuel should contain 6% biofuels and petrol 4.1% biofuels from June 2010 on. No increased follow-up targets are specified. (NREAP, p. 64)
	<i>How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?</i>	n/a
	<i>How is revision and optimization performed?</i>	n/a
	<i>Is there an obligation for biofuels?</i>	Diesel fuel should contain 6% biofuels and petrol 4.1% biofuels from June 2010 on. (NREAP, p. 64)
	<i>Is there a specific support for 2nd generation biofuels?</i>	n/a

Table (Appendix) 30: Comparison of technology-specific national RES deployment by 2020 (Czech Republic)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	Unit	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
Green-X ACT scenario (proactive RES support) (prepared within the REPAP project)	14.4%	4815	2645	43	53	2417*	38	0	94	15983	2813	11	1120	0	0	4679	0	5010*	2352	n/a ^o	796	261	137	0	0	398**
NREAP	13.5%	4352	2657	15	22	2350	167	0	118	11679	2274	18	1726	0	0	1496	0	3294	2871	0	691	128	495	0	19	49
Difference	-6%	-10%	0%	-65%	-58%	-3%	77%	-	20%	-27%	-19%	40%	35%	-	-	-68%	-	-34%	18%	n/a	-13%	-51%	72%	-	100%	-88%

^o n/a ... Not applicable. In the REPAP industry roadmap no separate category is applied to “liquid biomass” used for power generation - i.e. for modelling purposes they are included in the category “solid biomass”.

* Includes solid and liquid biomass and biomass from MSW. Outlook is not itemized between solid and liquid biomass.

** 391 ktoe Net biofuel import, 7 ktoe 2nd generation biofuels

5.6 Annex for Denmark

Table (Appendix) 31: Assessment criteria for administrative procedures and spatial planning (Denmark)

Indicator		NREAP Assessment
4.2.1 Administrative procedures and spatial planning	<i>Presence of a one-stop shop scheme?</i>	“One-stop shop” procedure is available for the administration of applications for the erection of offshore wind turbines p.37
	<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	Time to be spent for administrative process (duration to get the main permits) is less than 50 weeks.
	<i>Is the estimated typical number of permits required (excl. small-scale systems) adequate?</i>	The estimated number of permits required (excl. small-scale systems) is considered low in Denmark (between 1 and 2).
	<i>Are timetables communicated in advance?</i>	Timetables and deadlines are usually communicated in advance and respected in Denmark.
	<i>Is there an exception from authorization of small-scale systems?</i>	Electricity generating renewable energy installations under 10 MW do not require authorization under the Electrical Supply Act. The establishment of smaller installations must, however, fulfil the requirements of the local authority spatial planning p.39
	<i>What is the level of permitting costs of a large project?</i>	The amount of money to be invested in administrative process (including cost of work and costs like fees) is very low in Denmark.
	<i>Are the fees required correlated to the administration costs?</i>	Any fees which may be liable are limited to covering direct administrative costs p.39
	<i>Are renewables integrated in spatial planning?</i>	The Planning Act (Consolidation Act No. 1027 of 20 October 2008 with later amendments) ensures that the coordinated planning unites the local interests in the use of the area p.32
	<i>Is it assured that during the authorization process, the administration has no discretionary power? (e.g. denial or delay can be subject to legal options to the applicant)</i>	Bound decisions are implemented p.38
	<i>Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time? (e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)</i>	n/a
	<i>Is information available on the process?</i>	The quality of information is evaluated as very positive in Denmark. The Energy Agency has the most comprehensive website, (www.ens.dk) which provides guidance and information on all the requirements necessary for obtaining authorization p. 37
	<i>Do administrative procedures consider RES specificities?</i>	Authorization procedures take into account the specificities of RES Technologies.
	<i>Is there official guidance for local and regional administrative bodies?</i>	Guidance is available and clear. There are rules on this in Danish Building Regulations and in the optional agreements on energy saving work which Local Government Denmark and the Danish Regions p.40
<i>Are trainings planned for authorities in charge of authorization?</i>	Trainings are foreseen. In addition, certain tasks may be undertaken privately, e.g. monitoring of schemes in connection with the Buildings Directive, in which certified companies undertake work on behalf of the authorities p.40	

Table (Appendix) 32: Electricity infrastructure development and electricity network operation (Denmark)

Indicator		NREAP Assessment
4.2.6 Electricity infrastructure development & 4.2.7 Electricity network operation	Is the average time for grid connection adequate?	The average lead time for getting grid connection (considering also approval of grid connection) is low in Denmark. Typically takes about one month for smaller projects, to about a year with larger investments p.58
	Is there priority dispatch?	Priority dispatch can only exist in cases, where a fixed feed-in tariff applies.
	Is there priority access or guaranteed access to the grid?	New installations that produce electricity from renewable sources have the right to be connected to the grid. However, the current legislation does not prioritize cases p.58. There are rules on cost sharing and bearing of grid connection objective, and they are transparent and non-discriminatory. The Electricity Supply Act (ESA) states that the owner of the installation is solely responsible for costs associated with connection to the 10-20 kV network. Additional costs, including network reinforcement and expansion are borne by the network companies p.59
	What are the rules of cost sharing and bearing of network technical adaptations?	Producers are exempted from all costs relating to network reinforcement and expansion. There are therefore no rules for the sharing of these between previous and future producers p.60
	What are the costs for subsequently connected producers?	Main objective of the organization responsible for the system (Energinet.dk) is to ensure that the electricity transmission network and the electricity system can cope with the increasing amounts of electricity generation from renewable energy sources p.55. Specific rules for subsequently connected producers could not be identified.
	Is the connection to existing electricity networks coordinated?	The increased input of electricity from renewable energy sources will be facilitated both by expanding connections to neighboring countries and by national initiatives p.57. The lack of the development of Trans-European Electricity Network is perceived as one the main barriers to enhance the use of RES.
	Is the Member State contributing to the development of a trans-European electricity network?	Yes, measures are implemented and monitored by reg. authority p.62-63
	Are there grid- market related measures to minimize RES-E curtailment?	Curtailment is managed by Energinet.dk according to publicly available and transparent criteria. Curtailment is currently minimised due to very strong international connections, future measures to minimise curtailment are currently addressed in intense R&D activities p.61
	Is information on costs and connection timetable available?	Up until now there have only been a few examples of delays in the connection of RES installations due to limited network capacity. However, in cooperation with the transmission companies, the Energy Agency estimates that there is a need for amended authorization procedures for network reinforcement p.59
	Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?	Yes.
	Are there simple administrative procedures for grid connection?	Yes.
Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?	n/a	

Table (Appendix) 33: Electricity from renewable sources support measure assessment (Denmark)

Indicator		NREAP Assessment	
4.3 RES-E support measures	All support measures	Are the support levels sufficient for each technology?	Sufficiency for biogas, wind offshore and hydro. Biomass, wind on-shore and solar support (PV and ST) should be reviewed.
		Is there a technology specific support?	Technology specific support is defined for the different RES technologies p.72-80
		Is the long-term security of the support measures ensured?	Long-term security of the support measures (10 years) is given p.75
		Is there a maximum or minimum size for support?	In general, there is no set minimum or maximum size for the systems that are eligible for support p.74-75
		Does the support depend on energy efficiency criteria of the technology?	There are no requirements for compliance with energy efficiency criteria p.74-76
		Are there multiple measures of which a project can benefit (e.g. tax credits, feed-in, etc.)?	In general, projects may not take advantage of more than one scheme p.74-76. For small RE technologies, a project may take advantage of both the price guarantee and investment incentives p.76
	Regulatory framework	Is there a concrete obligation/target per year (technology)?	There are no statutory targets or obligations for the promotion of renewable energy for the generation of electricity p.72
		How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?	n/a
		How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?	There is no set end date, but an evaluation was carried out in 2010. Also the recommendations of the Commission on Climate Change appointed by the Danish government, which gives suggestions as to how Denmark can phase out fossil fuels, will play a role for the future development of the support scheme. For small RE technologies support is provided from a fund comprising DKK 25 million per year for four years, from 2008-2011 p.76-77
		How are revision and optimization performed?	n/a

Table (Appendix) 34: Heat from renewable sources support measure assessment (Denmark)

Indicator		NREAP Assessment	
4.3 RES-H support measures	All support measures	Are the support levels sufficient for each technology?	The support levels for district heating, biomass, solar thermal and heat pumps should be increased in order to stimulate growth.
		Is there a technology specific support?	There is no technology specific support.
		Is the long-term security of the support measures ensured?	The generation of RES-H is supported through tax exemptions and, in the domestic housing, subsidies for the replacement of inefficient oil-fired boilers with more energy efficient heating systems.
		Does the support depend on energy efficiency criteria of the technology?	In the domestic housing sector, support is dependent on energy efficiency criteria.
		Are there multiple measures of which a project can benefit (eg. tax credits, feed-in, etc.)?	In the domestic housing sector a tax relief and subsidies are applicable p. 81
	Regulatory framework	Is there a concrete obligation/target per year (technology)?	n/a
		How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?	n/a
		How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?	Subsidy funds are limited and applications are considered on a “first come, first served” basis as long as funds are available p.82
		How is revision and optimization performed?	n/a
	Support scheme specific indicators:	What measures are planned on the use of CHP from RES?	In CHP plants, the heat produced from biomass and biogas is exempt from energy taxes.
		What measures are planned on the use of district heating from RES?	In certain areas there is an obligation for buildings to connect to a district heating system.
		What measures are planned on the use of small scale heating and cooling from RES?	Outside of district heating areas, there are three possibilities for subsidy: 1) efficient air to water heat pumps, 2) efficient liquid to water heat pumps or 3) solar installations p.81
		What measures are planned on the use of heat from RES in industrial applications?	n/a
		Is there a RES Obligation for the building sector?	The obligations to use RES in new buildings are applied not on the building level, but on the energy system level.
		Do public buildings feature best practices?	n/a

Table (Appendix) 35: Transport fuels from renewable sources support measure assessment (Denmark)

Indicator		NREAP Assessment
4.5 RES-T support measures	Is the long-term security of the support measures ensured?	n/a
	Are there multiple measures of which a project can benefit (e.g. tax credits, obligation, etc.)?	Yes, one project can cumulate more than one measure (CO ₂ tax and obligation).
	Is there a concrete obligation/target per year (technology)?	0.75 % in 2010, 3.35 % in 2011 and 5.75 % in 2012 (according to energy content). Additionally, the government will ensure that in accordance with the RE Act, at least 10 % renewable energy is reached in the transport sector by 2020 p.82
	How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?	The Climate and Energy Minister ensures compliance with the Act No. 468 of 12 June 2009. Failure to comply with the requirements is punishable by fine. Additionally, the Climate and Energy Minister can reduce the mixture requirements in the event of a crisis or of the lack of sustainable biofuels p.84
	How is revision and optimization performed?	A revision is not currently planned.
	Is there an obligation for biofuels?	0.75 % in 2010, 3.35 % in 2011, 5.75 % in 2012, 10 % in 2020.
	Is there a specific support for 2nd generation biofuels?	The Energy Technology Development and Demonstration Programme (ETDDP) have contributed a total of DKK 200 million for the development and demonstration of second generation biofuels p.83

Table (Appendix) 36: Comparison of technology-specific national RES deployment by 2020 (Denmark)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
Green-X ACT scenario (proactive RES support) (prepared within the REPAP project)	43%	6272	3113	71	216	1790	721	-	315	32250	35	70	1872	-	-	9327	14	4478	2431	-	386	331	-	-	-	55
NREAP	30%	5090	3029	-	16	2470	165	8	370	20597	35	-	0	-	-	6397	5327	6350	-	12	290	94	167	-	29	-
Difference	-30%	-19%	-3%	n/a	-93%	+38%	-77%	-	+17%	-36%	0%	n/a	-100%	n/a	n/a	-31%	-62%	+42%	2%	-	-25%	-71%	-	n/a	-	n/a

5.7 Annex for Finland

Table (Appendix) 37: Assessment criteria for administrative procedures and spatial planning (Finland)

Indicator	NREAP Assessment
Presence of a one-stop shop scheme?	There is no presence of a one-stop shopping scheme.
Is the lead time for collecting all permits reasonable? If not, what is the lead time for typical RES-E projects?	The time from the application to the receipt of permit is quite long (12-36 months), although it is possible to get a permission in 3 months, especially in biomass projects.
Is the estimated typical number of permits required (excl. small-scale system) adequate?	The estimated number of permits required (excl. small-scale systems) is evaluated as average in Finland (in comparison to other Member States).
Are timetables communicated in advance?	Timetables and deadlines are usually communicated and respected.
Is there an exception from authorization of small-scale systems?	n/a (Building permits are required for the use of RES - not exempted from an authorization procedure).
What is the level of permitting costs of a large project?	The amount of money to be invested in administrative process (including cost of work and costs like fees) is between 50 and 200 k€.
Are the fees required correlated to the administration costs?	n/a
Are renewables integrated in spatial planning?	Regarding wind projects, there is no national planning available for the areas of the wind energy utilization.
Is it assured that during the authorization process, the administration has no discretionary power?(e.g. denial or delay can be subject to legal options to the applicant)	According to the assessment of non-cost barriers to renewable energy growth in EU Member States - AEON report, barriers of this kind were identified in Finland.
Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time? (e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)	n/a
Is information available on the process?	According to the assessment of non-cost barriers to renewable energy growth in EU Member States - AEON report, the availability of information has been evaluated as negative in Finland.
Do administrative procedures consider RES specificities?	Yes. Authorization procedures take into account the specificities of renewable energy technologies.
Is there official guidance for local and regional administrative bodies?	Within the building sector there is ongoing information guidance for investors, final consumers, public admin., planners, architects, fitters, general public, etc. p.8
Are trainings planned for authorities in charge of authorization?	Finland has sufficient training on RES issued during the formal education of installers, planners and architects. No information is available on trainings involving authorities in charge of authorization.

4.2.1 Administrative procedures and spatial planning

Table (Appendix) 38: Electricity infrastructure development and electricity network operation (Finland)

Indicator		NREAP Assessment
4.2.6 Electricity infrastructure development & 4.2.7 Electricity network operation	Is the average time for grid connection adequate?	Yes. Less than six months.
	Is there priority dispatch? Is there priority access or guaranteed access to the grid?	In Finland there is no priority grid access for electricity by RES.
	What are the rules of cost sharing and bearing of network technical adaptations?	In Finland the rules on cost sharing and bearing of grid connection are objective, transparent and non-discriminatory.
	What are the costs for subsequently connected producers?	n/a
	Is the connection to existing electricity networks coordinated?	There are no problems concerning TSOs and DSOs. No reports could be found on denial of grid connection by TSOs and DSOs.
	Is the Member State contributing to the development of a trans-European electricity network?	The EU Commission launched a Baltic Sea Energy strategy, which goal is the full integration of the three Baltic States into the European energy market, through the strengthening of interconnections with their EU neighbouring countries (Finland, Sweden and Poland). There is presence of an efficient plan for the reinforcement of the interconnection capacity with neighbouring countries.
	Are there grid- market related measures to minimize RES-E curtailment?	n/a
	Is information on costs and connection timetable available?	The time for getting grid connection is 1 to 2 months. To erect a new grid and get connected will take 2 to 4 years after permit has been granted.
	Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?	In Finland the grid operators were given clear rules and grid connection is granted to the operators at a reasonable price (however a clear standard of either deep or shallow grid connection rules is not used).
	Are there simple administrative procedures for grid connection?	The average lead time for getting grid connection (considering also approval of grid connection) is considered low in Finland.
Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?	n/a	

Table (Appendix) 39: Electricity from renewable sources support measure assessment (Finland)

Indicator		NREAP Assessment	
4.3 RES-E support measures	All support measures	Are the support levels sufficient for each technology?	Sufficiency for biomass and hydro. Biogas, wind (offshore and on-shore) and solar support (PV and ST) should be reviewed.
		Is there a technology specific support?	State grant for investments are available for all RES-E technologies. There is also an electricity tax aid which amount depends on the technology used. All technologies used in the generation of RES-E are eligible to this tax aid, except photovoltaic systems, large-scale hydropower stations, geothermal systems and systems for the generation of electricity from peat.
		Is the long-term security of the support measures ensured?	The duration of these instruments are not set, and are therefore theoretically unlimited. These supports are available for both existing and new installations.
		Is there a maximum or minimum size for support?	The maximum amount of the subsidy is 250,000 EUR, but it can be extended by the Ministry of Employment and Economy. Regarding the electricity tax aid there is an annual cap on the available

			budget of 50 million EUR per year.
		Does the support depend on energy efficiency criteria of the technology?	Measures for promoting energy efficient equipment are currently in place in Finland.
		Are there multiple measures of which a project can benefit (eg. tax credits, feed-in, etc.)?	RES-E technologies may take advantage of both the grant for investments and the electricity tax aid.
	Regulatory framework	Is there a concrete obligation/target per year (technology)?	There are no statutory targets or obligations for the promotion of renewable energy for the generation of electricity.
		How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?	n/a
		How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?	Current policies are funded by the state budget. There are plans to introduce a feed-in tariff scheme for several RES technologies in 2011, also to be funded from the State budget.
		How are revision and optimization performed?	n/a

Table (Appendix) 40: Heat from renewable sources support measure assessment (Finland)

Indicator		NREAP Assessment	
4.3 RES-H support measures	All support measures	Are the support levels sufficient for each technology?	The support level for district heating, biomass and heat pumps is sufficient. Solar thermal should be increased in order to stimulate growth.
		Is there a technology specific support?	There is no direct generation based RES-H support. The generation of RES-H is supported by investment subsidies and tax reliefs.
		Is the long-term security of the support measures ensured?	n/a
		Does the support depend on energy efficiency criteria of the technology?	n/a
		Are there multiple measures of which a project can benefit (e.g. tax credits, feed-in, etc.)?	The generation of RES-H is supported by investment subsidies and tax reliefs.
	Regulatory framework	Is there a concrete obligation/target per year (technology)?	n/a
		How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?	n/a
		How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?	There is a cap on the annually available budget: 14 million EUR in 2008 and 22 million EUR in 2009.
		How is revision and optimization performed?	n/a
	S U	What measures are planned on	It is intended that a feed-in tariff for small CHP units should be in-

	the use of CHP from RES?	roduced at the beginning of 2011. p.4
	What measures are planned on the use of district heating from RES?	In Finland, there are policies to promote the increase of the RES share in existing district heating networks.
	What measures are planned on the use of small scale heating and cooling from RES?	n/a
	What measures are planned on the use of heat from RES in industrial applications?	n/a
	Is there a RES Obligation for the building sector?	n/a
	Do public buildings feature best practices?	n/a

Table (Appendix) 41: Transport fuels from renewable sources support measure assessment (Finland)

Indicator		NREAP Assessment
4.5 RES-T support measures	Is the long-term security of the support measures ensured?	n/a
	Are there multiple measures of which a project can benefit (e.g. tax credits, obligation, etc.)?	There are a few financial measures for RES-T production available: vehicle tax exemption according to the Law on Vehicle Tax and grants for R&D and pilot projects under the technology programme "BioRefine - New Biomass products".
	Is there a concrete obligation/target per year (technology)?	The use of transport biofuels is to be increased to 7 TWh by 2020 (20%). No specific target per technology is available.
	How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?	If the distributors failed to fulfil this obligation, the customs authorities will impose a penalty fee.
	How is revision and optimization performed?	n/a
	Is there an obligation for biofuels?	A quota obligation (a minimum percentage of biofuels to be supplied for consumption) for the distributors of transport fuels has been set for the years 2008-2010. This minimum percentage increased annually: 2% in 2008, 4% in 2009 and 5.75% in 2010.
	Is there a specific support for 2nd generation biofuels?	n/a

Table (Appendix) 42: Comparison of technology-specific national RES deployment by 2020 (Finland)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
REPAP industry roadmap (proactive RES support)	46.5%	12,529	8,370	-	142	7,658	124	-	446	43426	15038	-	2245	-	-	6629	1803	16829	907	-	425	123	-	-	-	-
NREAP	38%	10,700	7,270	-	-	6,550	60	-	660	33413	14410	-	-	-	-	6094	-	12642	267	-	600	130	430	-	40	-
Difference	-18%	-15%	-13%	-	-	-14%	-52%	-	-8%	-23%	-4%	-	-	-	-	-8%	-	-25%	-71%	-	41%	6%	100%	n.a.	n.a.	n.a.

5.8 Annex for France

Table (Appendix) 43: Assessment criteria for administrative procedures and spatial planning (France)

Indicator	NREAP Assessment
<i>Presence of a one-stop shop scheme?</i>	There is no one-stop shop scheme in France.
<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	To obtain a planning permission the NREAP reports on a lead time between two months and one year. The environmental impact assessment may take between 10 and 12 months (p.24). According to AEON lead times for an onshore wind power plant may amount to between 5 and 7 years. For hydro power facilities the administrative process may take on average 6 years, but occasionally up to 18 years, although the law prescribes a maximum of 2 years for small hydropower projects and 5 years for large projects. An additional appeal period for hydropower of 4 years causes a high uncertainty for project developers and for their financing possibilities. The system of tacit denial of a request after a certain period of months exacerbates the permission barriers.
<i>Is the estimated typical number of permits required (excl. small-scale system) adequate?</i>	The number of authorities that have to be contacted to get the permission for a wind turbine is estimated to be very high, amounting to around 27 authorities (AEON).
<i>Are timetables communicated in advance?</i>	There are no timetables available. Their publication depends on the local administration.
<i>Is there an exception from authorization of small-scale systems?</i>	Power plants with a capacity of up to 4.5 MW only need a prior declaration to the Energy Minister to comply with electricity regulations. Small-scale PV systems with a capacity below 3 kW _{peak} may follow a simplified scheme. Authorisation for small-scale renewable heating systems tends to proceed smoothly.
<i>What is the level of permitting costs of a large project?</i>	n/a
<i>Are the fees required correlated to the administration costs?</i>	n/a
<i>Are renewables integrated in spatial planning?</i>	A regional plan for the connection of RES to the grid shall facilitate required reinforcements of the electricity network. Existing incompatibilities of local spatial planning with RES (solar panels) in the Ile-de-France region have been addressed by enabling simplified procedures. Geo-referenced data on the inventory of environmental information are not yet made available for biofuel producers, but it is planned to provide this information to biofuel producers.
<i>Is it assured that during the authorization process, the administration has no discretionary power? (e.g. denial or delay can be subject to legal options to the applicant)</i>	n/a
<i>Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time? (e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)</i>	The public may raise an objection to hydropower projects during a period of 4 years even though the construction of the project has already started. These circumstances provoke a high level of uncertainty for investors and project developers.
<i>Is information available on the process?</i>	Due to the regional character of RES-H support in France the available information is rather fragmented. In some regions information availability is better than in others (Source: AEON).
<i>Do administrative procedures consider RES specificities?</i>	Certain characteristics are not always considered for the administrative procedures. Thus, there is no specific administrative procedure for offshore wind power plants.

4.2.1 Administrative procedures and spatial planning

<p><i>Is there official guidance for local and regional administrative bodies?</i></p>	<p>The strategic planning tool provided by the Regional Plan for the Climate, Air and Energy (SRCAE) provides guidance for administrative institutions. It contains regional qualitative and quantitative targets. The Grenelle II law includes an obligation to create regional wind power plan identifying areas suitable for wind power before June 2012. Territorial and energy plans have to be elaborated for cities exceeding 50,000 inhabitants and considered in local town planning and urban master planning (SCOT).</p>
<p><i>Are trainings planned for authorities in charge of authorization?</i></p>	<p>n/a</p>

Table (Appendix) 44: Electricity infrastructure development and electricity network operation (France)

Indicator	NREAP Assessment
<p><i>Is the average time for grid connection adequate? If not, give examples.</i></p>	<p>If a new link has to be constructed, it may take between one and three years.</p>
<p><i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i></p>	<p>In theory, there is guaranteed feed-in for RES-E unless the safety of the network is maintained (NREAP, p. 40), but no priority access. Stakeholders report that only minimum requirements of Article 16 II b of directive 2009/28/EC is satisfied and that grid operators do not always even respect the guaranteed grid access (AEON). Transformation points have to be defined in the regional network connection plans. The capacities foreseen in these plants are reserved for RES technologies during 10 years.</p>
<p><i>What are the rules of cost sharing and bearing of network technical adaptations?</i></p>	<p>There is a shallow cost approach in France. RES-E producers pay the costs for their connections, whilst upstream network reinforcements are paid through network use prices. There is the possibility to pool RES-E producers in order to share connection costs in areas with network constrains (Grenelle II).</p>
<p><i>What are the costs for subsequently connected producers?</i></p>	<p>The creation of a source point is entirely paid by the first producer.</p>
<p><i>Is the connection to existing electricity networks coordinated?</i></p>	<p>The transport network manager provides information on the potential amount of electricity feed-in in areas with a weak grid infrastructure.</p>
<p><i>Is the Member State contributing to the development of a trans-European electricity network?</i></p>	<p>France collaborates with other European grid managers in the European Energy Grid Initiative. The interconnection capacity to Spain is planned to be increased to 2 GW by end of 2013. Between France and Italy two projects are envisaged, the optimization of the existing network implying an additional exchange capacity of 600 MW until 2012 and the construction of a direct current link (1,000 MW) until 2017. The optimization of the connection to Belgium is foreseen to create an additional transit capacity of 400 MW by end of this year. The improvement of connection capacities to other countries are currently under evaluation.</p>
<p><i>Are there grid-market related measures to minimize RES-E curtailment?</i></p>	<p>According to the AEON report RES-E technologies are the first in being disconnected from the grid in times of grid overcharges. Since summer 2010, the feed-in of electricity may be modified on an intraday basis. RES-E producers may connect to a forecast system (IPES) to improve forecasts in a bundled manner.</p>
<p><i>Is information on costs and connection timetable available?</i></p>	<p>The transport network manager has to come up with a technical and financial proposal, showing estimated prices and lead times within 3 months. Small-scale producers are exempted from the contribution used to reinforce networks. Producers pay according to the corresponding voltage range of the grid (€ Cents/MWh 19 at 225kV and 400kV and no fee for connection to lower voltage ranges).</p>
<p><i>Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?</i></p>	<p>Prices for grid connection are fixed.</p>

4.2.6 Electricity infrastructure development &
4.2.7 Electricity network operation

<i>Are there simple administrative procedures for grid connection?</i>	Grid connection procedures tend to be complicated and lengthy.
<i>Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?</i>	n/a

Table (Appendix) 45: Electricity from renewable sources support measure assessment (France)

Indicator		NREAP Assessment	
4.3 RES-E support measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Tariff levels are in general sufficient or even favourable. For biogas, biomass and wind technologies the support level appears to be sufficient. In case of wind onshore the tariff is adapted to the full-load hours of a turbine. The tariffs for solar PV are favourable, in particular for building-integrated PV.
		<i>Is there a technology specific support?</i>	France applies a technology-specific feed-in tariff scheme and tenders for biomass, wind power plants and photovoltaics. In addition feed-in tariffs prices depend on performance criteria, such as energy efficiency for biomass power plants.
		<i>Is the long-term security of the support measures ensured?</i>	Long-term security exists, as feed-in tariffs are paid for a duration of 15 to 20 years.
		<i>Is there a maximum or minimum size for support?</i>	No.
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	Performance criteria have to be fulfilled in order to receive support from tenders and income tax credit. Solar collectors have to fulfill CSTBat, Solar keymark certification or European standards. Biomass-based hot water production requires an efficiency of at least 70 % and a rate of carbon monoxide of not more than 0.3 %. Biomass-fueled boilers need an efficiency of at least 80 % (manual loading) or 85 % (automatic loading). Heat pumps require a performance coefficient of at least 3.4.
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	Some multiple measures can be combined, such as the zero rate eco-loan and other support schemes, such as the energy saving certificates. Until end of 2010 it is possible to combine the sustainable development tax credit and the zero rate eco-loan. The guarantee of origin system is not combinable with the FIT (NREAP, p. 61).	
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	There is no direct obligation for a minimum share of RES-E. The technology-specific targets set in the Multi-annual Investment Programming are not binding. France has set itself the goal of increasing RES-E from 45.3 Mtoe in 2005 to 46.5 Mtoe in 2020 corresponding to 27 % of RES-E share (2020).
		<i>How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?</i>	Support schemes are revised periodically. No binding targets are in place.
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Additional costs of the FIT-system are paid by the end consumers via their electricity bill.
		<i>How are revision and optimization performed?</i>	The support level of the feed-in tariffs is reviewed periodically. It is planned to adapt technical specifications in biomass tenders annually in order to reflect technological progress.

Table (Appendix) 46: Heat from renewable sources support measure assessment (France)

Indicator		NREAP Assessment	
4.3 RES-H sup-port measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Support levels for RES-H in France appear to be on a sufficiently high level.
		<i>Is there a technology specific support?</i>	The support of renewable heating in France is technology-specific.
		<i>Is the long-term security of the support measures ensured?</i>	Support depends on the budget availability. Therefore, long-term security is not provided.
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	Efficiency criteria partly fulfilled for biomass boilers. Performance criteria for heat pumps are on a rather low level. Biomass facilities supported by the Heat Fund have to fulfill certain quality standards, but due to missing experience, no standards are defined for biogas installations. Solar thermal collectors have to meet minimum solar productivity and must not exceed maximum investment per unit of produced heat. Only heat pumps with a minimum performance coefficient are supported (4 for water-based heat pumps and 3.7 for ground-based heat pumps).
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	The zero rate eco-loan can be combined with other support schemes, such as the energy saving certificates. Until end of 2010 it is possible to combine the sustainable development tax credit and the zero rate eco-loan. In principle, support from the heat fund is not combinable with any other support system (with the exception of aid from local authorities, from ERDF, Energy performance plan for farms, Waste policy support plan).
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	There is no national building obligation in France.
		<i>How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?</i>	ADEME and MEEDDM monitor the impacts of the Heat Fund.
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	The system is a budgetary measure.
		<i>How is revision and optimization performed?</i>	The French Environment and Energy Management Agency (ADEME) and the Ministry of Ecology, Energy Sustainable Development and Sea (MEEDDM) monitor the results of the Heat Fund. The optimisation of the support level paid in the Heat Fund is realised on a project by project basis depending on the respective technology using indicators such as the cost per ton of CO2 avoided or the support level per unit of produced heat.
	Support scheme specific indicators:	<i>What measures are planned on the use of CHP from RES?</i>	There is a feed-in tariff for electricity produced in CHP-plants.
		<i>What measures are planned on the use of district heating from RES?</i>	Low share of DHC and low share of renewables in DHC. 414 heating networks exist as of 2008, whereof 209 networks dispose of CHP-plants. 13 cooling networks with 620 MW. Parisian cooling network has the first iced water network in Europe. Tax exemption for cooling networks. Reduced VAT rate on the supply of heat connected to a heating network with more than 50 % renewables. Exceptional depreciation possibilities for renewable-fueled heating networks. Investment support from the Heat Fund is available.
		<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Smaller projects receive a regional feed-in premium managed by ADEME.

	<i>What measures are planned on the use of heat from RES in industrial applications?</i>	There is a tender for large industrial or agricultural biomass heating plants (2009 -2011).
	<i>Is there a RES Obligation for the building sector?</i>	There is no RES obligation for buildings in France.
	<i>Do public buildings feature best practices?</i>	Best practice in public buildings has not yet been addressed appropriately by the French government. The focus here is on improving energy efficiency.

Table (Appendix) 47: Transport fuels from renewable sources support measure assessment (France)

<u>Indicator</u>		<u>NREAP Assessment</u>
4.5 RES-T support measures	<i>Is the long-term security of the support measures ensured?</i>	n/a
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ obligation etc...)?</i>	Tax reductions and obligation.
	<i>Is there a concrete obligation/target per year (technology)?</i>	In addition to the EU consumption target for biofuels of 10 % by 2020 France targets to commission 450,000 electric vehicles by 2015 and 2,000,000 vehicles by 2020. Furthermore, France plans to develop non-road transport t by renovating river channels, port facilities and rail freight. Non-road and non-aerial share of transport is planned to be increased from 14 % to 25 % by 2022.
	<i>How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?</i>	n/a
	<i>How is revision and optimization performed?</i>	n/a
	<i>Is there an obligation for biofuels?</i>	EU-target of 10 %.
	<i>Is there a specific support for 2nd generation biofuels?</i>	There is no specific support for 2nd generation biofuels.

Table (Appendix) 48: Comparison of technology-specific national RES deployment by 2020 (France)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	Others	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	Unit	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
REPAP industry road-map (proactive RES support)	23%	36 000	19 732	500	927	15 900	555	0	1 850	149 200	67 300	1 000	5 200	0	-	42 300	16 200	16 700			300	4 000	4 000				
NREAP	23%	35 711	19 732	500	927	15 900	555	0	1 850	155 284	71 703	475	5 913	972	1 150	39 900	18 000	13 470	3 701	0	-	4 062	650	2 850	0	402	160
Difference	0%	-8%	0%	0%	0%	0%	0%	0%	0%	+4%	+6.5%	-53%	+14%	-	-	-6%	+11%	+3%			-	+2%	+2%				

* not quantified due to missing methodology from EC, contribution expected from 2012 onwards.

5.9 Annex for Germany

Table (Appendix) 49: Assessment criteria for administrative procedures and spatial planning (Germany)

Indicator		NREAP Assessment
4.2.1 Administrative procedures and spatial planning	<i>Presence of a one-stop shop scheme ?</i>	Yes - Unless approval under other legislation (other than the BImSchG) is required, the licensing authority shall ensure full coordination of the regulatory process and the content and conditions
	<i>Is the lead time for collecting all permits reasonable? If not, what is the lead time for typical RES-E projects?</i>	Formal procedure: 7 months, simplified procedure: 3 months, deviations possible in individual cases
	<i>Is the estimated typical number of permits required (excl. small-scale system) adequate?</i>	n/a
	<i>Are timetables communicated in advance?</i>	yes
	<i>Is there an exception from authorization of small-scale systems?</i>	Notifications for small, decentralized systems are not provided for by the BImSchG, since, according to this legislation, they do not require authorisation. Most renewable energy installations require only building approval.
	<i>What is the level of permitting costs of a large project?</i>	n/a
	<i>Are the fees required correlated to the administration costs?</i>	The fees for obtaining the necessary permits follow fee regulations of the individual federal states. These regulations provide that, when assessing fees, the administrative burden must be considered.
	<i>Are renewables integrated in spatial planning?</i>	Only indirectly in that the principles of spatial planning have to take into account requirements for an affordable, safe and environmentally sound energy supply, including the development of energy grids and in particular renewable energies.
	<i>Is it assured that during the authorization process, the administration has no discretionary power?(e.g. denial or delay can be subject to legal options to the applicant)</i>	In the authorization process, the administration has no discretionary power. If the requirements for the building permission are met, the permit authority has to grant the permission. In case of rejection, the German judicial system provides for a broad range of legal remedies and independent courts.
	<i>Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time?(e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)</i>	During the authorization process, the public has the opportunity to file objections against the project within a defined period of time. Objections which are raised afterwards have to be ignored by the permission authority and the courts, § 10 Federal Immission Control Act. This so called preclusion effect increases legal certainty for the project developer in a considerable way.
	<i>Is information available on the process?</i>	In accordance with § 2(2) of the 9th BImSchV, the licensing authority must advise the project applicant and discuss the timing of the approval process, as well as other issues relevant to the application procedure. At the federal level, there is no further ‘recommendations’, in statutory or regulatory form, to the planning authorities to promote through planning the use of renewable energies. For fulfilment of duties, however, many other forms of action, such as guidelines or manuals, are available.
<i>Do administrative procedures consider RES specificities?</i>	In Germany, above certain thresholds, plants are subject to federal pollution control approval. Plants below this given threshold may only need a building permit (this is organised, however, in most federal states without concentration effect).	
<i>Is there official guidance for local and regional administrative bodies?</i>	There are no ‘recommendations’ made, in form of laws or regulations to the planning authorities to exploit these opportunities. For fulfilment of duties however, many other forms of action, such as guidelines or manuals, exist. Appropriate actions lie within the	

		competence of the federal states and, if they have not yet been made, will be made in conceivable time
	<i>Are trainings planned for authorities in charge of authorization?</i>	The training of case handlers for authorisation and licensing applications is subject to the sovereignty of the federal states. As a general rule, a university degree is required. Some federal states also offer further training courses for case handlers

Table (Appendix) 50: Electricity infrastructure development and electricity network operation (Germany)

Indicator		NREAP Assessment
4.2.6 Electricity infrastructure development & 4.2.7 Electricity network operation	<i>Is the average time for grid connection adequate? If not, give examples.</i>	<p>In Southern Germany some PV installations are waiting to be connected to the grid; however, they have not been connected by grid operators so far. It is unclear whether a lack of network capacity is the reason</p> <p>According to § 5 EEG, grid operators are obliged to give immediate priority to the connection of systems designed to generate electricity from renewable energy sources. A fixed deadline for the connection to be effected by the grid operator is however, not prescribed in the EEG. This may lead to delays of the grid connection.</p> <p>The fact that the immediate connection of PV systems in accordance with § 5 EEG is not always sufficiently guaranteed in everyday practice is also demonstrated by the results of the PV LEGAL survey of companies (see PV LEGAL database at www.pvlegal.eu). This revealed that the average waiting periods for the grid operators were between zero and ten weeks for small rooftop systems (reference system: 5 kW_p), four to ten weeks for medium-sized rooftop systems (reference system: 50 kW_p) and six to sixteen weeks for large systems (reference system: 5-MWp-ground-mounted system).</p>
	<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid ?</i>	<p>In Germany there are two regulations governing the priority use of installations producing electricity from renewable energy sources:</p> <ul style="list-style-type: none"> - According to § 8(1) of the EEG, grid operators are required to purchase, transmit and distribute preferentially the total amount of electricity from renewable energy sources. Only in situations where the grid operator's requirement to purchase stands against safe and reliable power supply, the operator can, with a so-called feed-in management, in accordance with § 11 EEG, down-regulate renewable energy installations with a capacity of over 100 kW. - In accordance with § 13 EnWG, transmission system operators (and according to § 14 EnWG distribution system operators also), are required to counteract threats to reliable supply through grid-specific or market-related measures (in accordance with paragraph 1) or active intervention in the feeds (in accordance with paragraph 2). These measures may also affect the priority of renewable energy. <p>The priority use of renewable energy is therefore guaranteed.</p>
	<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	<p>The costs arising from the new connection (as well as for necessary metering devices) are borne by the grid operator (§13 EEG). Furthermore, the costs for network reinforcements, grid capacity expansion and optimization of the system are covered by the grid operator as well (§ 14). In general, grid operators recover these costs by socializing them (by means of accounting for them in the determination of the charges for use of the grid system).</p> <p>§ 11 EnWG provides for a general public law obligation of the grid operators to extend the grid according to requirements and in the context of "economic reasonableness". The "economic reasonableness" of the grid extension is however not defined by law.</p> <p>An incentive regulation introduced in 2009 provides that investment budgets can be applied for at transmission and long-distance</p>

	<p>grid level that do not influence the attainment of the defined upper limits on prices and revenues (§ 23 para. 1 Incentive Regulation Ordinance³⁹). A systematic investment in the distribution networks is not provided for in the contexts of these investment budgets, however. The connection of RES systems is indeed given priority in that the costs for the optimisation, strengthening and expansion of the grids that result from the obligation under § 9 of the EEG are considered permanently non-controllable costs in the sense of § 11 para. 2 Fig. 1 of the Incentive Regulation Ordinance. To this end, however, the grid operator must be required by law to carry out such measures so that a systematic expansion of the distribution grids is not covered by this.</p>
<i>What are the costs for subsequently connected producers?</i>	All costs of grid optimisation, expansion and development are borne by the operator. Therefore producers connected at a later point have no cost advantages.
<i>Is the connection to existing electricity networks coordinated?</i>	Partly, in the German Federal States, specific areas are designated for new (overhead) lines in a spatial planning procedure.
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Yes, planned interconnectors are documented in the Transmission Development Plan by UCTE (now: ENTSO-E). Furthermore, the <i>Energieleitungsbaugesetz</i> (Law on transmission line extensions from 2009) contains a list of 24 high priority projects, which shall be updated regularly.
<i>Are there grid- market related measures to minimize RES-E curtailment?</i>	Grid-related measures include primarily grid circuits; market measures include mainly the use of balancing energy, contractually agreed switchable loads, information about bottlenecks and congestion management, and mobilizing additional resources through counter-trading and re-dispatch. Additionally if grid operators use feed-in management, i.e. curtailment of RES-E installations >100kW in order to prevent grid overload, they shall (financially) compensate producers that are affected.
<i>Is information on costs and connection timetable available?</i>	<p>Connecting procedures for generators >100 MW are stipulated by the <i>Kraftwerks-Netzanschlussverordnung</i>, including information requirements regarding technical standards, anticipated costs and agreements on timetables between grid operators and producers. As for RES-E, offshore wind farms are encompassed by these legal provisions (due to capacity sizes). For all other RES-E generators, the EEG is applicable. § 5 EEG lays down that those interested in feeding in and grid operators have to submit to each other, upon request within 8 weeks, the necessary documentation (in particular, grid system data).</p> <p>Some grid operators publish grid connection costs on their website - small grid operators often do not publish any information. No legal obligation.</p> <p>Connection time is sometimes communicated by the grid operator but there is no legal obligation to do so. No legal time limit for connection.</p>
<i>Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?</i>	<p>The various grid operators charge different fees for connection studies. This is due to the fact that there is no definition clarifying who bears the costs of the connection study and how these costs are to be defined. Thus it can happen that in part high fees, in part no fees are incurred. There is no visible logic to the fees structure, which often bears no relation to the services provided by the grid operator.</p> <p>The results of the PV LEGAL company survey (see PV LEGAL database at www.pvlegal.eu) show that the fees for the connection study are on average between 300 and 1,000 Euros for medium-sized PV rooftop systems (reference system: 50 kW_p) and between</p>

³⁹ Incentive Regulation Ordinance dated October 29th 2007 (Federal Law Gazette. I, page 2529), last amended by Article 4 of the Act dated August 21st 2009 (Federal Law Gazette. I, page 2870).

		350 and 2,000 Euros for large PV systems (reference system: 5 MW _p ground-mounted system). As a general rule, no fees are raised for small PV systems of less than 30 kW _p .
	<i>Are there simple administrative procedures for grid connection?</i>	Administrative procedures for network infrastructure are rather complex. The necessary steps prior to the physical realisation of grid connection are not fully clearly defined and settled in the EEG and are therefore handled differently by the grid operators. Improvements are necessary and are also foreseen.
	<i>Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?</i>	In case of delayed grid expansion due to the grid operator (i.e., violating his obligations stated in §9(1) EEG), renewable electricity producers that are negatively affected may demand compensation for the damage incurred.

Table (Appendix) 51: Electricity from renewable sources support measure assessment (Germany)

Indicator		NREAP Assessment	
4.3 RES-E sup-port measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Yes, if currently effective support levels are adjusted according to future technological developments.
		<i>Is there a technology specific support?</i>	Yes, the fee paid for the electricity depends on the energy source and the size of the installation, and in case of wind also the site of the installation. The remuneration also depends on the date of commissioning - usually a degression of tariffs is assumed if technology costs continue to decline
		<i>Is the long-term security of the support measures ensured?</i>	The Act is valid for an unlimited period. The feed-in tariff is granted at present level over a period of 20 years (15 years for large hydropower plants) plus start-up year. This is enshrined in the Renewable Energy Sources Act, and offers investors a high degree of investment security, since changes based on progress reports, for reasons of legitimate expectations, can only lead in exceptional cases and for important reasons of general interest, to a less favourable treatment of existing installation operators. The regular evaluation cycle also contributes to long-term security.
		<i>Is there a maximum or minimum size for support?</i>	No (for most technologies except some specifications on hydro and biomass power).
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	Wind turbines with a reference energy yield of less than 60% are not eligible for feed-in tariffs in order to avoid installations on sites with poor wind conditions. Specific criteria are also applied in the biomass sector: For example, the CHP-bonus will only be granted if it is a cogeneration plant, which corresponds to the high efficiency criteria of the EU. The technology bonus, which promotes the use of selected, innovative technologies, is only granted if the electricity is produced through heat-power-cogeneration and thus the biomass is used with maximum efficiency.
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	The EEG contains the so-called ‘dual marketing ban’, which prevents the dual marketing of produced electricity. Electricity for which a feed-in tariff under the EEG has been granted cannot be marketed as ‘green electricity’, for example. The combined use of feed-in remunerations and schemes within the Joint Implementation and Clean Development Mechanism from the Kyoto Protocol is not allowed. The EEG-remuneration can, however, be combined with an investment in form of low-interest loans.
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	Technology-specific targets do not exist.
<i>How is the system supervised and what happens in case of non-fulfilment of the targets</i>		There are no sanctions for not reaching the targets, because the targets are not imposed on individual companies, but they are defined as political goals.	

	<i>mentioned above?</i>	
	<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	The Renewable Energy Sources Act ensures that the costs are distributed among all electricity consumers (maximum cost levels are defined for energy intensive industries). The grid operators and supply companies can pass on the costs for electricity from renewable energies to the final consumer.
	<i>How are revision and optimization performed?</i>	A regular revision period and process - the period was just reduced from 4 to 3 years - is foreseen in the law itself. The Act will be evaluated at regular intervals through progress reports. It contains sector-specific descriptions of developments, points out undesirable developments and makes recommendations for appropriate adjustments, such as a correction of the compensation rates. The progress report is followed by a new version of the Act, which accordingly takes into account the proposals for adjustments.

Table (Appendix) 52: Heat from renewable sources support measure assessment (Germany)

<u>Indicator</u>		<u>NREAP Assessment</u>	
4.3 RES-H support measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	The Market Incentive Programme (MAP) has had some success, but compared to the electricity sector the potential is not exploited as effectively, because it is dependent on annual budget decisions and has therefore regularly led to stop-and-go situations in market development. Also there are no effective measures for existing buildings.
		<i>Is there a technology specific support?</i>	Yes, the Market Incentive Program-guidelines are technology specific. The amount of the repayment subsidy differs depending on the technology.
		<i>Is the long-term security of the support measures ensured?</i>	The Act (EEWärmeG) is valid indefinitely, but the Market Incentive Programme (MAP) is dependent on annual budget decisions and has therefore led to stop-and-go situations in market development.
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	Principally yes; the MAP-guidelines include requirements for all technologies to ensure that high quality and efficient products are fostered. Heat pumps must be 'efficient' (i.e. electric heat pumps must have low power requirements) in order to be granted support. In addition the guidelines demand a minimum collector yield, and they allow for an efficiency bonus.
		<i>Are there multiple measures of which a project can benefit (eg. tax credits+ feed-in etc...)?</i>	MAP can partly be combined with KfW loans. In addition there are incentives at regional level (Federal states and regions). (p.84)
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	The aim of the EEWärmeG is to contribute to increasing the share of renewable energies in final consumption of energy for heating (space, water, cooling and process heating) by 2020 to 14 %. There are no specific targets per - only for newly constructed buildings; Renewable Heating Act (EEWärmeG): Owners of newly constructed buildings must cover a share of their thermal energy demand by renewable energies. E.g. the use of solar radiation shall meet the obligation if at least 15 percent of the thermal energy demand is covered by this source.
		<i>How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?</i>	Pursuant to § 10 EEWärmeG, obliged parties have to provide evidence of fulfilment before the competent authority and, in case of purchase of biomass fuels, save all bills and provide them on demand. The competent authorities in the federal states must control, through appropriate sampling methods, fulfilment of the obligation and accuracy of the evidence. In case of non-fulfilment of the legal obligation, a fine has to be paid by the owner of the building.
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant?</i>	The EEWärmeG stipulates that, for the promotion of renewable energy for heating, for the years 2009-2012 need-based funds of up to 500 million euros are to be made available each year. The MAP's

Support scheme specific indicators:	<i>enough?</i>	financial resources, including the KfW-program Renewable Energy <i>Premium</i> , is set down in the corresponding federal budget and accordingly depends on annual decisions.
	<i>How is revision and optimization performed?</i>	MAP: yearly revision EEWärmeG: progress report every four years.
	<i>What measures are planned on the use of CHP from RES?</i>	The Renewable Energy Sources Act (EEG) grants a CHP-bonus, provided that proof is furnished of compliance with recognized rules of technology and heat use, as established in a positive list (certification for both points required from environmental verifiers)
	<i>What measures are planned on the use of district heating from RES?</i>	Renewable Energies Heat Act (EEWärmeG): The EEWärmeG acknowledges compliance as part of an alternative measure if the heat energy needs are met directly from a local or district heating network (to a significant share from renewable energies: at least 50 % from waste heat plants, at least 50 % from CHP-plants or at least 50 % through a combination of these measures). Market Incentive Programme (MAP), KfW-Program Renewable Energy (Program section 'Premium'): This program supports the construction and development of a heating network supplied from renewable energy sources. The heating network must be supplied at least 50 % with heat from renewable energy sources or at least 20 % from solar radiation energy, in the case that otherwise almost exclusively high-efficiency heat from CHP-plants or heat pumps is used.
	<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	In the draft Law about the implementation of the RES-Directive (Europarechtsanpassungsgesetz - EAG) an extension of the obligation to cover a share of the thermal energy demand by renewable energies in existing buildings (but only for public buildings) is foreseen. In the Federal Government's Energy concept, a slight increase of the MAP budget is planned - the possibility to introduce a support mechanism independent from annual budget decisions will be considered by the government
	<i>What measures are planned on the use of heat from RES in industrial applications?</i>	So far no measures are planned.
	<i>Is there a RES Obligation for the building sector?</i>	Only for newly constructed buildings - NREAP does not consider building obligations for existing buildings.
	<i>Do public buildings feature best practices?</i>	No.

Table (Appendix) 53: Transport fuels from renewable sources support measure assessment (Germany)

Indicator		NREAP Assessment
4.5 RES-T support measures	<i>Is the long-term security of the support measures ensured?</i>	The German Biofuels Quota Law defines an obligation until 2020. Tax reduction for pure biofuels runs out in 2013/2015.
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ obligation etc...)?</i>	Biofuels in Germany can benefit from the mandatory quota <u>or</u> a tax reduction for pure biofuels. Only second generation biofuels are exempted from this rule.
	<i>Is there a concrete obligation/target per year (technology)?</i>	The amount of quota for biofuels is for diesel fuel 4.4 % and for petrol 2.8 % (by-energy). Since the year 2009 an overall quota applies, beyond both fuels. Initially it was 5.25 %; for the period 2010 to 2014 it amounts to 6.25 %. The minimum unchanged quotas for gasoline and diesel fuel continue to be applied. From the year 2015, the reference value for biofuel quotas will be changed from the current energy rates to net greenhouse gas reduction values starting with 3% GHG reduction of the fuel market, rising to 4.5% in 2017 and 7% in 2020
	<i>How is the system supervised and what happens in case of non-fulfilment of</i>	Revision is done by the German customs service. If the mineral oil industry does not fulfil the obligation, a penalty has to be paid. The

<i>the obligation mentioned in the line above?</i>	competent authority applies a levy calculated according to the energy value of the missing amount of biofuel. For the petrol quota, the levy amounts to 43 euro per gigajoule, for the diesel fuel quota and overall quota, the charge is 19 euros per gigajoule.
<i>How is revision and optimization performed?</i>	
<i>Is there an obligation for biofuels?</i>	See above
<i>Is there a specific support for 2nd generation biofuels?</i>	There is a tax exemption for Biomass-to-liquid fuels (BTL), Cellulosic ethanol and E85 until 2015. Biogas also gets a tax reduction until 2015.

Table (Appendix) 54: Comparison of technology-specific national RES deployment by 2020 (Germany)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
REPAP industry roadmap (proactive RES support)	28.3%	52549	19039	11225	2592	10922	1364	634	2303	278445	31850	3750	39500	0	0	112050	37000	18800	31200	2280	10931	1308	7380	0	1363	880
NREAP	19.6%	38647	14430	686	1245	8952	1692	711	1144	216935	20000	1654	41389	0	0	72664	31771	24569	23438	1450	6228	857	4443	0	667	261
Difference	-31%	-26%	-24%	-45%	-52%	-8%	24%	12%	-50%	-22%	-37%	-56%	5%	n.a.	n.a.	-35%	-14%	31%	-25%	-36%	-43%	-34%	-40%	n.a.	-51%	-70%

Note: n.a. ... not applicable

5.10 Annex for Greece

Table (Appendix) 55: Assessment criteria for administrative procedures and spatial planning (Greece)

Indicator	NREAP Assessment
Presence of a one-stop shop scheme?	The new government has merged several administrations into the Ministry of Environment Energy and Climate Change (MEECC) which now functions as a one-stop-shop for RES licensing.
Is the lead time for collecting all permits reasonable? If not, what is the lead time for typical RES-E projects?	The lead time for collecting all permits depends on the technology but could be described as lengthy. The authorization procedure exceeded on average 3.5 years for small hydro plants and wind farms. For small PV stations <2 MW the time was estimated to be 1 year, for larger stations about 2 years. p.38,39
Is the estimated typical number of permits required (excl. small-scale system) adequate?	There are 6 main procedural steps for large electricity units and several other intermediate approvals from various public authorities are needed towards granting the Operation License. p.38. Other sources mention that the permitting process is complicated, including around 20 different authorities and sub-permits (whereas it used to be around 40).
Are timetables communicated in advance?	The HTSO and RAE inform the public via their web pages on the date and basic descriptive information for each application and the date of receipt of the corresponding approval.
Is there an exception from authorization of small-scale systems?	The process for small scale systems is simplified. For solar thermal systems the only license that is needed is a “small works permit”. For the installation of low-capacity PV on buildings and small wind turbines in house yards, a small works permit is needed as well and could be replaced in some cases by a “simple” notification of the works. P.40, 41.
What is the level of permitting costs of a large project?	n/a. Fees are published in the official gazettes. p.41 The detailed level is not mentioned in the NREAP.
Are the fees required correlated to the administration costs?	n/a
Are renewables integrated in spatial planning?	A special physical planning framework for the development of RES and land management exists. This framework sets out policies aiming at prioritizing RES over other land uses. p.34
Is it assured that during the authorization process, the administration has no discretionary power?(e.g. denial or delay can be subject to legal options to the applicant)	n/a
Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time? (e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)	n/a
Is information available on the process?	Information is provided through websites. Interested persons can send requests for receiving information. p.39. However, no details are given about which information is available and which information is not.
Do administrative procedures consider RES specificities?	Depending on the capacity of the different technologies, exemptions from the requirement of receiving a license are made. P.39,40
Is there official guidance for local and regional administrative bodies?	CRES (Centre for Renewable Energy Source and Saving) prepared and distributed guidebooks for the assessment, evaluation, envi-

4.2.1 Administrative procedures and spatial planning

	ronmental impact and installation procedure for all different RES technologies. p.41,42
Are trainings planned for authorities in charge of authorization?	The Central Administration provides official explanatory documents and circulars to local authorities. A number of seminars that address administrative issues have taken place in the past. p.42

Table (Appendix) 56: Electricity infrastructure development and electricity network operation (Greece)

Indicator		NREAP Assessment
4.2.6 Electricity infrastructure development & 4.2.7 Electricity network operation	<i>Is the average time for grid connection adequate?</i>	The average time of getting grid approval exceeds 5 years if land expropriation time is included. p.56
	<i>Is there priority access or guaranteed access to the grid?</i>	Network capacity for a RES plant is reserved by the HTSO (Hellenic Transmission System Operator) after successful completion of the ETA (Environmental Terms Approval) procedure. If there is no more capacity available, the HTSO does not provide further connection rights. Priority access is ensured for RES power stations up to 50 MW _e , but only as long as system security and security of supply are not jeopardized. P.57,59
	What are the rules of cost sharing and bearing of network technical adaptations?	Cost bearing rules are defined in the grid operation code. With regard to cost sharing rules, the HTSO has to provide to the regulator a recommendation concerning rules for remuneration. The costs are attributed to the producer on a percentage basis ("shallow" connection cost charging). p.58. According to other resources, these rules are not objective, not transparent and discriminatory however.
	What are the costs for subsequently connected producers?	The HTSO has to provide an initial recommendation to the regulator for the remuneration rules of initially connected users by subsequently connected users. p.58,59
	Is the connection to existing electricity networks coordinated?	The general grid infrastructure development is the responsibility of the TSO. p.56. According to the assessment of non-cost barriers to renewable energy growth in EU Member States - AEON report, the electricity grid is very congested in areas with high RES potential in Greece and many of the islands are not connected to the main grid. Furthermore there is insecurity amongst investors. There were failures with bureaucratic processes on grid extension procedures, after an agreement was made before. For this reason there is the fear amongst investors that once a licence is granted, no grid access will remain. The TSO does also not have sufficient view on transmission extension. Moreover, expropriation and land acquisition rules for new transmission connections takes years.
	Is the Member State contributing to the development of a trans-European electricity network?	The Greek transmission system is interconnected to neighbouring countries Bulgaria, Macedonia, Albania, Italy, and Turkey. Another line to Bulgaria is planned. p.55,56
	Are there grid- market related measures to minimize RES-E curtailment?	Rules/measures do not yet exist as the penetration level of RES is rather low. p.60
	Is information on costs and connection timetable available?	The HTSO provides the connection offer with costs and connection timetable. This timetable is only indicative however. p.59
	Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?	No objective observations about the behaviour of the TSO and DSO could be found in the NREAP assessment. According to the assessment of non-cost barriers to renewable energy growth in EU Member States - AEON report, a conclusion that could be made is that the TSO does not have sufficient view on transmission extension.
	Are there simple administrative procedures for grid connection?	n/a
Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?	n/a	

What are the rules of cost sharing and bearing of network technical adaptations?	n/a
--	-----

Table (Appendix) 57: Electricity from renewable sources support measure assessment (Greece)

Indicator		NREAP Assessment
4.3 RES-E support measures	All support measures	Are the support levels sufficient for each technology? Support level for offshore wind is not sufficient; support for biogas is expected to be sufficient in most cases. The support levels for all other RES-E technologies are sufficient.
		Is there a technology specific support? Technology specific feed-in tariffs exist. p.69,71
		Is the long-term security of the support measures ensured? Long-term security is guaranteed. PPAs (Power Purchase Agreements) are valid for 20 years. For solar thermal units a duration of 25 years is foreseen. p.76
		Is there a maximum or minimum size for support? Technology specific tariffs exist. Some plant sizes are excluded from support, e.g. hydropower plants only get supported if they are smaller than 15 MW _e . p.76
		Does the support depend on energy efficiency criteria of the technology? n/a. No dependence on energy efficiency criteria is mentioned in the assessment.
		Are there multiple measures of which a project can benefit (e.g. tax credits, feed-in, etc.)? Small residential photovoltaic applications are eligible for a 20% tax deduction capped at € 700 per system.
	Regulatory framework	Is there a concrete obligation/target per year (technology)? Target for 2020 for the share of renewables is a 29% share in the gross electricity consumption. No technology specific targets exist. p.68
		How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above? No consequences for non compliance were set. p.68
		How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough? The feed-in tariff system exists, it is obligatory for the Public Power Corporation to buy the energy produced from the RES unit. It is financed through a surcharge on electricity consumption. p.71
		How are revision and optimization performed? Revision and optimization have taken place several times. p.70-77

Table (Appendix) 58: Heat from renewable sources support measure assessment (Greece)

Indicator		NREAP Assessment	
4.3 RES-H sup-port measures	All support measures	Are the support levels sufficient for each technology?	Support level for RES heating and cooling (RES H&C) is not sufficient. The new investment support law L3908/2011 provides support for energy saving technologies in general. However this type of support is not adequate for RES H&C if not in combination with other investments.
		Is there a technology specific support?	At the moment there is no general scheme on technology specific support. Small domestic RES-H&C as investments in any energy saving measure and natural gas equipment can apply for a 20% tax deduction capped at 700 euro but this is expected to be cancelled in 2011.
		Is the long-term security of the support measures ensured?	There is no long-term security of the support measures ensured.
		Does the support depend on energy efficiency criteria of the technology?	Law L3908/2011 financial investment support system is based on some energy efficiency related criteria.
		Are there multiple measures of which a project can benefit (e.g. tax credits, feed-in, etc.)?	No. According to the criteria that were mentioned in the NREAP, absence of fiscal support from other national support measures was demanded in order to receive support from investment subsidies. p.79 The same is valid for the new law L3908/2011.
	Regulatory framework	Is there a concrete obligation/target per year (technology)?	Yearly targets per sector exist until 2020. Furthermore estimations are made about the contribution of each RES H&C technology for the future (until 2020). No concrete obligations are set however. p.21,103
		How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?	A monitoring system will be developed by CRES.
		How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?	The OPE and OPC programmes provided economic incentives, either in the form of grants covering part of the initial cost, or in the form of for example financial leasing or tax rebates. It is founded based on the federal budget and therefore subject to annual budget decisions. p.78
		How is revision and optimization performed?	The investment subsidy schemes will continue under the L3908/2011. There is a planned revision of the tax deduction system in 2011.
	Support scheme specific indicators:	What measures are planned on the use of CHP from RES?	A feed-in tariff for electricity is available for CHP from RES. Furthermore, owners of CHP installations can apply for investment support under L3908/2011. (Only PV is excluded).
		What measures are planned on the use of district heating from RES?	District heating systems from RES can apply for investment support under L3908/2011. District heating is included as an option in the provisions of law 3851/2010.
		What measures are planned on the use of small scale heating and cooling from RES?	Small domestic RES H&C as investments in any energy saving measure and natural gas equipment can apply for a 20% tax deduction capped at Euro 700 but this is expected to be cancelled in 2011. NSRF (National Strategic Reference Framework) - 4th Framework Programme: e.g. a) "Exoikonomo" Program for energy efficiency in Local Authority organizations, b) "Exoikonomo kat'oikon" Program, c) Action "Green Tourism", d) Action "Green Enterprise" will have minor impact on RES H&C. The same is expected for "Building the future" Program energy saving addressing to existing stock of buildings but without financial support for the users, apart from a discount provided by the suppliers. It is foreseen to develop specific national energy policies and to

		establish new financial incentives for the support of the heat production from biomass and geothermal energy, along with the implementation of the Energy Performance of Buildings Directive (EPBD) but are not yet decided.
	What measures are planned on the use of heat from RES in industrial applications?	The new investment support law L3908/2011 provides support for energy saving technologies in general. However, this type of support is not adequate for RES H&C if not in combination with other investments.
	Is there a RES Obligation for the building sector?	The law L3851/2010 is setting new requirements that stipulate the coverage of 60% of the need of new buildings for hot water by solar thermal systems or by other energy supply systems based on RES, CHP, district heating on a large area scale/block scale as well as heat pumps after 01.01.2011. All new public buildings must cover the total of their primary energy consumption with RES, CHP, district heating on a large area scale/block scale as well as heat pumps by 31.12.2014 at the latest. From 2020 on however, all new buildings should cover their primary energy consumption with RES, CHP, district heating or heat pumps.
	Do public buildings feature best practices?	n/a

Table (Appendix) 59: Transport fuels from renewable sources support measure assessment (Greece)

Indicator		NREAP Assessment
4.5 RES-T support measures	Is the long-term security of the support measures ensured?	n/a
	Are there multiple measures of which a project can benefit (e.g. tax credits, obligation, etc.)?	A quota system exists for the yearly allocation of biofuels. p.81. Biofuels are exempted from fossil fuel taxes. In addition, subsidies varying between 40% and 55% should be available.
	Is there a concrete obligation/target per year (technology)?	A target of 5.75% and 10.1% share of biofuels for the transport sector existed for 2010 and 2020 respectively. p.87
	How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?	At the moment there is no authority monitoring sustainability criteria of biofuels. Consequences of non-fulfilment of the allocated biofuel quantities are not mentioned in the assessment. p.65
	How is revision and optimization performed?	Every year the biofuel quantities are reallocated. p.81
	Is there an obligation for biofuels?	Yes. The allocation of the quota depends on a formula including weighting factors for each type of raw material. Legislation for the sustainability criteria of biofuels does not yet exist. p.63,81
	Is there a specific support for 2nd generation biofuels?	n/a

Table (Appendix) 60: Comparison of technology-specific national RES deployment by 2020 (Greece)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
Unit	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	Ktoe
REPAP industry roadmap (proactive RES support)	21.7%	5,495	2,219	46	582	1,363	32	-	196	28,854	5,222	151	5,350	1,221	186	12,351	2,221	791	1,361	-	795	189	12	-	-	6
NREAP	18%	4,341	1,907	51	355	1,222	-	-	279	27,272	4,873	733	2,896	709	-	16,131	675	361	896	-	634	414	203	-	17	-
Difference	-17%	-21%	-14%	11%	-39%	-10%	-	-	42%	-5%	-7%	385%	-46%	-42%	-	31%	-70%	-54%	-34%	-	-20%	119%	1592%	n.a.	n.a.	n.a.

5.11 Annex for Ireland

Table (Appendix) 61: Assessment criteria for administrative procedures and spatial planning (Ireland)

Indicator	NREAP Assessment
Presence of a one-stop shop scheme?	A one stop shop system is not present. For the final license by the Commission for Energy Regulation, several permits have to be submitted, which need to be received from different organizations p.40
Is the lead time for collecting all permits reasonable? If not, what is the lead time for typical RES-E projects?	After all documents are submitted, the authorization is normally issued within six weeks. However, the documents have to be obtained from several authorities, situation that normally lengthens the process (e.g. Environmental Impact Statement or Waste license) p.23, 33, 40
Is the estimated typical number of permits required (excl. small-scale system) adequate?	The licensing and authorization authority requires the following permits: planning permission, Integrated Pollution Prevention Control License, addition to the water abstraction register, connection offer and REFIT acceptance where appropriate p.23, 40
Are timetables communicated in advance?	Timetables are not given in general. Once all requested documents are submitted to the Commission for Energy Regulation, the license can be expected within six weeks p.33
Is there an exception from authorization of small-scale systems?	Installations of 1 MW or less are generally exempted from authorization processes. A new decision paper proposes a lower administrative procedure for installations up to 40 MW. The final decision has not been taken so far p.33, 37, 42
What is the level of permitting costs of a large project?	n/a
Are the fees required correlated to the administration costs?	The fees are not directly related to the administration costs and differ depending on the plant size p. 43
Are renewables integrated in spatial planning?	n/a
Is it assured that during the authorization process, the administration has no discretionary power?(e.g. denial or delay can be subject to legal options to the applicant)	n/a
Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time? (e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)	Within four weeks before the decision of planning applications, appeals can be submitted to the “An Board Pleanála” p.41
Is information available on the process?	The Renewable Energy Information Office is the main source of information. However, the licensing and authorization authority and the TSO & DSO provide information p.39, 40
Do administrative procedures consider RES specificities?	The RES specificities are not taken into account directly as all applicants are handled according to the same criteria, but depending on the different technologies, specific standards and requirements take into account the particularities of the individual renewable energy technologies p.33, 41
Is there official guidance for local and regional administrative bodies?	Official guidance documents are available and are published online. The Renewable Energy Information Office deals exclusively with providing users and suppliers with updated accurate technical information p.44
Are trainings planned for authorities in	The staff is trained in house and for the planning process, decisions

4.2.1 Administrative procedures and spatial planning

charge of authorization?	are only made by trained planners with appropriate qualifications p.45
--------------------------	--

Table (Appendix) 62: Electricity infrastructure development and electricity network operation (Ireland)

Indicator		NREAP Assessment
4.2.6 Electricity infrastructure development & 4.2.7 Electricity network operation	Is the average time for grid connection adequate?	Decisions for infrastructure projects were made in 6 months to 1 year p.82 (i.e. “Gate” process p.83).
	Is there priority dispatch?	No priority access is available, only non-discriminatory connection for all electricity is guaranteed p.40. A reserved connection capacity for RES generation is in place (i.e. including enough to meet the 40% RES-E target).
	Is there priority access or guaranteed access to the grid?	Costs of the immediate connection assets to the network are born by the developer, while costs of additional reinforcements are recovered through a tariff for all the users of the system p.84
	What are the rules of cost sharing and bearing of network technical adaptations?	There are rules for sharing the costs between initially and subsequently connected producers p.85
	What are the costs for subsequently connected producers?	The 2006 Planning and Development (Strategic Infrastructure) Act is designed to ensure coordination between local, regional and national approaches p.82
	Is the connection to existing electricity networks coordinated?	No direct interconnection to European electricity network is available. Direct interconnection is foreseen between Ireland and France p.35, 36, 37
	Is the Member State contributing to the development of a trans-European electricity network?	The usage of interconnections and of demand side response are important measures to minimize RES-E curtailment - especially for wind p. 89
	Are there grid- market related measures to minimize RES-E curtailment?	There is publicly available information on the standard transmission charges and timelines p.86
	Is information on costs and connection timetable available?	n/a
	Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?	n/a
	Are there simple administrative procedures for grid connection?	n/a
	Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?	n/a

Table (Appendix) 63: Electricity from renewable sources support measure assessment

Indicator		NREAP Assessment
4.3 RES-E support measures	All support measures	
	Are the support levels sufficient for each technology?	Sufficiency for wind (offshore and onshore). Biogas, hydro and solar PV should be reviewed.
	Is there a technology specific support?	Technology specific support is defined for the different RES technologies p.105
	Is the long-term security of the support measures ensured?	Long-term security of the support measures (15 years) p.105
	Is there a maximum or minimum size for support?	Maximum and minimum sizes are available for the different RES categories, which may apply for the feed-in tariff p.107

Regulatory framework	Does the support depend on energy efficiency criteria of the technology?	There is no dependence on energy efficiency criteria p.106
	Are there multiple measures of which a project can benefit (e.g. tax credits, feed-in, etc.)?	Multiple measures can be possible, e.g. projects could obtain the feed-in tariff as well as the a relief for investments p.107
	Is there a concrete obligation/target per year (technology)?	A 40% target for RES-E was set with a sub-target for ocean energy of 500 MW p.103
	How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?	The scheme is managed by the Department of Communication, Energy & Natural Resources, while the Commission for Energy Regulation is responsible for the calculation of payable accounts p.104
	How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?	The budget and funding is ensured via a public service obligation levy p.104
	How are revision and optimization performed?	There is not specific an optimization plan, but the responsible bodies are in continued communication with industry participants p.105

Table (Appendix) 64: Heat from renewable sources support measure assessment (Ireland)

Indicator		NREAP Assessment	
4.3 RES-H support measures	All support measures	Are the support levels sufficient for each technology?	The support levels for district heating, biomass, solar thermal and heat pumps should be increased in order to stimulate growth.
		Is there a technology specific support?	The support is technology specific p.116
		Is the long-term security of the support measures ensured?	Long-term security is guaranteed as the support schemes comprise investments subsidies and feed-in tariffs with 15 years of duration p.115
		Does the support depend on energy efficiency criteria of the technology?	In the CHP program, installations need to meet the terms of the 2004 Cogeneration Directive on High Efficiency CHP. For reheat, installations must meet certain boiler efficiency criteria p.116
		Are there multiple measures of which a project can benefit (eg. tax credits, feed-in, etc.)?	Multiple measures can be possible p.116
	Regulatory framework	Is there a concrete obligation/target per year (technology)?	n/a
		How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?	All grant schemes are managed by the Sustainable Energy Authority of Ireland p.115
		How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?	The budget from REFIT is ensured via a public service obligation levy. There is no information about the other schemes p.115
		How is revision and optimization performed?	All grant schemes have been periodically revised p.115
	Support	What measures are planned on the use of CHP from RES?	Measures on usage of CHP from RES are available e.g. for biomass CHP p.118

	What measures are planned on the use of district heating from RES?	Measures on the usage of district heating are included in the Reheat program p. 114
	What measures are planned on the use of small scale heating and cooling from RES?	Measures on the usage of small-scale heating and cooling systems from RES heat are included in the Greener Homes scheme p.114
	What measures are planned on the use of heat from RES in industrial applications?	Measures on the usage of heat from RES in industrial applications are included in the Reheat and CHP programs p. 114
	Is there a RES Obligation for the building sector?	There is an mandatory RES obligation for the building sector p.55, 56
	Do public buildings feature best practices?	Best practice measures in public buildings were introduced p.58

Table (Appendix) 65: Transport fuels from renewable sources support measure assessment (Ireland)

Indicator		NREAP Assessment
4.5 RES-T support measures	Is the long-term security of the support measures ensured?	n/a
	Are there multiple measures of which a project can benefit (e.g. tax credits, obligation, etc.)?	Multiple measures per project are available, e.g. an obligation and tax exceptions p.120, 121
	Is there a concrete obligation/target per year (technology)?	There is no differentiation between different fuels or separate targets for individual fuels p.120
	How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?	The National Oil Reserves Agency is the Administrator for the biofuels obligation scheme. Non-fulfilment results in a non-compliance fee p.121
	How is revision and optimization performed?	The legislation includes a review of the ongoing impact of biofuels and, thereby, any change in their suggested penetration rate p.121
	Is there an obligation for biofuels?	Initial effective penetration rate of 4% (by volume), effective penetration rate of 6% scheduled to take place in 2012 and a 10% planned in 2020 p.120
	Is there a specific support for 2nd generation biofuels?	There will be a double certification (two tradable certificates per unit) for biofuels produced from wastes, residues, non-food cellulosic material, lignocellulosic material and algae p.120

Table (Appendix) 66: Comparison of technology-specific national RES deployment by 2020 (Ireland)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
Green-X ACT scenario (proactive RES support) (prepared within the REPAP project)	19%	2.603	747	5	50	545	55	-	93	16	907	-	1163	-	907	7466	2454	1524	1965	-	448	189	4	-	-	8
NREAP	16%	2.269	591	-	20	453	33	-	84	14	698	-	-	-	233	10223	1745	686	314	-	482	139	342	-	37	1
Difference	-20%	-15%	-26%	n.a.	-150%	-20%	-65%	n.a.	-11%	-15%	-23%	n.a.	n.a.	n.a.	-74%	37%	-29%	-55%	-84%	n.a.	7%	-36%	99%	n.a.	100%	-789%

5.12 Annex for Italy

Table (Appendix) 67: Assessment criteria for administrative procedures and spatial planning (Italy)

Indicator	NREAP Assessment
<i>Presence of a one-stop shop scheme?</i>	Yes, one-stop shop scheme is introduced, but not well implemented. (NREAP, p. 47) (AEON, p. 8, 10)
<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	Despite set deadlines, lead-time is considered too long. Average time varies from 12 months for huge biomass plants to 42 months for wind power plants onshore. (AEON, p.12,14)
<i>Is the estimated typical number of permits required (excl. small-scale system) adequate?</i>	Only one permit is required. (AEON, p. 13)
<i>Are timetables communicated in advance?</i>	There are precise timetables communicated, but the deadlines are largely missed. (NREAP, p. 47) (AEON, p. 9)
<i>Is there an exception from authorization of small-scale systems?</i>	Photovoltaic panels and solar thermal collectors on buildings can be installed without any authorization. Micro-cogeneration (up to 50 kW) is subjected only to notification. (NREAP, p. 41) Moreover, there is also a simplified procedure for small-scale plants (up to 1 MW) (NREAP, p. 37ff)
<i>What is the level of permitting costs of a large project?</i>	Permitting cost vary from 75,000 €/MW _e for large biomass plans to 375,000 €/MW _e for large-scale photovoltaic plants. (AEON, p. 14)
<i>Are the fees required correlated to the administration costs?</i>	Unspecified
<i>Are renewables integrated in spatial planning?</i>	Regional energy plan harmonises the decision taken at the various levels of spatial planning. (NREAP, p. 37) For hydro installations a lack of spatial planning is noticed. (AEON, p. 12)
<i>Is it assured that during the authorization process, the administration has no discretionary power? (e.g. denial or delay can be subject to legal options to the applicant)</i>	n/a
<i>Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time? (e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)</i>	n/a
<i>Is information available on the process?</i>	All information concerning the authorisation process must be available on the responsible administrations website. (NREAP, p. 46) In practice there are several problems getting complete information on the process, because of the lack of national guidelines. (AEON, p. 10)
<i>Do administrative procedures consider RES specificities?</i>	This question is not answered, but the authorities are generally poorly informed on RES technologies. (AEON, p. 11)
<i>Is there official guidance for local and regional administrative bodies?</i>	In October 2009, the Ministry of Economic Development issued a guidance document for supporting public administration bodies in matters relating to renewable energy sources. (NREAP, p. 48)
<i>Are trainings planned for authorities in charge of authorization?</i>	According to the NREAP each public body envisages to establish training courses for the employees appointed to manage authorisation, certification and licensing procedure related to RES projects. (NREAP, p. 49)

4.2.1 Administrative procedures and spatial planning

Table (Appendix) 68: Electricity infrastructure development and electricity network operation (Italy)

Indicator		NREAP Assessment
4.2.6 Electricity infrastructure development & 4.2.7 Electricity network operation	<i>Is the average time of grid connection adequate? If not, give examples.</i>	Lead-time for getting grid connection is very long and wide spread. Time varies between 6 and 30 months. (AEON, p. 47, 50)
	<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	Network operators must give priority treatment (dispatch and access) to connection request from renewable sources, but execution is not ensured. (NREAP, p. 86) (AEON, p. 47)
	<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Rules are not explained, but they are supposed to be objective, transparent and non-discriminatory. (NREAP, p. 87)
	<i>What are the costs for subsequently connected producers?</i>	Italy introduced “lump-sum” cost, which depends on the specific nature of the connection. Precise explanation of this method is absent, but it should ensure that the price for subsequently and initially connected producers is equal. (NREAP, p. 90)
	<i>Is the connection to existing electricity networks coordinated?</i>	n/a
	<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Seven new interconnection lines are planned. 3 with Northern countries, and 4 with countries in the East. (NREAP, p. 83, 84)
	<i>Are there grid-market related measures to minimize RES-E curtailment?</i>	TERNA (TSO) is obliged to define the necessary monitoring procedures for the predictability of feeding in electricity produced by RES plants. (NREAP, p. 94)
	<i>Is information on costs and connection timetable available?</i>	A very detailed and precise timetable is published. Deadlines differing by the connection voltage. A cost estimate is available 20 to 60 days after the connection request. (NREAP, p. 90, 91)
	<i>Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?</i>	n/a
	<i>Are there simple administrative procedures for grid connection?</i>	n/a
<i>Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?</i>	A sanction system is in place but considered of little significance. (AEON, p. 49)	

Table (Appendix) 69: Electricity from renewable sources support measure assessment (Italy)

Indicator		NREAP Assessment	
4.3 RES-E support measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Current support levels appear sufficient for wind onshore and offshore, solar PV, small hydro and all kind of biomass. (RE-Shaping) Green certificates will be issued for a period of 15 years. Feed in tariffs will also be paid for 15 years, except photovoltaic (20 years) and solar thermal (25 years). Interregional operation plan on energy remain operational until the end of 2013. (NREAP, p. 117, 118, 122, 125) No - but for biomass projects the introduction of energy efficiency criteria for being qualified for certificate trading is researched. (NREAP, p. 120)
		<i>Is there a technology specific support?</i>	Feed-in tariffs as applicable for small-scale RES projects differ by technology. (NREAP, p. 123) Large-scale RES projects are supported by green certificates banded according to technology since 2007 (i.e. technology-specific weighting factors are applied, varying the number of certificates issued according to the renewable source used) (NREAP, p. 120)
		<i>Is the long-term security of the</i>	Green certificates will be issued to RES projects for the first 15

Regulatory framework	<i>support measures ensured?</i>	years of operation. Feed in tariffs are guaranteed for a period of 15 years, except photovoltaic (20 years) and solar thermal power (25 years). Besides, the interregional operation plans on energy remain operational until the end of 2013. (NREAP, p. 117, 118, 122, 125)
	<i>Is there a maximum or minimum size for support?</i>	Feed-in tariff (Photovoltaic and solar thermal): Photovoltaic plants must have a capacity equal or over 1 kW. Solar thermal plants must capture a surface of at least 2,500 m ² with a capacity of at least 1.5 kW. Green certificates: Plants must have a capacity larger than 1 kW. Kyoto Rotating Fund have precise boundaries: Wind power and hydroelectric power plants between 1 and 200 kW, solar thermal not greater than 200 m ² , biomass power plants between 50 and 450 kW _t and photovoltaic plants between 1 and 40 kW _p Feed-in tariff (small-scale RES producer): Capacity must be over 1 kW and under 1 MW (200 kW for wind power) (NREAP, p. 111-130)
	<i>Does the support depend on energy efficiency criteria of the technology?</i>	No - but for biomass projects the introduction of energy efficiency criteria for being qualified for certificate trading is researched. (NREAP, p. 120)
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits + feed-in etc...)?</i>	In general, a RES project cannot be supported by more than one support measure. (NREAP, p. 120) However, feed-in tariffs for solar energy may be combined with e.g. investment incentives up to certain limitations (NREAP, p. 1144)
	<i>Is there a concrete obligation/target per year (technology)?</i>	An overall target for new RES-E was introduced in 1999, aiming for a RES-E share of 2 % by then. The current quota target for 2010 is set at 6.05 %, and this increases every year by 0.75 percentage points. (NREAP, p. 110) With respect to solar energy the envisaged goal is to establish until 2013 3 GW of photovoltaic capacity, and Solar thermal power constructions should then capture a surface of 2 million m ² . (NREAP, p. 113)
	<i>How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?</i>	The energy service regulator supervises the fulfilment of the overall quota target. A sanction system is installed but undefined. (NREAP, p. 110)
	<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Feed-in tariff (Photovoltaic and solar thermal) and all-inclusive tariff: System is funded by a fee on electricity consumption for final customers. (NREAP, p. 112, 123) Interregional operational plan on energy: European Union Structural Funds (FS) and the Italian Underused Areas Fund (FAS) cover funding. Financing till the end of the scheme (2013) is guaranteed. (NREAP, p. 125) Kyoto rotating fund: Budget is € 200 million per year for three years (2010-2012) (NREAP, p. 128)
	<i>How are revision and optimisation performed?</i>	Feed-in tariff (Photovoltaic and solar thermal): New tariffs are set every second year, considering energy price level and the price of photovoltaic components. Green certificate: No concrete revision plan is set. But several changes were undertaken during the last years. (NREAP, p. 119) All-inclusive tariff: Optimisation can take place every three years. (NREAP, p. 123) Interregional operational plan on energy and Kyoto rotating fund: Regular revision is planned but schemes have only been operational for a few months. (NREAP, p. 125, 128)

Table (Appendix) 70: Heat from renewable sources support measure assessment (Italy)

Indicator		NREAP Assessment	
4.3 RES-H sup-port measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Support for centralized and decentralized biomass heating plants should be approved. Support for solar thermal installations and ground-source heat pumps is sufficient. (RE-Shaping)
		<i>Is there a technology specific support?</i>	There is no dedicated technology specific support.
		<i>Is the long-term security of the support measures ensured?</i>	Tax deduction measure will expire at the end of this year. (NREAP, p. 141)
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	Main goal of the “Energy Efficiency Credit” is to promote energy efficient technologies. (NREAP, p. 136) Tax deduction does not depend on efficiency criteria. (NREAP, p. 139, 140)
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	One project can benefit from “Energy efficiency credit” and tax reduction. (NREAP, p. 141)
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	A concrete overall target is only set for energy efficiency: The goal is to save 3.5 Mtoe/year electricity gas and 2.5 Mtoe/year gas till 2012. (NREAP, p. 134)
		<i>How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?</i>	AEEG (Regulatory Authority for Electricity and Gas) checks that each distributor holds credits corresponding to the national target. Otherwise additional quotas could be set, or the national target could be updated. Sanction system is installed but not made concrete. (NREAP, p. 134)
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Tax deduction depends on decisions made on the annual budget. (NREAP, p. 140) “Energy Efficiency Credit” is financed through tariff for electricity and natural gas transportation and distribution. (NREAP, p. 135)
		<i>How is revision and optimization performed?</i>	“Energy Efficiency Credit” is regularly revised. AEEG drafts quarterly reports on progress. (NREAP, p. 136) Tax deduction was installed 2007 and revised several times. Applicants have to send a report. Several authorities review this reports. (NREAP, p. 140)
	Support scheme specific indicators:	<i>What measures are planned on the use of CHP from RES?</i>	“Energy Efficiency Credit” promotes the use of CHP from renewable sources indirect. (NREAP, p. 142)
		<i>What measures are planned on the use of district heating from RES?</i>	Green certificates consider CHP from RES connected to district heating. Loans for operations on heat distribution networks are granted. Users, which get connected to district heating networks, fed by geothermal or biomass source can receive a tax incentive. (NREAP, p. 142, 143)
		<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Main measure is the tax deduction mechanism. Additionally the “Sun in Public Building” project promotes solar thermal systems. (NREAP, p. 143)
<i>What measures are planned on the use of heat from RES in industrial applications?</i>		No specific measure for the promotion of RES in industrial application is designated. (NREAP, p. 143)	
<i>Is there a RES Obligation for the building sector?</i>		New or renovated buildings must provide 50 % of the annual primary energy requirement for the production of domestic hot water by using renewable energies. Buildings in historical centres must provide 20 %. (NREAP, p. 59)	
<i>Do public buildings feature best practices?</i>		The “Extraordinary Energy Efficiency Plan” published in 2009 should encourage public administrative bodies to use renewable energies. (NREAP, p. 64)	

Table (Appendix) 71: Transport fuels from renewable sources support measure assessment (Italy)

Indicator		NREAP Assessment
4.5 RES-T support measures	<i>Is the long-term security of the support measures ensured?</i>	Excise benefit for biofuels will end this year. (NREAP, p. 149)
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ obligation etc...)?</i>	No, only excise tax reduction is possible. (NREAP, p. 149)
	<i>Is there a concrete obligation/target per year (technology)?</i>	No concrete target is set.
	<i>How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?</i>	Administrative and spot checks on operator's premises are possible. A fine varying from € 600 to € 900 depending on the deviation is charged. (NREAP, p. 147)
	<i>How is revision and optimization performed?</i>	An excessive benefit was adjusted according to trends in biofuel production costs. (NREAP, p. 150)
	<i>Is there an obligation for biofuels?</i>	Quota of renewables on transport fuels rises from 3,5 % (2010) to 4,5 % (2012). (NREAP, p. 146)
	<i>Is there a specific support for 2nd generation biofuels?</i>	n/a

Table (Appendix) 72: Comparison of technology-specific national RES deployment by 2020 (Italy)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
REPAP industry roadmap (proactive RES support)	18 %	25631	9133	2487	1455	5117	75	0	0	148467	51046	12816	24908	1588	38	29358	838	16760	11153	n/a°	3732	324	163	0	0	3246**
NREAP	16.2 % ***	21490	10456	300	1586	5254	266	150	2900*	98885	42000	6750	9650	1700	5	18000	2000	7900	6020	4860	2899	600	1880	0	369	50
Difference	-10%	-16%	13 %	-88%	8%	3%	72%	100%	100%	-33 %	-18%	-47%	-61%	7%	-87%	-39%	58%	-53%	-46%	n/a	-22%	46%	91%	-100%	-98%	

° n/a ... Not applicable. In the REPAP industry roadmap no separate category is applied to “liquid biomass” used for power generation - i.e. for modelling purposes they are included in the category “solid biomass”.

* Estimate does not include the energy capture by pumps used in cooling, estimated between 1 and 2 Mtoe

** 3,199 ktoe net biofuel import, 47 ktoe 2nd generation biofuels

*** Italy counts on imports through the use of cooperation mechanisms for fulfilling its 2020 RES target of 17%

5.13 Annex for Latvia

Table (Appendix) 73: Assessment criteria for administrative procedures and spatial planning (Latvia)

Indicator	NREAP Assessment
<i>Presence of a one-stop shop scheme?</i>	There is no one-stop shop scheme implemented in Latvia.
<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	In Latvia there is a long lead time for RES-projects. The time to collect the necessary permits is provided in the NEREAP and sums up to approximately 15-20 month. This corresponds with the AEON Report that gives a minimum lead time of 18 month (8 permits) for wind and 6 month (3 permits) for biomass projects.
<i>Is the estimated typical number of permits required (excl. small-scale system) adequate?</i>	The number of permits required is very high. RES-projects suffer from a lack of coordination between responsible authorities. According to the AEON Report RES-projects face a long lasting, troublesome and complex application procedure including corruption in spatial planning in some cases.
<i>Are timetables communicated in advance?</i>	For single permits times to receiving a permit are given. A timetable for the whole authorisation procedure is not available, as authorities related to RES are not coordinated.
<i>Is there an exception from authorization of small-scale systems?</i>	There are no special procedures for small-scale systems, however Latvia is drafting a net metering and a notification procedure for small-scale systems.
<i>What is the level of permitting costs of a large project?</i>	The NREAP does not provide any information about costs or fees related to the authorisation process.
<i>Are the fees required correlated to the administration costs?</i>	The NREAP does not provide any information about costs or fees related to the authorisation process.
<i>Are renewables integrated in spatial planning?</i>	Renewables are not integrated in spatial planning; even though the Latvian Energy Law prescribes that local governments shall consider RES utilisation and cogeneration potential.
<i>Is it assured that during the authorization process, the administration has no discretionary power? (e.g. denial or delay can be subject to legal options to the applicant)</i>	The NREAP does not provide any information about legal options for the applicant.
<i>Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time? (e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)</i>	The NREAP does not provide any information about public hearing mechanisms.
<i>Is information available on the process?</i>	Responsible authorities ensure the availability of all types of information. According to the AEON Report the authorities in charge are not coordinated and responsibilities are not clearly defined. As a result information may be inconsistent.
<i>Do administrative procedures consider RES specificities?</i>	Administrative procedures do not consider RES specificities. According to the AEON Report the incomplete or the inexistent RES legislature results in an instable overall management system on the administrative level, this is perceived as the most significant barrier for Latvia's renewable energy development.
<i>Is there official guidance for local and regional administrative bodies?</i>	There is no official guidance for local and regional administrative bodies.
<i>Are trainings planned for authorities in charge of authorization?</i>	No special training is given to employees working with the reviewing and issuing of permits for renewable energy installations.

4.2.1 Administrative procedures and spatial planning

Table (Appendix) 74: Electricity infrastructure development and electricity network operation (Latvia)

Indicator	NREAP Assessment
<i>Is the average time for grid connection adequate? If not, give examples.</i>	The NREAP states, that current legislation prescribes two months as the time for permits to be received. The Ministry makes a decision on the issuing of a permit examines within 30 days. System operators shall specify connection sites and conditions within 60 days of receiving applications. According to the AEON Report grid connection takes 6 to 12 months though very few developers apply for grid connection due to high connection costs.
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	Latvia does not stipulate any regulation that transmission system operators should give preference to the connection of generating installations that use RES. System operators have to provide system connection, if the system participant fulfils the technical requirements stipulated by the system operator. The Latvian Electricity Market Law guarantees generators access to the grid, though the NREAP also states that currently, guaranteed connection for new installations is not planned, mainly because of limits on grid capacity.
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Currently the generator bears all costs related to system connection and necessary grid enforcements. Latvia plans to oblige system operators to cover connection costs (not including line and cable construction from plant to connection point). The refund is graduated by plant size. For plants smaller than 500 kW 100% are covered within 1 year; for plants smaller than 1 MW 100% are covered within 5 years; for plants with a capacity higher than 5 MW only 50% are covered within 5 years.
<i>What are the costs for subsequently connected producers?</i>	There are no rules for sharing the costs between initially and subsequently connected generators.
<i>Is the connection to existing electricity networks coordinated?</i>	Different steps in the application procedure for grid connection are not coordinated. Applicants are responsible for coordination of different requirements between Public Utilities Commission, system operator and different local institutions.
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	NREAP states that existing inter-country connections are adequate and 2020 is the earliest date for an additional Latvia-Estonia connection.
<i>Are there grid-market related measures to minimize RES-E curtailment?</i>	There are no special measures to minimize RES-E curtailment. It is anticipated that the required amendments to legislation will be made in 2010 and 2011.
<i>Is information on costs and connection timetable available?</i>	General information on the application procedure is available from the Public Utilities Commission. As the operator has to construct grid connection and bear costs, information on connection costs are not provided by TSO or DSO. Though technical rules shall be specified within 60 days of application. It is planned that the TSO will publish information about application procedure and technical requirements.
<i>Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?</i>	As the operator has to bear construction work and connection costs, these costs are strongly dependent on the existing grid infrastructure and local conditions. No maximum levels of costs are defined.
<i>Are there simple administrative procedures for grid connection?</i>	According to the AEON Report administrative procedures are complex and are burdened with uncertainty.
<i>Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?</i>	n/a

 4.2.6 Electricity infrastructure development &
 4.2.7 Electricity network operation

Table (Appendix) 75: Electricity from renewable sources support measure assessment (Latvia)

Indicator		NREAP Assessment	
4.3 RES-E sup-port measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Tariffs paid appear to be sufficient for wind onshore, biomass, biogas, and small hydro and photovoltaic. For wind offshore the same tariff as for wind onshore is applied. Therefore the wind offshore support level is far below current electricity generation costs.
		<i>Is there a technology specific support?</i>	There is a technology specific support. Tariffs are differentiated depending on RES type and installed electrical capacity.
		<i>Is the long-term security of the support measures ensured?</i>	Currently feed-in tariffs are paid for 20 years. Latvia plans to change RES support to feed-in premiums that are paid for 10 to 15 years.
		<i>Is there a maximum or minimum size for support?</i>	Under the existing fixed feed-in tariff as well as under the planned feed-in premiums support for hydropower plants with capacity higher than 5 MW is not possible. Support for cogeneration plants is not limited. Funds from Latvia's Rural Development Programme 2007-2013 for biomass is limited to LVL 4,000,000.
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	Energy efficiency criteria for cogeneration plants are not specified in the NREAP: Energy Law. Cogeneration plants using RES can gain support for if the primary energy resources saving compared to separate generation is at least 1%.
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits + feed-in etc...)?</i>	Combining different support schemes laid down in the Energy Market Law is not possible. If a project complies with the requirements of multiple measures, the operator has to choose one measure. Currently options to combine support mechanisms are being evaluated, within the drafting of a Law on Renewable Energies. Funding schemes may be combined under certain conditions, ensuring that funding does not exceed 50% to 70% of project investments.
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	The overall target for RES-E in electricity consumption is 60% in 2020. Technology specific annual obligations are neither in place nor planned.
		<i>How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?</i>	The NREAP does not mention any measures to supervise target-fulfilment. Though the draft Law on Renewable Energy provides for a monitoring procedure for target fulfilment, consequences in case of non-fulfilment are neither in place nor planned.
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Costs for Energy Market Law measures are covered by end consumers of electricity. Financial support on Investments for cogeneration and agricultural and forestry biomass is funded by EU Coherence Fund.
		<i>How are revision and optimization performed?</i>	Existing regulation does not provide for planned periodic revisions, though regulations have been revised several times. Support schemes based on EU funding monitoring and amendments are being coordinated with the European Commission.

Table (Appendix) 76: Heat from renewable sources support measure assessment (Latvia)

Indicator		NREAP Assessment	
4.3 RES-H sup-port measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	The support level is sufficient for centralised and decentralised biomass, as well as heat pumps. The support for solar thermal heat is far to low.
		<i>Is there a technology specific support?</i>	RES-H support is based on financial incentives as direct grants and soft loans. These are not technology-specific.
		<i>Is the long-term security of the support measures ensured?</i>	Support is mainly based on EU structural funds for the period 2007 to 2013. The Latvian Environmental Protection Fund announces tenders every year. There is no long-time security in support measures.
		<i>Does the support depend on en-</i>	n/a

		<i>ergy efficiency criteria of the technology?</i>	
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits + feed-in etc...)?</i>	n/a
Regulatory framework		<i>Is there a concrete obligation/target per year (technology)?</i>	n/a
		<i>How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?</i>	n/a
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Support is financed by EU structural funds for the period 2007 to 2013. For planned measures state, EU or other funding as well as climate change financial instruments are envisaged.
		<i>How is revision and optimization performed?</i>	n/a
		<i>What measures are planned on the use of CHP from RES?</i>	Currently electricity from CHP plants based on biomass is supported with fixed feed-in tariffs, technology change from fossil fuels to RES is supported with climate change financial instruments and construction of CHP-plants is supported with funds from the EU cohesion fund. Support for fuel change to RES is furthermore envisaged within the draft Law on Renewable Energy.
Support scheme specific indicators:		<i>What measures are planned on the use of district heating from RES?</i>	Currently district heating from RES is supported with fiscal measures from EU structural fund. The draft Law on Renewable Energy envisages payment of premiums for RES-heat, support for conversion to and construction of biomass fuelled heat production, support for increasing efficiency of heat generation.
		<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Currently investment support based on cohesion fund and climate change financial instrument is in force. No further specific measures to support small scale heating from RES are planned, though planned measures to support renewable heat production and increase efficiency within the draft Law on Renewable Energy may be also available for small scale installation.
		<i>What measures are planned on the use of heat from RES in industrial applications?</i>	Support schemes to promote the use of RES in industry sector heating and cooling are planned to be drawn up by 31 December 2010.
		<i>Is there a RES Obligation for the building sector?</i>	Building legislation does not prescribe minimum levels for the use of renewable energy. To promote the use of RES in buildings, planning, construction and building energy performance legislation will be reviewed. By 2012 the Ministry of Economics will incorporate minimum renewable energy utilisation requirements for new and refurbished buildings in the relevant construction policy guidelines.
		<i>Do public buildings feature best practices?</i>	Public buildings do not feature best practise.

Table (Appendix) 77: Transport fuels from renewable sources support measure assessment

Indicator		NREAP Assessment
4.5 RES-T support measures	<i>Is the long-term security of the support measures ensured?</i>	n/a
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ obligation etc...)?</i>	n/a
	<i>Is there a concrete obligation/target</i>	No concrete obligations per year are mentioned. RES should con-

<i>per year (technology)?</i>	tribute 5.75% by the end of 2010 and 10% by 2020 to the energy consumption in the transport sector.
<i>How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?</i>	n/a
<i>How is revision and optimization performed?</i>	n/a
<i>Is there an obligation for biofuels?</i>	There is a mandatory admixture of 5%.
<i>Is there a specific support for 2nd generation biofuels?</i>	n/a

Table (Appendix) 78: Comparison of technology-specific national RES deployment by 2020 (Latvia)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	%	Ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
REPAP industry roadmap (pro-active RES support)	49%	2286	1631.5	-	10.9	1605.7	5.6	-	9.4	5747	3271	-	9	-	-	1302	71	746*	348	-	57.4	22.1	10.3	-	-	25**
NREAP	41%	1918	1396	-	2	1343	49	-	4	5191	3051	-	4	-	-	519	391	642	584	-	83	9	20	-	6	48***
Difference	-16%	-16%	-14%	-	-82%	-16%	+775%	-	-57%	-10%	-7%	-	-56%	-	-	-60%	+451%	-14%	+68%	-	+45%	-59%	+94%	-	-	+92%

* including 19 GWh biowaste

** including 8.5 ktoe 2nd generation biofuels and 16.6 ktoe biofuel imports

*** including 9 ktoe bioethanol imports and 8 ktoe biodiesel imports

5.14 Annex for Lithuania

Table (Appendix) 79: Assessment criteria for administrative procedures and spatial planning (Lithuania)

Indicator	NREAP Assessment
<i>Presence of a one-stop shop scheme?</i>	There is no one-stop shop scheme implemented in Lithuania. Administrative procedures to get all necessary permits are complicated. Especially spatial planning procedures take 1-2 years and are a precondition to apply for a construction permit. Currently there is a lack of coordination between the various responsible institutions. In order to improve the coordination guidelines based on best practices are planned.
<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	The NREAP does not specify lead times. As renewable energies are not considered in spatial planning, procedures to obtain necessary spatial planning documents and approvals take 1-2 years. According to the AEON Report the minimum lead time is 3 years for wind energy and 2 years for biogas. Typical lead times may be longer.
<i>Is the estimated typical number of permits required (excl. small-scale system) adequate?</i>	The NREAP does not specify how many permits are required. According to the AEON Report the necessary permits for wind energy installations varies and may exceed 15. For other RES-E technologies 3-4 permits are required in average. Especially for wind energy the number of necessary permits is inappropriate.
<i>Are timetables communicated in advance?</i>	A timetable is set for the issuing of the construction permit, but not for other necessary permits.
<i>Is there an exception from authorization of small-scale systems?</i>	There is no exception from authorization of small scale systems. For small scale systems (wind <250kW, solar < 100kW, biogas plants close to livestock farming buildings up to 1MW) detailed plans are not necessary. Lithuania wants to revise the procedures for small-scale RES-E.
<i>What is the level of permitting costs of a large project?</i>	The NREAP does not report permitting costs. According to the AEON Report permitting costs are perceived as high.
<i>Are the fees required correlated to the administration costs?</i>	Fees are correlated to administrative costs and are revised on a regular basis.
<i>Are renewables integrated in spatial planning?</i>	Renewables are not integrated in spatial planning.
<i>Is it assured that during the authorization process, the administration has no discretionary power? (e.g. denial or delay can be subject to legal options to the applicant)</i>	An applicant for an authorisation or licence has the right to require that the issuing authority should explain the reasons for the delay or refusal. Legal options are not mentioned in the NREAP.
<i>Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time? (e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)</i>	n/a
<i>Is information available on the process?</i>	Due to the lack of coordination between the various responsible institutions, information is difficult to access. Lithuania is currently introducing an information system for the issuance of construction.
<i>Do administrative procedures consider RES specificities?</i>	RES-specificities are not widely considered in administrative procedures. Requirements in spatial planning procedures are reduced for small scale systems.
<i>Is there official guidance for local and regional administrative bodies?</i>	Official guidance for local and administrative bodies does not yet exist, but is envisaged within the National Strategy for the Development of Renewable Energy Sources for 2010-2015.

4.2.1 Administrative procedures and spatial planning

<i>Are trainings planned for authorities in charge of authorization?</i>	Trainings are not planned.
--	----------------------------

Table (Appendix) 80: Electricity infrastructure development and electricity network operation (Lithuania)

<u>Indicator</u>	<u>NREAP Assessment</u>
<i>Is the average time for grid connection adequate? If not, give examples.</i>	The NREAP does not include information on the time of grid connection. According to the AEON Report grid connection takes from 12 to 24 month.
<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	Currently there are no priority connection rights. Lithuania envisages an obligation for TSO and DSOs to ensure access to the grid for RES. The NREAP does not include information on priority dispatch for RES.
<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Rules for cost sharing and bearing are envisaged in implementation of the National Strategy for Development of Renewable Energy Sources for 2010-2015. Producers bear 60% of the costs for grid connection, reinforcement, and extension. Operators pay 40% of the costs, which are built into the grid tariffs.
<i>What are the costs for subsequently connected producers?</i>	There no rules for sharing the costs between initially and subsequently connected producers.
<i>Is the connection to existing electricity networks coordinated?</i>	There are no special measures to coordinate the connection of RES to the electricity network. Currently neither priority connection rights nor reserved connection capacities exist. With the implementation of the National Strategy for Development of Renewable Energy Sources for 2010-2015 TSOs and DSOs could be obligated to ensure grid access for RES-E.
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	There are two new investment projects to build interconnection capacity to Poland and Sweden. A 400 kV line between Lithuania and Poland is planned to be put into operation in 2015. An interconnection to Sweden with a throughput capacity of 7,000 MW is planned to be commissioned in 2016.
<i>Are there grid-market related measures to minimize RES-E curtailment?</i>	Currently RES-E curtailment does not occur, as there are only little RES-E capacities. According to the AEON Report consideration if RES-E in grid development is insufficient and grid and market operation does not minimise curtailment. Plans and future legislation envisages priority transmission of RES-E and the promotion of electric and hybrid vehicles. Lithuania further envisages additional measures for the development of wind power plants, transmission and distribution networks, intelligent networks, and electricity accumulation infrastructure.
<i>Is information on costs and connection timetable available?</i>	According to the AEON Report the grid connection procedure is complicated and heterogeneous, sometimes also discriminatory and non-transparent The NREAP indicates that Lithuania is preparing a law that obligates the network operator to provide information on the connection timetable. On special request the network operator to the producer will have to provide a detailed estimate on costs, a accurate timetable for necessary applications and a preliminary timetable of proposed grid connection.
<i>Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?</i>	The NREAP does not mention any rules regarding the establishment of costs for grid connection. Maximum levels for connection costs are not defined.
<i>Are there simple administrative procedures for grid connection?</i>	According to the AEON Report the grid connection procedure is complicated.
<i>Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?</i>	No sanctions are defined.

4.2.6 Electricity infrastructure development &
4.2.7 Electricity network operation

Table (Appendix) 81: Electricity from renewable sources support measure assessment (Lithuania)

Indicator		NREAP Assessment	
4.3 RES-E sup-port measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Tariffs paid appear to be sufficient for wind onshore, small hydro and photovoltaic, whereas the biogas support may be a bit tight. For solid and liquid biomass the support level is below minimum generation costs. For wind offshore the same tariff as for wind onshore is applied. Therefore the wind offshore support level is far below current electricity generation costs.
		<i>Is there a technology specific support?</i>	There is a technology specific support. Purchasing prices of electricity produced from renewable energy sources. Feed-in tariffs are technology-specific. For cogeneration biofuel power plants structural support of the European Union for 2007-2013 is provided. The Lithuanian Rural Development Programme for 2007-2013 supports various RES technologies, mostly for the construction of biogas and wind power plants. Biofuel power plants and boiler plants are released from environmental pollution tax. Supports from Lithuanian Environmental Investment Fund and excise tax exemption do not differ according to technology. Envisaged new measures are technology-specific. Information on caps for annual generation seems contradictory.
		<i>Is the long-term security of the support measures ensured?</i>	Feed-in tariffs are guaranteed until 2020. The prepared draft Law on Energy from Renewable Sources envisages periods, during which producers are guaranteed fixed purchasing tariffs and premiums.
		<i>Is there a maximum or minimum size for support?</i>	The feed-in tariff for hydropower is restricted to plants < 10 MW. Support from the Lithuanian Rural Development Programme for 2007-2013 and Lithuanian Environmental Investment Fund is limited for wind power producing energy used by the producer and plants <= 250 kW, for other technologies capacity of power plants is limited by the amount of support provided. Operators of large thermal plants (thermal capacity > 50 MW resp. > 0.5MW for solid fuel boiler resp. > 1 MW for stationary incineration sources) cannot apply for an exemption from environmental pollution tax.
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	Currently energy efficiency criteria are not established as a condition for support. The prepared draft Law of the Republic of Lithuania on Energy from Renewable Sources establishes energy efficiency criteria for technologies which are applied for the production of electricity eligible for support.
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits + feed-in etc...)?</i>	Feed-in tariff can be combined with structural support for biofuel, wind (< 250 kW) and photovoltaic and/or Lithuanian Environmental Investment Fund (LEIF) for wind (< 250 kW), solar, water and biomass and/or environmental pollution tax exemption for use of biofuel.
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	The overall target for RES-E in electricity consumption is 21% in 2020. Technology specific annual obligations are not in place.
		<i>How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?</i>	Supervision of the system is envisaged within the National Strategy for RES-E. The target fulfilment for the share of RES-E in final energy consumption will be assessed for the period 2010-2015 and 2016-2020. The NREAP does not specify the measurements or criteria. No specific parties are in charge of fulfilment and no consequences are intended in case of non-fulfilment.
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Feed-in tariffs are paid by electricity costumers via electricity prices. Connection costs, borne by TSO/DSO are also paid via electricity prices. The Lithuanian Rural Development Programme for 2007-2013 is funded by structural funds of the European Union as well as by national budget. The Lithuanian Environmental Investment Fund (LEIF)

		is financed by state incomes from environmental pollution tax. Envisaged new measures are mainly funded by the Special Climate Change Programme, excise duty on fossil resources, corporate income tax from RES-producers as well as income from statistical transfers.
	<i>How are revision and optimization performed?</i>	The NREAP states that the feed-in tariff is periodically revised, but revisions are not scheduled. To modify support schemes the underlying laws need to be changed.

Table (Appendix) 82: Heat from renewable sources support measure assessment (Lithuania)

Indicator		NREAP Assessment	
4.3 RES-H sup-port measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	The price level for decentralised heat sufficient for investments into heat pumps and lower cost decentralised biomass. The price-level for decentralised heat is far below solar thermal heat generation costs.
		<i>Is there a technology specific support?</i>	In general, the support is not technology specific. While the Lithuanian Rural Development Programme for 2007-2013 and the Lithuanian Environmental Investment Fund supports all RES-H technologies, structural support, and benefits on environmental pollution tax only apply for heat production from biofuels.
		<i>Is the long-term security of the support measures ensured?</i>	Long-term security of support measures is not ensured. Structural funds and the Lithuanian Rural Development Programme expire in 2015. The Lithuanian Environmental Investment Fund was suspended from 04/2009 and new applications will not be accepted before spring 2011 ⁴⁰ .
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	Support does not depend on energy efficiency criteria.
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits + feed-in etc...)?</i>	Structural support as well as support from the Lithuanian Rural Development Programme can be combined with support from the Lithuanian Environmental Investment Fund (LEIF) and environmental pollution tax exemption.
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	n/a
		<i>How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?</i>	n/a
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	The Lithuanian Rural Development Programme for 2007-2013 is funded by structural funds of the European Union as well as by national budget. The Lithuanian Environmental Investment Fund (LEIF) is financed by state incomes from environmental pollution tax. Envisaged new measures are mainly funded by the Special Climate Change Programme, excise duty on fossil resources, corporate income tax from RES-producers as well as income from statistical transfers.
	Support scheme	<i>What measures are planned on the use of CHP from RES?</i>	n/a
			For modernisation of cogeneration power plants including a switch to biomass and construction of biomass-based cogeneration power plants structural support can be requested. The prepared draft Law on RES envisages a Special National Programme for the Development of RES and special municipal programmes, including municipal action plans for RES.

⁴⁰ <http://www.laaif.lt/index.php?1069925527>

	<i>What measures are planned on the use of district heating from RES?</i>	An application for EU structural support is possible. If heat from different sources is offered for the same price, heating suppliers shall prefer CHP using RES and other RES-based heat. Lithuania envisages measures to support construction of cogeneration power plants using municipal and other waste and to provide financial support for modernisation of heat production installations and a fuel switch to biofuel. Additionally the Draft Law on Energy from Renewable Sources regulates prioritisation of RES-H in planning.
	<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Several measures are planned to promote the use of small scale heating including legal stipulations for new and modernised buildings, financial measures, promotion by municipalities, municipal action plans, and special support for rural public buildings
	<i>What measures are planned on the use of heat from RES in industrial applications?</i>	Currently, the structural support of the European Union can be used for fuel switch to biomass in boiler plants and for construction of new boiler plants using RES. No additional measures are planned.
	<i>Is there a RES Obligation for the building sector?</i>	Currently the share of energy from renewable sources in the building sector is not regulated. Requirements to the use of RES are effective from 2012 for new public buildings and for existing public buildings requiring major renovation special. As from 2015 the requirements apply for all new buildings and existing buildings requiring major renovation. Within the implementation of the Programme for modernisation of Multi-Apartment as well as the implementation of the National Strategy for the Development of RES financial support for installation of RES equipment is envisaged.
	<i>Do public buildings feature best practices?</i>	Currently public building do not provide best practices, though legal obligations for using RES are effective for public buildings from 2012 and for all buildings from 2015.

Table (Appendix) 83: Transport fuels from renewable sources support measure assessment (Lithuania)

Indicator	NREAP Assessment
<i>Is the long-term security of the support measures ensured?</i>	Financial support expires in December 2012. Special measures ensuring long-term security of support are not mentioned in the NREAP.
<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ obligation etc...)?</i>	A project complying with the requirements can benefit from financial support for the development of the production of biofuels for transport, excise duty as well as environmental tax exemption.
<i>Is there a concrete obligation/target per year (technology)?</i>	No concrete obligations per year are established.
<i>How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?</i>	The National Strategy for the Development of RES envisages a monitoring mechanism, which will be performed by the Ministry of Energy of the Republic of Lithuania. To modify support schemes the underlying laws need to be changed.
<i>How is revision and optimization performed?</i>	Financial support of biofuels for transport is revised and updated on an annual basis. Yearly economic and financial indicators of biofuel producers are analysed in order to avoid overruns of the support. Environmental pollution tax exemption and excise duty exemption are revised periodically; however the revision period is not specified.
<i>Is there an obligation for biofuels?</i>	Lithuania wants to increase share of biofuels in transport to 10% by 2020. The Government of the Republic of Lithuania or institutions authorised by the Government are obligated to fulfil the target though there are no consequences of non-fulfilment.
<i>Is there a specific support for 2nd generation biofuels?</i>	Research in 2 nd generation biofuels was regulated by the Programme for Development of Industrial Biotechnology from 2007 to 2010. No further measures are planned.

4.5 RES-T support measures

Table (Appendix) 84: Comparison of technology-specific national RES deployment by 2020 (Lithuania)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	%	Ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
REPAP industry road-map (proactive RES support)	29%	1632	1368	0.3	18.7	1310	6	-	33.2	3342	532	-	19	-	-	1282	46	1032*	431	-	225.5	134.8	17.3	-	-	73.4**
NREAP	26%	1478	1051	5	9	973	50	-	14	2958	470	-	15	-	-	1250	-	810	413	-	169.5	36	131	-	2.5	-
Difference	-9%	-9%	-23%	-	-52%	-26%	+747%	-	-58%	-12%	-12%	-	-21%	-	-	-2%	-	-22%	-4%	-	-25%	-73%	+657%	-	-	-

* including 11 GWh biowaste

** including 46.5 ktoe 2nd generation biofuels and 26.9 ktoe biofuel imports

5.15 Annex for Malta

Table (Appendix) 85: Assessment criteria for administrative procedures and spatial planning (Malta)

Indicator	NREAP Assessment
Presence of a one-stop shop scheme?	No. A declaration has been made that there are future plans but no timeframe given (p.17)
Is the lead time for collecting all permits reasonable? If not, what is the lead time for typical RES-E projects?	Usually long lead times are needed to obtain necessary permits (over 3 years in some cases). In the NREAP only some information is available regarding the EIA process: Screening: 4 weeks, Scoping: 21 days, ES documentation: 30 days, ES certification: 30 days.
Is the estimated typical number of permits required (excl. small-scale system) adequate?	Yes.
Are timetables communicated in advance?	Yes but this is not binding.
Is there an exception from authorization of small-scale systems?	Exception from authorization of solar water heaters and PV systems (delimited by the capacity of 16 amperes per phase).
What is the level of permitting costs of a large project?	For PV systems the fees are the following: service fee of € 46.59 (Single phase 40 Amps) and of € 104.82 (Three phase 60 Amps). No information available for large projects.
Are the fees required correlated to the administration costs?	n/a
Are renewables integrated in spatial planning?	Insufficient or even hostile spatial planning has been named as a decisive barrier in Malta. No information about this issue is mentioned in the NREAP for Malta.
Is it assured that during the authorization process, the administration has no discretionary power?(e.g. denial or delay can be subject to legal options to the applicant)	n/a
Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time? (e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)	Preclusion effect included. p.18
Is information available on the process?	The availability of information has been evaluated positively for Malta.
Do administrative procedures consider RES specificities?	RES specificities are addressed, but need amendments. It is not specified how these consideration apply to the different RES specificities.
Is there official guidance for local and regional administrative bodies?	Guidance is available but needs amendment.
Are trainings planned for authorities in charge of authorization?	Courses will be planned in the coming months.

4.2.1 Administrative procedures and spatial planning

Table (Appendix) 86: Electricity infrastructure development and electricity network operation (Malta)

Indicator		NREAP Assessment
4.2.6 Electricity infrastructure development & 4.2.7 Electricity network operation	Is the average time for grid connection adequate?	Dependent on the location and voltage. Increasing use of underground tunnels is leading to increased lead times (4-5 years - 132 kV circuits).
	Is there priority dispatch? Is there priority access or guaranteed access to the grid?	All users and prospective developments are treated equally (including conventional sources), based on the electricity supply regulation GN 223/1940. Only small systems (net-metering) take priority of dispatch. The operator (Enemalta Corporation) charges for infrastructure reinforcement in a cost plus a standard mark-up basis (35%). The full cost is charged to medium to large projects. Small projects are covered by standard application fees or rates.
	What are the rules of cost sharing and bearing of network technical adaptations?	Fully borne by the producer of RES electricity.
	What are the costs for subsequently connected producers?	Case-by-case basis. The planning authority (MEA) consults Enemalta on all medium and large developments.
	Is the connection to existing electricity networks coordinated?	A High Voltage Alternating Current (HVAC) network of 225 MW is planned (sub-sea connection to Sicily) and is expected to be finished in 2012.
	Is the Member State contributing to the development of a trans-European electricity network?	n/a
	Are there grid- market related measures to minimize RES-E curtailment?	Requests are subject to Electricity Supply Regulations (GN 223/1940) and the network code when applicable.
	Is information on costs and connection timetable available?	Yes, but it is set on a case-by-case basis.
	Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?	There are rules but no maximum levels defined.
	Are there simple administrative procedures for grid connection?	Yes, for small systems that requires a notification only.
	Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?	n/a

Table (Appendix) 87: Electricity from renewable sources support measure assessment (Malta)

Indicator		NREAP Assessment	
4.3 RES-E support measures	All support measures	Are the support levels sufficient for each technology?	Sufficiency for wind onshore. Modifications appear necessary for biogas and solar PV technologies.
		Is there a technology specific support?	There is technology specific support. The support scheme in most cases does discriminate between different technologies.
		Is the long-term security of the support measures ensured?	No. For the case of solar heaters, it is almost always linked with the National Budget. For small domestic PV systems, there is a 3-year plan of limited capital grant support and additionally the option of either feed-in tariff at 25 Euro cents per kWh guaranteed for 8 years or net-metering with spill-off price of 7 Euro cents per kWh. For small wind, there is very little capital support.
		Is there a maximum or minimum size for support?	Yes. For 2011 SWH 400 Euros per household. PV: 3,000 Euros max. or 50% of capital, whichever is smaller. Micro-wind: 233 Euros per

			system.
		Does the support depend on energy efficiency criteria of the technology?	n/a
		Are there multiple measures of which a project can benefit (eg. tax credits, feed-in, etc.)?	Yes, PV and micro-wind for residential use only (Capital Grant plus the option of feed-in tariff or net-metering with spill-off rate).
Regulatory framework		Is there a concrete obligation/target per year (technology)?	PV support measure amounts to 3.8 million Euros distributed equally over 3 years and starting in 2010 (400 families per year, all taken up). Solar Heating keeps changing (2010: 2500 families but only 200 applied so far).
		How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?	Malta Resources Authority manages the schemes and registers all applicants. No declared action is present in case of non-fulfilment.
		How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?	ERDF, Cohesion Fund, ESF, European Territorial Cooperation Programmes (ERDF)
		How are revision and optimization performed?	Mostly linked with Annual Budget. Sometimes, it is independently controlled by the Planning and Priorities Coordination Department of the OPM.

Table (Appendix) 88: Heat from renewable sources support measure assessment (Malta)

Indicator		NREAP Assessment	
4.3 RES-H sup-port measures	All support measures	Are the support levels sufficient for each technology?	Sufficient for the solar thermal applications. Modifications appear necessary for heat pumps, biomass and district heating.
		Is there a technology specific support?	There is technology specific support. The support scheme in most cases does discriminate between different technologies.
		Is the long-term security of the support measures ensured?	No long term security is included.
		Does the support depend on energy efficiency criteria of the technology?	n/a
		Are there multiple measures of which a project can benefit (e.g. tax credits, feed-in, etc.)?	n/a
	Regulatory framework	Is there a concrete obligation/target per year (technology)?	Yes, for residential solar heating and small PV systems.
		How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?	Malta Resources Authority manages the schemes and registers all applicants. No declared action is present in case of non-fulfilment.
		How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?	European Funds and National Funds. Yes, it is mostly dependant on annual budget decisions. Budget is not significant (SWH 2011 = 800,000 Euros)
		How is revision and optimization performed?	n/a

Support scheme specific indicators:	What measures are planned on the use of CHP from RES?	n/a
	What measures are planned on the use of district heating from RES?	No real plans except for heating a pool in Marsascale, using waste heat from a waste to energy facility.
	What measures are planned on the use of small scale heating and cooling from RES?	n/a
	What measures are planned on the use of heat from RES in industrial applications?	No plans but funds are sometimes made available through a competitive call. So far very few industries have RES heating systems.
	Is there a RES Obligation for the building sector?	n/a
	Do public buildings feature best practices?	n/a

Table (Appendix) 89: Transport fuels from renewable sources support measure assessment (Malta)

Indicator		NREAP Assessment
4.5 RES-T support measures	Is the long-term security of the support measures ensured?	No long term security is included.
	Are there multiple measures of which a project can benefit (e.g. tax credits, obligation, etc.)?	n/a
	Is there a concrete obligation/target per year (technology)?	Incremental obligation: 1.5% in 2011 and reach 10% in 2020.
	How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?	Pro-rata penalty imposed on the importer/wholesaler.
	How is revision and optimization performed?	Only some comments for EV technology are available. Not clearly defined.
	Is there an obligation for biofuels?	Incremental obligation: 1.5% in 2011 and reach 10% in 2020.
	Is there a specific support for 2nd generation biofuels?	n/a

Table (Appendix) 90: Comparison of technology-specific national RES deployment by 2020 (Malta)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	Unit	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
REPAP industry road-map (proactive RES support)	12.2%	84.9	10.2	-	9.8	0.1	-	-	0,3	522	-	-	33	-	-	116	284	23	67	-	29.8	-	0,2	-	-	-
NREAP	10.2%	54.5	4.5	-	2.8	-	1.7	-	-	435	-	-	43	-	-	40	216	86	50	-	13.5	5.8	7.0	-	0.7	-
Difference	-20%	-56%	-128%	n.a.	254%	n.a.	100%	n.a.	n.a.	0	n.a.	n.a.	0	n.a.	n.a.	-1	0	3	0	n.a.	-120%	100%	98%	n.a.	100%	n.a.

5.16 Annex for Portugal

Table (Appendix) 91: Assessment criteria for administrative procedures and spatial planning (Portugal)

Indicator	NREAP Assessment
<i>Presence of a one-stop shop scheme?</i>	In general there is no one-stop shop scheme implemented in Portugal. Administrative procedures required to get permits appear to be complicated. However, there is a one-stop shop scheme available for micro- and mini-generation projects.
<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	The NREAP does not specify a concrete time horizon. According to the AEON Report the time required to obtain permission may take more than 24 months, for micro- and mini- generation it may be shorter.
<i>Is the estimated typical number of permits required (excl. small-scale system) adequate?</i>	It is estimated that more than six permits are needed. APREN states that between 2 and 10 numbers of permits are required, representing an adequate number if deadlines were kept short.
<i>Are timetables communicated in advance?</i>	Timetables for large-scale systems are not communicated in advance. If there are announced timetables, authorities often do fulfil the timetables.
<i>Is there an exception from authorization of small-scale systems?</i>	Simplified regime exists for micro- and mini-generation.
<i>What is the level of permitting costs of a large project?</i>	The NREAP does not report on exact value of fees. However, APREN judges the fees to be adequate (between € 5,000 and € 150,000 depending on project size excl. EIA).
<i>Are the fees required correlated to the administration costs?</i>	Fees are not associated with the administrative costs.
<i>Are renewables integrated in spatial planning?</i>	There are problems with integrating RES projects in spatial planning instruments such as the Municipal Master Plans, which are partly out of date. In addition, the intention to prevent man-caused forest fires hampers the construction of RES projects in these areas. Portugal plans to speed up the review of instruments for territorial management in its NREAP.
<i>Is it assured that during the authorization process, the administration has no discretionary power? (e.g. denial or delay can be subject to legal options to the applicant)</i>	n/a
<i>Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time? (e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)</i>	n/a
<i>Is information available on the process?</i>	Complicated regulation spread over a large number of laws. More than 350 legislative documents.
<i>Do administrative procedures consider RES specificities?</i>	There are special rules for micro-production and the additional equipment of wind parks. Self-licensing regimes are envisaged for the future for some technologies (mini-production, mini-dams and wave energy).
<i>Is there official guidance for local and regional administrative bodies?</i>	According to the NREAP official guidance is provided by the Municipal Master Plans, but would need some improvements.
<i>Are trainings planned for authorities in charge of authorization?</i>	There is professional training provided by the licensing entities.

4.2.1 Administrative procedures and spatial planning

Table (Appendix) 92: Electricity infrastructure development and electricity network operation (Portugal)

Indicator		NREAP Assessment
4.2.6 Electricity infrastructure development & 4.2.7 Electricity network operation	<i>Is the average time for grid connection adequate? If not, give examples.</i>	Aeon estimates the average time of grid connection to exceed 24 months for normal projects and 12 months for micro-generation.
	<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	There is priority access for RES-E with the exception of large hydro-power plants.
	<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Costs for the development (reinforcement and expansion) of the grid are organized by TSO/DSO and are paid by consumers. RES-E producers pay for connecting their installation to a connection point. There may be bilateral negotiations between the producer and the grid operator.
	<i>What are the costs for subsequently connected producers?</i>	There are rules specifying the subsequent connection of producers. If the assets are part of the public network the first promoter has to be compensated if the subsequent producer uses infrastructure within 5 years after commissioning. If network elements are privately owned, both involved parties have to come to an agreement.
	<i>Is the connection to existing electricity networks coordinated?</i>	The "Transmission Network Development and Investment Plan" (PDIRT) ensures a reserved capacity for future RES plants, which exceeds the predetermined national objectives.
	<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Portugal plans to reinforce interconnection capacity between Portugal and Spain to 3 GW by 2014, implying the construction of two 400 kV lines in the North and in the South between the Algarve and Andalusia. The NREAP says that it is important to increase connections between Spain and France.
	<i>Are there grid-market related measures to minimize RES-E curtailment?</i>	The use of forecasts for wind electricity is one measure to minimize RES-E curtailment. In addition, the operator is able to cut electricity supply to energy intensive industries if there is a system overload. In situations of surplus electricity, pump storage plants are applied. Portugal plans to increase reversible hydro capacity, oblige wind electricity producers to improve equipment to increase system stability, reinforce interconnection capacity with Spain, promote electric vehicles and make use of smart grids.
	<i>Is information on costs and connection timetable available?</i>	Information on costs is made available in meetings between grid operator and RES-E producer.
	<i>Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?</i>	n/a
	<i>Are there simple administrative procedures for grid connection?</i>	n/a
	<i>Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?</i>	n/a
	<i>Is the average time of grid connection adequate? If not, give examples.</i>	No sanctions are defined.

Table (Appendix) 93: Electricity from renewable sources support measure assessment (Portugal)

Indicator		NREAP Assessment
4.3 RES-E sup-port	All support measures <i>Are the support levels sufficient for each technology?</i>	Tariffs paid appear to be sufficient for old wind onshore, biomass technologies and solar technologies, whereas the new wind onshore support may be a bit tight. For wind offshore plants the same tariff as for wind onshore is paid. Therefore, the offshore support level is far below current electricity generation costs.
	<i>Is there a technology specific</i>	Fixed feed-in tariffs, investment incentives for innovative projects

		<i>support?</i>	and R&D, tender scheme for wind onshore, biomass and other technologies in the future.
		<i>Is the long-term security of the support measures ensured?</i>	Depending on the technology validity of tariffs is granted for 15 to 25 years or until a certain amount of electricity output is achieved. p. 92
		<i>Is there a maximum or minimum size for support?</i>	There is a maximum size for the support of hydropower plants corresponding to 10 MW.
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	For almost no technology, such premiums are paid. Only for cogeneration plants including biomass power plants efficiency premiums are paid according to primary energy savings.
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits + feed-in etc...)?</i>	No
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	There is no concrete obligation in place, only indicative targets. p. 89.
		<i>How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?</i>	n/a
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Tariffs are paid by electricity consumers via electricity prices.
		<i>How are revision and optimization performed?</i>	Feed-in tariffs are supposed to be updated regularly, but the time horizon is not specified. The feed-in system will be reviewed in the second half of 2010.

Table (Appendix) 94: Heat from renewable sources support measure assessment (Portugal)

Indicator		NREAP Assessment	
4.3 RES-H sup-port measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	The support for solar thermal heating systems was generous in past years. Decentralised biomass applications receive only limited support through particular programs (e.g. subsidies and loans for SMEs). In case of district heating systems the remuneration level is just enough for lower cost technologies.
		<i>Is there a technology specific support?</i>	Technology specific support within the RES heat sector. p.124-128
		<i>Is the long-term security of the support measures ensured?</i>	For cogeneration units the long-term security is provided. For any other use of RES for heating and cooling long term security is not provided since the support is either inexistent or depend on annual budget decisions.
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	There is no dependence on energy efficiency criteria.
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits + feed-in etc...)?</i>	Possible. Investment incentives are combinable with tax reductions.
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	Targets for solar panels to produce hot water in the Residential and Services sector for 2015 and 2020. Targets for the installation of heat recuperators, small biomass boilers and heat pumps with COP>4 for 2015 and 2020. Targets for micro-generation for 2015 and 2010
		<i>How is the system supervised</i>	n/a

Support scheme specific indicators:	<i>and what happens in case of non-fulfilment of the target mentioned in the line above?</i>	
	<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	The system depends on annual budget decisions.
	<i>How is revision and optimization performed?</i>	Legislation of Energy Certification in Buildings is currently being reviewed. Portugal envisages a review of horizontal property rules for the installation of RES in common parts of the building.
	<i>What measures are planned on the use of CHP from RES?</i>	Electricity from cogeneration is supported within the feed-in tariffs of the Special Regime, whilst the renewable heat is remunerated in no special way.
	<i>What measures are planned on the use of district heating from RES?</i>	n/a
	<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	During 2009 the Portuguese government supported solar thermal collectors for hot water by providing an investment subsidy of € 1,642 per installation for domestic users. For 2010 the investments of small and medium enterprises in solar thermal heating, in passive surroundings and thermal insulation were supported. The future continuation of these programs is currently unclear.
	<i>What measures are planned on the use of heat from RES in industrial applications?</i>	Companies exceeding an annual energy consumption of 500 ktoe are covered by the "Intensive Energy Consumption Management System" (SGCIE) regulated in Decree Law No. 71/2008. This program promotes energy efficiency or the substitution of fossil fuels by RES for energy intensive companies.
	<i>Is there a RES Obligation for the building sector?</i>	It is obligatory to install solar panels for hot water. In quantitative terms, 1m ² of solar panel is required per tenant unless more than 50 % of the total coverage area available, on terraces or the sides facing the south quadrant between the southeast and southwest, is covered with solar panels. The corresponding regulation is called "Regulations for the Characteristics of the Thermal Behaviour of Buildings" (RCCTE). Solar thermal collectors may be substituted with other RES. Moreover in order to receive the FiT for PV micro-generation it is mandatory to have 2 m ² of solar thermal panels installed.
	<i>Do public buildings feature best practices?</i>	Public buildings have not been used as best-practice example, but Portugal envisages the State Energy Efficiency Programme which promotes: <ul style="list-style-type: none"> • solar thermal systems in swimming pools and sports complexes • micro-production systems in public schools • Renewable energy and energy efficiency in schools

Table (Appendix) 95: Transport fuels from renewable sources support measure assessment (Portugal)

Indicator		NREAP Assessment
4.5 RES-T support measures	<i>Is the long-term security of the support measures ensured?</i>	Yes, thanks to mandatory incorporation targets defined up to 2020. However, the mandatorily implemented targets imply that from 2015 onwards it will be necessary to introduce a new generation of biofuels, meaning that significant investments will be necessary. The mechanisms to support and facilitate these investments need to be defined quite soon to allow the investors to plan ahead and guarantee the necessary infrastructures.
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ obligation etc...)?</i>	The support for electric vehicles may include the subsidised decommissioning of cars that are more than 8 years old and tax exemptions. Biodiesel is promoted by a simultaneous obligatory share

	in transport consumption and a tax exemption. Some projects are eligible for investment incentives.
<i>Is there a concrete obligation/target per year (technology)?</i>	EU-target for biofuel of 10 % by 2020 including an obligation for biodiesel by 2014 and for biological gasoline substitutes from 2015 to 2020.
<i>How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?</i>	Penalty payments are due if the quota cannot be fulfilled. The according rules are not yet clearly defined.
<i>How is revision and optimization performed?</i>	n/a
<i>Is there an obligation for biofuels?</i>	EU-target for biofuel of 10 % by 2020. Obligation for biodiesel is set up until the end of 2014 while an obligation for gasoline bio-substitutes is established from 2015-2020.
<i>Is there a specific support for 2nd generation biofuels?</i>	There is no specific support for 2 nd generation fuels.

Table (Appendix) 96: Comparison of technology-specific national RES deployment by 2020 (Portugal)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	%	Ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
REPAP industry road-map (proactive RES support)	34.8	6,871	2,082	39	236	1,807			n/a	46,402	18,549	936	3,160	1,000	750	16,559	563	3,836	1,050	0	749	35	633	0	60	21
NREAP	31	6,044	2,507	25	160	1,484	37	801	*	35,584	12,562	488	1,475	1,000	437	14,416	180	1,468	525	1,523	535	27	450	0	58	0
Difference	-11%	-12%	+20%	-36%	-32%	+29%			-	-23%	-32%	-48%	-53%	0%	-42%	-13%	-68%	-28%			-29%	-23%	-29%	0%	-3%	-

* not quantified due to missing methodology from EC, contribution expected from 2012 onwards.

5.17 Annex for Romania

Table (Appendix) 97: Assessment criteria for administrative procedures and spatial planning (Romania)

Indicator	NREAP Assessment	
4.2.1 Administrative procedures and spatial planning	<i>Presence of a one-stop shop scheme?</i>	No one-stop shop scheme is introduced. (AEON, p. 15)
	<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	Average lead-time is 12 months, but varies largely according to the type of technology. (AEON, p. 11, 15)
	<i>Is the estimated typical number of permits required (excl. small-scale system) adequate?</i>	Estimated number of permits adds up to 20 is therefore not adequate. (AEON, p. 15)
	<i>Are timetables communicated in advance?</i>	Not applicable (n/a)
	<i>Is there an exception from authorization of small-scale systems?</i>	Systems with a capacity below 1 MW are exempted from set-up authorisation procedure. (NREAP, p. 42)
	<i>What is the level of permitting costs of a large project?</i>	Permitting costs add up to 50,000 €. (AEON, p. 15)
	<i>Are the fees required correlated to the administration costs?</i>	In general, fees are correlated to the administrative costs relevant for granting such permits. (NREAP, p. 43)
	<i>Are renewables integrated in spatial planning?</i>	Spatial planning is not considered RES specific. (AEON, p. 13)
	<i>Is it assured that during the authorization process, the administration has no discretionary power?(e.g. denial or delay can be subject to legal options to the applicant)</i>	n/a
	<i>Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time?(e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)</i>	n/a
	<i>Is information available on the process?</i>	Electricity and Heat Regulatory Authority (ANRE) provides information in various forms, mainly on their website. (NREAP, p. 39)
	<i>Do administrative procedures consider RES specificities?</i>	Specificities of CHP plants using RES are considered. (NREAP, p. 42)
	<i>Is there official guidance for local and regional administrative bodies?</i>	Guidance is not available. For this case, the government wants to introduce a “Renewable Energy Action Framework-Plan”. (NREAP, p. 43)
<i>Are trainings planned for authorities in charge of authorization?</i>	Case handlers participate in specific professional training. (NREAP, p. 43)	

Table (Appendix) 98: Electricity infrastructure development and electricity network operation (Romania)

Indicator	NREAP Assessment	
4.2.6 Electricity infrastructure	<i>Is the average time for grid connection adequate? If not, give examples.</i>	Average time for grid connection is 1-6 months and therefore quite short. (AEON, p. 35)
	<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	Dispatch is guaranteed as long as the safety of the grid is not jeopardised. Grid connection procedure is in need of improvement (NREAP, p. 66) (AEON, p. 34)
	<i>What are the rules of cost sharing and bearing of network technical adapta-</i>	The electricity producer pays the costs for grid construction to a connection point. Costs for additional grid enhancement are divided

<i>tions?</i>	between the connected producer and the grid operators. Exact rules are not explained. (NREAP, p. 65)
<i>What are the costs for subsequently connected producers?</i>	The producer initially connected to the grid receives financial compensation from the producers subsequently connected in the first five years from the start-up of the connection installation. (NREAP, p. 65)
<i>Is the connection to existing electricity networks coordinated?</i>	n/a
<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Concrete plans are made for interconnection lines to Serbia (400 kV), Turkey and Moldova (400 kV). (NREPA, p. 61)
<i>Are there grid-market related measures to minimize RES-E curtailment?</i>	Avoiding of curtailment is assured through guaranteed dispatch. (NREAP, p. 67)
<i>Is information on costs and connection timetable available?</i>	Information on costs and connection timetable has to be published by the respective TSO or DSO. (NREAP, p. 65)
<i>Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?</i>	Clear rules are theoretically set within “Methodology on setting the tariffs for the electricity transmission service”, but the rules are not considered transparent. (NREAP, p. 71) (AEON, p. 35)
<i>Are there simple administrative procedures for grid connection?</i>	n/a
<i>Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?</i>	n/a

Table (Appendix) 99: Electricity from renewable sources support measure assessment (Romania)

<u>Indicator</u>		<u>NREAP Assessment</u>	
4.3 RES-E sup-port measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Support measures are adequate for wind offshore, solid and liquid biomass, biogas and small-scale hydro. Support for PV is insufficient. (RE-Shaping)
		<i>Is there a technology specific support?</i>	Certificate system differs according to the technology used. Several investment incentives for different technologies are installed. (NREAP, p. 92 ff.)
		<i>Is the long-term security of the support measures ensured?</i>	Generally all financial support measures end in 2013. Except the “Programme on the production of energy from renewable sources” which has no end date. Systems receive certificates generally for 15 years. (NREAP, p. 93 ff., 105, 114, 126)
		<i>Is there a maximum or minimum size for support?</i>	Hydro power plants up to 10 MW are eligible to receive certificates. (NREAP, p. 93) “Programme on the production of energy from renewable sources” supports projects with a capacity of up to 10 MW. (NREAP, p. 126)
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	Investment support for CHP applies only to not clearly specified high efficient plants. (NREAP p. 104)
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	No.
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	Obligation regarding the certificate scheme is set until 2020 and amounts currently to 8.3 % (2011). (NREAP, p. 100 ff.)
		<i>How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?</i>	If an electricity supplier fails to fulfil the obligation, the company is fined 70 € for each not delivered certificate. (NREAP, p. 97)

	<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Certificate scheme is financed through the electricity consumer. (NREAP, p. 90) Regional state aid schemes are mainly financed by European funds. European budget is only estimated. Governmental part of financing is declared until 2013. (NREAP, p. 103) “Programme on the production of energy from renewable sources” is financed by the national budget. The amount is set by annual decisions. (NREAP, p. 124)
	<i>How are revision and optimization performed?</i>	Revision of the certificate scheme is not foreseen. (NREAP, p. 91) It is not possible to revise the various schemes provided by European funds. (NREAP, p. 104, 113) “Programme on the production of energy from renewable sources” is revised annually. (NREAP, p. 124)

Table (Appendix) 100: Heat from renewable sources support measure assessment (Romania)

Indicator		NREAP Assessment	
4.3 RES-H support measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Support measures are immature for biomass and solar thermal installations. Ground source heat pumps are supported mediocre. (RE-Shaping)
		<i>Is there a technology specific support?</i>	Several investment incentives are installed addressing different technologies. (NREAP, p. 140 ff.)
		<i>Is the long-term security of the support measures ensured?</i>	Investment incentives under the environmental fund are not equipped with an end date. Incentives from the structural fund will end either 2013 or 2015. (NREAP, 135 ff.)
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	Support does not depend on any energy efficiency criteria. Except the support measures for CHP plant. CHP plants must meet specific high-efficiency criteria. (NREAP, p. 135 ff.)
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits + feed-in etc...)?</i>	Installations can only benefit from one investment incentive. (NREAP, p. 135 ff.)
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	No concrete targets are installed. (NREAP, p. 135 ff.)
		<i>How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?</i>	n/a
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Public revenues are financing the schemes controlled by the environmental fund. Budget is partly limited. (NREAP, p. 143) Financing of the “National programme for increasing energy efficiency and use of renewable energy sources in public sector for 2009-2010” is provided by the national budget. (NREAP, p. 159) Structural fund is financed partly from the national budget and the EU. (NREAP, p. 134)
		<i>How is revision and optimization performed?</i>	Environmental fund is annually revised depending on the annual income. (NREAP, p. 149) “National programme for increasing energy efficiency and use of renewable energy sources in public sector for 2009-2010” has been periodically revised in relation to the allocated budget. (NREAP, p. 159)
	Support scheme	<i>What measures are planned on the use of CHP from RES?</i>	Structural funds provide special support for RES CHP plants. (NREAP, p. 167, 168)
<i>What measures are planned on the use of district heating from RES?</i>		Three support measures are installed, mainly to support centralized thermal energy supply systems. (NREAP, p. 168)	

	<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	A “Green House” program, providing support for wood biomass, solar panels and heat pumps started in July 2010. (NREAP, p. 168)
	<i>What measures are planned on the use of heat from RES in industrial applications?</i>	Three specific measures promoting renewable installations in industrial applications are installed. (NREAP, p. 169)
	<i>Is there a RES Obligation for the building sector?</i>	No RES obligation is introduced. (NREAP, p. 48)
	<i>Do public buildings feature best practices?</i>	No plans considering the exemplary role of public buildings are existent. (NREAP, p. 49)

Table (Appendix) 101: Transport fuels from renewable sources support measure assessment (Romania)

<u>Indicator</u>		<u>NREAP Assessment</u>
4.5 RES-T support measures	<i>Is the long-term security of the support measures ensured?</i>	The investment incentive will be granted until 2013. (NREAP, p. 173)
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ obligation etc...)?</i>	Solely a planned scheme will promote the regional RES development by investing in agricultural and forestry product processing. (NREAP, p. 171)
	<i>Is there a concrete obligation/target per year (technology)?</i>	No concrete target is existent. (NREAP, p. 170)
	<i>How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?</i>	n/a
	<i>How is revision and optimization performed?</i>	No revision is planned. (NREAP, p. 172)
	<i>Is there an obligation for biofuels?</i>	No obligation is installed.
	<i>Is there a specific support for 2nd generation biofuels?</i>	n/a

Table (Appendix) 102: Comparison of technology-specific national RES deployment by 2020 (Romania)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	Unit	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
Green-X ACT scenario (proactive RES support) (prepared within the REPAP project)	27.5 %	8991	4712	176	247	4162*	34	0	94	42953	21982	544	357	0	0	7248	47	7555*	5220	n/a°	586	800	54	0	0	-267**
NREAP	24 %	7280	4038	-	-	-	-	-	-	31388	19768	0	320	0	0	8400	0	1950	950	0	542.7	-	-	-	-	-
Difference	-13%	-19%	-14%	-	-	-	-	-	-	-27%	-10%	-100%	-10%	-	-	14%	-100%	-74%	-82%	n/a	-7%	-	-	-	-	-

° n/a ... Not applicable. In the REPAP industry roadmap no separate category is applied to “liquid biomass” used for power generation - i.e. for modelling purposes they are included in the category “solid biomass”.

* Includes solid and liquid biomass and biomass from MSW. Outlook is not itemized between solid and liquid biomass.

** Exported biofuel (-329 ktoe) plus second generation biofuels (62 ktoe).

5.18 Annex for Slovenia

Table (Appendix) 103: Assessment criteria for administrative procedures and spatial planning (Slovenia)

Indicator		NREAP Assessment
4.2.1 Administrative procedures and spatial planning	<i>Presence of a one-stop shop scheme?</i>	No one-stop shop scheme is introduced. (NREAP, p. 58)
	<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	The lead-time for collecting all permits is considered too long. The estimated period is 12-24 months. (NREAP, p. 59)
	<i>Is the estimated typical number of permits required (excl. small-scale system) adequate?</i>	The typical number of permits is 6, and therefore deemed as too much. (AEON, p. 8-10)
	<i>Are timetables communicated in advance?</i>	No timetables are communicated in advance. (NREAP, p. 58)
	<i>Is there an exception from authorization of small-scale systems?</i>	Small-scale installations, such as solar collectors on building are exempted from all authorization procedure. (NREAP, p. 61)
	<i>What is the level of permitting costs of a large project?</i>	N/a
	<i>Are the fees required correlated to the administration costs?</i>	Fees are associated with the administrative costs of approving such permits. (NREAP, p. 61, 57)
	<i>Are renewables integrated in spatial planning?</i>	There is a new law coming into force providing better drafting and adopting spatial acts. (NREAP, p. 55)
	<i>Is it assured that during the authorization process, the administration has no discretionary power? (e.g. denial or delay can be subject to legal options to the applicant)</i>	n/a
	<i>Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time? (e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)</i>	n/a
	<i>Is information available on the process?</i>	Will be possible with the implementation of the “e-construction permit”. This service should set up between 2015 and 2020. (NREAP, p.58)
	<i>Do administrative procedures consider RES specificities?</i>	Several specific procedures are considered for issuing permits. (NREAP, p. 60)
	<i>Is there official guidance for local and regional administrative bodies?</i>	There are no official guidelines available, but a detailed analysis is being conducted regarding prospects for adopting specific guidelines. (NREAP, p. 61)
<i>Are trainings planned for authorities in charge of authorization?</i>	Training programs for staff that is managing administrative procedures is supplemented with information about RES installations. Nevertheless a detailed analysis is being conducted on the need for special training. (NREAP, p. 61)	

Table (Appendix) 104: Electricity infrastructure development and electricity network operation (Slovenia)

Indicator		NREAP Assessment
4.2.6 Electricity infrastructure development & 4.2.7 Electricity network operation	<i>Is the average time for grid connection adequate? If not, give examples.</i>	Connection time is considered too long, due to the complex administrative procedure, usually 6-8 months. (AEON, p. 29, 30)
	<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	Under Article 64 of the Energy Act system operators must, within the possibility of the system, give priority dispatch to electricity produced from RES. Access to the grid is guaranteed. (NREAP, p. 75, 73)
	<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Costs concerning reinforcement of the transmission and distribution network are borne by the system operator. Costs for making up the equipment for connection to the grid are borne by the investor of the RES generating plant. Costs for connection to the grid are drawn up and published by the system operator. (NREAP, p. 73)
	<i>What are the costs for subsequently connected producers?</i>	There are no specific rules. (NREAP, p. 74)
	<i>Is the connection to existing electricity networks coordinated?</i>	In Slovenia 5 different operators are existent, each of them having their own rules for grid connection. (AEON, p. 26)
	<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Reinforcement with Hungary and Italy has already been envisaged for a decade. The Slovenian transmission network is already considered relatively strong. (AEON, P. 28) (NREAP, p. 71)
	<i>Are there grid-market related measures to minimize RES-E curtailment?</i>	Owing to the small scope of sources, till now there are now limits on energy transmission. But problems are considered for future development. Therefore a new law for connection will get into force. (NREAP, p. 75)
	<i>Is information on costs and connection timetable available?</i>	Timetable and information on costs is not available. (NREAP, p. 74)
	<i>Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?</i>	Rules for establishing the costs are considered non-transparent. (AEON, p. 30)
	<i>Are there simple administrative procedures for grid connection?</i>	Grid connection is long and administratively very complex. (AEON, p. 30)
	<i>Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?</i>	No sanction system is installed.

Table (Appendix) 105: Electricity from renewable sources support measure assessment (Slovenia)

Indicator		NREAP Assessment	
4.3 RES-E support measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Support measures for most RES systems are appropriate. Only the support for PV is mediocre. (RE-Shaping)
		<i>Is there a technology specific support?</i>	Feed-in fixed tariffs and feed-in premiums are technology specific. (NREAP, p. 88, 87)
		<i>Is the long-term security of the support measures ensured?</i>	Both feed-in schemes are granted for 15 years. (NREAP, p. 87, 88)
		<i>Is there a maximum or minimum size for support?</i>	The upper limit for support is 125 MW _{el} for RES power plants. (NREAP, p. 85)
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	Only for wood biomass an efficient criteria is set. During the reporting period efficiency from 70 % has to be reached. (NREAP, p. 85)
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits + feed-in etc...)?</i>	Only feed in tariffs are installed.

Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	There is no overall and concrete target. (NREAP, p. 85)
	<i>How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?</i>	Supervision is provided based on to the decree on support for electricity generated from renewable energies. The Ministry of Economy observes the conditions every five years. (NREAP, p. 84)
	<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Every electricity customer contributes to the funding of the support for the generation of renewable electricity. (NREAP, p. 84)
	<i>How are revision and optimization performed?</i>	Revision is provided in accordance with the supervision process. Conditions are checked and revised every 5 years. New feed-in tariffs are set comparing to price trends of reference fuels. (NREAP, p. 84)

Table (Appendix) 106: Heat from renewable sources support measure assessment (Slovenia)

Indicator		NREAP Assessment	
4.3 RES-H support measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Support for decentralized biomass and ground source heat pumps is adequate. Support for centralized biomass and solar thermal installations should be optimized. (RE-Shaping)
		<i>Is there a technology specific support?</i>	There are many different technology specific support measures in place for solar collectors in households, wood biomass boilers in households, wood biomass in district heating systems, geothermal district heating systems. (NREAP, p. 90-96)
		<i>Is the long-term security of the support measures ensured?</i>	Long-term stability of financial support for solar systems and biomass boilers was insecure, therefore the schemes are moving to a legal basis. (NREAP, p. 90, 92)
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	Support for wood biomass burners in households: Energy efficiency must be over 90 % and particle emission must be less than 50 milligrams per cubic meter. (NREAP, p. 93) Support for district heating systems using wood biomass and geothermal energy and support for the installation of wood biomass boiler equipment: Energy efficiency must be over 86 %. (NREAP, p. 95, 97)
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits + feed-in etc...)?</i>	A project could benefit from different financial support systems. (NREAP, p. 91-98)
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	The overall target is to increase the share of RES in supplying heat and cooling from 22% in 2002 to 25% by 2010. (NREAP, p. 89)
		<i>How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?</i>	There is an annual report, which contains information on all support schemes. Non-fulfilment is not punished. (NREAP, p. 89)
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Support measures for the promotion of solar collectors and wood biomass boilers in households were under threat. So the scheme funding now is provided from the supplement on the price of electricity, heat and fuels. The budget is appointed through the year 2015. (NREAP, p. 90-94) The co-financing scheme for wood biomass boiler equipment is open until the fund is used up or at least until the end of May 2010. (NREAP, p. 97)
		<i>How is revision and optimization performed?</i>	The scheme for the co-financing the construction of district heating systems using wood biomass and geothermal energy and the scheme for the co-financing the installation of wood biomass boiler equip-

		ment have been revised in 2010. (NREAP, p. 95, 97) For all other schemes no optimization procedure is installed, but the ministry of Economy regularly reviewed them. (NREAP, p. 92, 91)
Support scheme specific indicators:	<i>What measures are planned on the use of CHP from RES?</i>	No measure installed.
	<i>What measures are planned on the use of district heating from RES?</i>	Scheme for co-financing the construction of district heating systems using wood biomass and geothermal energy is installed. (NREAP, p. 94)
	<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Two schemes promoting wood biomass boilers and solar collectors in households are installed. (NREAP, p. 92)
	<i>What measures are planned on the use of heat from RES in industrial applications?</i>	No measure installed.
	<i>Is there a RES Obligation for the building sector?</i>	n/a
	<i>Do public buildings feature best practices?</i>	n/a

Table (Appendix) 107: Transport fuels from renewable sources support measure assessment (Slovenia)

Indicator		NREAP Assessment
4.5 RES-T support measures	<i>Is the long-term security of the support measures ensured?</i>	The tax exemption for biofuels is ensured long-term stable due to legal basis. No time limit of the schemes is designated. Operational Program for Developing Environmental and Transport Infrastructure is only a short-time measure. (NREAP, p. 106, 109, 112)
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ obligation etc...)?</i>	No, only tax exemptions are possible. (NREAP, p. 105)
	<i>Is there a concrete obligation/target per year (technology)?</i>	Until 2015 biofuels must promote at least 7,5 % of the fuel used for motor vehicles. (NREAP, p. 104)
	<i>How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?</i>	Suppliers of liquid fuels who are not achieving the target are subject to a fine. (NREAP, p. 105)
	<i>How is revision and optimization performed?</i>	Environmental inspectors perform supervision concerning biofuel obligation. (NREAP, p. 105) Customer authority supervises tax exemption for biofuels. (NREAP, p. 106)
	<i>Is there an obligation for biofuels?</i>	See point "Is there a concrete target per year?"
	<i>Is there a specific support for 2nd generation biofuels?</i>	n/a

Table (Appendix) 108: Comparison of technology-specific national RES deployment by 2020 (Slovenia)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
REPAP industry roadmap (proactive RES support)	29.4 %	1834	944	36	44	844*	4	0	15	7958	5161	213	80	0	0	600	0	1139*	765	n/a°	206	5	7	0	0	194**
NREAP	25.3 %	1354	625	20	21	497	0	28	58	6126	5121	0	139	0	0	191	0	309	367	0	202.7	18.5	173.7	0	10.5	0
Difference	-14%	-26%	-34%	-44%	-52%	-41%	-100%	100%	74%	-23%	-1%	-100%	42%	-	-	-68%	-	-73%	-52%	n/a	-2%	73%	96%	-	100%	-100%

° n/a ... Not applicable. In the REPAP industry roadmap no separate category is applied to “liquid biomass” used for power generation - i.e. for modelling purposes they are included in the category “solid biomass”.

* Includes solid and liquid biomass and biomass from MSW. Outlook is not itemized between solid and liquid biomass.

** Imported biofuel

5.19 Annex for Spain

Table (Appendix) 109: Assessment criteria for administrative procedures and spatial planning (Spain)

Indicator	NREAP Assessment
<i>Presence of a one-stop shop scheme?</i>	Generally, a system developer has always to deal with more than one authority (national, regional and local authorities all take part in many administrative processes) in obtaining the needed permits and other documentation. Simplified administrative procedures are not available for some small RES technologies, such as PV and geothermal applications.
<i>Is the lead-time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	Time to be spent for the administrative process (duration to get all the main permits): between 3 and 6 years (55 months in the case of PV). This is caused by highly complex authorization procedures even for small scale RES-E installations.
<i>Is the estimated typical number of permits required (excl. small-scale system) adequate?</i>	For a single project development up to 25 different permits may be needed from regional and national authorities, and the permitting for small projects is as complicated as the one for large projects. For PV technology more than 20 permits are required.
<i>Are timetables communicated in advance?</i>	It is not defined for each of the Autonomous Communities.
<i>Is there an exception from authorization of small-scale systems?</i>	A simplified regime is mentioned in the NREAP for small-scale systems. Some technologies (i.e. wind, PV grid-connected) have special procedures. Heat applications, in buildings, do not have authorization requirements (only for the start up step). p.71 The Spanish NREAP proposes a “New regulation to facilitate the connection of electricity generation facilities with low-power renewable energies associated with consumption centres interconnected with the electricity grid (especially low-voltage” which already exists in a draft version for small RES-E facilities up to 100 kW of installed capacity). However, this regulation was already postponed several times, the timing of an approval is currently unclear.
<i>What is the level of permitting costs of a large project?</i>	<p>Taking PV as an example, the Royal Decree 1578/2008 has introduced the so called Pre-assignment Remuneration Register for photovoltaic installations that limits the volume of PV installations within 4 annual calls. Therein the PV system developers must provide with the application:</p> <ul style="list-style-type: none"> - a financial deposit; - the connection point to the electric grid (administered by the relevant DSO); - the administrative authorization (administered by the regional authority); - the building permit (administered by the local municipality). <p>These requirements are seen as a severe barrier, as they involve costs (the building permit, for instance, requires a down payment of up to 4% of the value of the entire project) that may not be recovered for an undetermined period of time and therefore increase the risk for the investor.</p>
<i>Are the fees required correlated to the administration costs?</i>	Fees are defined accordingly to the real direct and indirect costs (to guarantee an adequate level of maintenance and service).
<i>Are renewables integrated in spatial planning?</i>	Spatial planning issues are affecting the development of certain RES technologies such as biomass, geothermal, hydro and wind energy. There is a general insufficiency in spatial planning for RES installation addressed by APPA and Greenpeace in its proposal for a law on renewables in Spain. In general, RES are not taken sufficiently into account when regional and local authorities are planning the urban and extra-urban territory.
<i>Is it assured that during the authoriza-</i>	Partly yes, as at least where the deadline for the issuing of authori-

4.2.1 Administrative procedures and spatial planning

<i>tion process, the administration has no discretionary power? (e.g. denial or delay can be subject to legal options to the applicant)</i>	zations is not specifically stipulated or when the meaning of administrative silence is not stipulated, the provisions of the Public Administrations and Common Administrative Procedure (Legal Regime) Act, Law 30/1992 of 26 November 1992 shall apply.
<i>Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time? (e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)</i>	The EIA Procedure, regulated by RDL 1/2008, is often the most delicate part of large RES project developments. The presence of NIMBY effects and the opposition of certain environmental organizations often affect this procedure, resulting in considerable delays or in the abort of the project development.
<i>Is information available on the process?</i>	Availability of information at industrial, residential and environmental (EIAs) level. No information is available or planned for license acquiring. In many cases, the available information on administrative procedures results excessively complicated to understand. p. 68
<i>Do administrative procedures consider RES specificities?</i>	Some specificities are addressed for wind (in some Autonomous Communities, e.g. "Comunidad Valenciana" as well as for PV, e.g. in Andalusia, Cantabria and Catalonia.
<i>Is there official guidance for local and regional administrative bodies?</i>	n/a
<i>Are trainings planned for authorities in charge of authorization?</i>	This need is only mentioned for industrial authorizations (heat applications, small-scale systems) and is planned to be developed by third installation companies.

Table (Appendix) 110: Electricity infrastructure development and electricity network operation (Spain)

Indicator	NREAP Assessment
4.2.6 Electricity infrastructure development & 4.2.7 Electricity network operation	Is the average time for grid connection adequate? The connection to the grid of RES systems is mainly affected by delays in the authorization phase and in the execution of connection works. These delays can sum up to over 2 years in the case of large RES installations such as wind and PV power parks. The average lead time for getting grid connection (considering also approval of grid connection) is high in Spain. PV case: In the case of large installations of above 1 MWp in size, times regarding grid connection permit are about 12-20 weeks longer than small-scale installations. The main reasons behind these delays seem to lay in the lack of transparent information provided by the DSOs on the current grid connection capacity and in the technical requirements necessary for the connection itself. The dialogues with the DSOs result difficult, vague and affected by considerable delays.
	Is there priority dispatch? Is there priority access or guaranteed access to the grid? Priority access to the grid in Spain is defined in Annex XI from the Royal Decree (RD) 661/2007. The Control Centre of Renewable Energies (Cecre), created by REE, is considered an excellent pioneering effort to increase the reliability and stability of the electricity system and giving priority to RES installations at the same time. In Spain, systems that generate electricity from RES are statutorily entitled to priority access and connection to the electrical grid. The developer will take care of all the grid-connection costs and the DSO and TSO will carry out the costs for expansion and upgrade of the grid. There are barriers involved. The plant operator shall bear the costs of the connection and of the eventual necessary upgrade of the grid capacity up to the connection point (RD 661/2007, Annex XI).
	What are the rules of cost sharing and bearing of network technical adaptations? The Spanish legislation provides that grid connection costs are charged to the plant developer while the TSO or DSO will have to shoulder the cost of reinforcing or extending the transmission or distribution grid. This is in application of what Decision

	2009/548/EC calls the "shallow connection cost approach".
What are the costs for subsequently connected producers?	There are several plans and laws involved within this process. The plan horizon is of 10 years.
Is the connection to existing electricity networks coordinated?	This coordination is regulated by several Royal Decrees (mainly RD 1955/2000 and RD 661/2007) as well as by different Operation Procedures (Procedimientos de Operación, P.O.) of the Spanish TSO (REE), mainly P.O. 12.1 and 12.2 (according to Appa). There is a characteristic barrier for Spain concerning grid access: The decision to include geothermal power systems in the group of technologies "non dispatchable". ⁴¹
Is the Member State contributing to the development of a trans-European electricity network?	It is mentioned in the NREAP the development of the international interconnection. Particularly two additional interconnections between Spain and France are currently planned, however the NREAP already considers these two lines as insufficient to reach the objective regarding the interconnection capacity of 10% of the installed power capacity. Furthermore, it is not explained how and when this development will take place. According to the AEON report for Spain ⁴² , the current interconnection capacity with Portugal may still be adequate, but the one with France is insufficient. A further interconnection with France of 1,400 MW (additional to the two cables mentioned above) through the Bay of Biscay was announced by the Spanish and the French TSO in October 2010.
Are there grid- market related measures to minimize RES-E curtailment?	There exist such measures mainly in the form of two so called Operational Procedure (P.O.) regarding the minimization of RES-E curtailment. One is P.O. 3.7 which establishes that all kind of RES-E installations with more than 10 MW of installed capacity have to be connected to a so called Control Centre (being at regional level of to the National Control Centre (CECRE) of the Spanish TSO (REE) where they have to communicate in real time its current power production etc. In case of necessity of curtailment the Spanish TSO curtails himself or communicates the curtailment orders to the regional control centres. The other is the P.O. 12.3 concerning the response requirements for wind power plants in dealing with voltage dips. (source: APPA)
Is information on costs and connection timetable available?	The denial of grid connection by TSOs and DSOs is, in some cases, a barrier for RES development in Spain.
Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?	n/a
Are there simple administrative procedures for grid connection?	Wind case: grid connection authorization and realization times are very long, lasting up to 35 months for a 2MW wind farm. Similarly as found for administrative procedures, grid connection procedures may vary from region to region, leading to conflicts between different administrative levels. The Spanish Government in July 2010 prepared a draft legislation to simplify and accelerate the grid access and grid connection for smaller RES installations up to 100 kW (1 MW in the case of cogeneration plants). However, this draft legislation is not yet implemented.
Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?	n/a

⁴¹ Non-cost barriers to renewables - AEON study - National report for Spain p. 95

⁴² Non-cost barriers to renewables - AEON study - National report for Spain p. 51

Table (Appendix) 111: Electricity from renewable sources support measure assessment (Spain)

Indicator		NREAP Assessment	
4.3 RES-E support measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Sufficiency for small hydro, solar (PV and solar thermal electricity) and wind on-shore. Marine technologies (excl. wind off-shore), biogas, biomass and small wind installations should be reviewed.
		<i>Is there a technology specific support?</i>	Fixed feed-in, feed-in premium and different options of subsidies are available and technology specific. p.117-123
		<i>Is the long-term security of the support measures ensured?</i>	In general 25 year of support is given in main schemes within Spain. p.118-119. Nevertheless, the planned new measures to modify the regulation for RES-E installations under the special regime (not mentioned in the NREAP directly but drafted by the ministry in July and October 2010 and approved in November and December, e.g. RD 1614/2010, RDL 14-2010) very much counteract the development of the PV sector, like the foreseen reduction of the PV tariffs within the first tender round after the coming into force of the planned regulative changes (most likely the 1st tender in 2011). Generally the newly introduced retroactive steps are very severely jeopardising the long term security of support. Another important source of insecurity is based on the current discussion around the “tariff deficit”. Due to electricity prices fixed by the government which since nearly 10 years did not cover the real electricity production and system costs (including the payments for RES electricity) a huge mismatch between real costs and income of the overall electricity system, called tariff deficit, has been accumulated, reaching approximately 15 billion € at the end of 2009. It will be important to solve this structural challenge without affecting the investment security for renewable energy sources.
		<i>Is there a maximum or minimum size for support?</i>	Some plant sizes are excluded from support. p.118-119
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	Energy efficiency criteria are defined only for biomass/biogas systems. p.122
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	Together with the feed-in, feed-in premium support RE technologies could receive complementary investment subsidies, grants, etc.
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	Concrete target for RES electricity in 2020 (40%). p.46-47
		<i>How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?</i>	Is not clear the target supervision and non-fulfilment consequences in the NREAP for Spain.
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	The costs of the feed-in tariff and the bonuses for electricity from renewable sources at the end are borne by the consumers. The costs of the feed-in tariffs for electricity from renewable sources are first paid by the National Energy Regulatory Body (CNE). Afterwards these costs are recovered in the form of a certain share of each kWh of electricity consumed (as a part of the access fees).
		<i>How are revision and optimization performed?</i>	Revisions are planned and coordinated regarding the RD 661/2007. p. 120

Table (Appendix) 112: Heat from renewable sources support measure assessment (Spain)

Indicator		NREAP Assessment	
4.3 RES-H	All sup-	<i>Are the support levels sufficient for each technology?</i>	Low remuneration levels for district heating and biomass. Low to average for solar thermal and heat pumps.
		<i>Is there a technology specific</i>	Technology specific support within the RES heat sector. p.124-128

	<i>support?</i>	
	<i>Is the long-term security of the support measures ensured?</i>	Long term security of the support measures is given (combined production of heat and electricity). p.128
	<i>Does the support depend on energy efficiency criteria of the technology?</i>	In particular, only high efficiency cogeneration, using either biomass or biogas is considered under the regulation and awarded with special tariffs following the same scheme as presented in the RES electricity section.
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	One project can cumulate more than one measure e.g. financing grants together with special tariffs for biomass and biogas. Furthermore a <i>Renewable Heat Incentive System</i> is planned to promote RES-H.
Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	Concrete target for the RES heat sector in 2020 (18.9%). p.46-47
	<i>How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?</i>	n/a
	<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Non sufficient budget is available for supporting all the involved RES heat projects for achieving the target. p.127
	<i>How is revision and optimization performed?</i>	n/a
Support scheme specific indicators:	<i>What measures are planned on the use of CHP from RES?</i>	The primary promotional tool within the country for cogeneration is set up under the RD 616/2007.
	<i>What measures are planned on the use of district heating from RES?</i>	n/a
	<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	The National State Administration has also been implementing funding programmes for small-scale heating and cooling networks set up by energy service companies. Maximum funding per project is €3.5 million and can be applied to biomass, solar and geothermal projects". No specific measures are given.
	<i>What measures are planned on the use of heat from RES in industrial applications?</i>	n/a
	<i>Is there a RES Obligation for the building sector?</i>	Spain has been the first European country to introduce an obligation to use renewable energy appliances in new buildings, and in those undergoing major renovations. Adoption in 2006 of a solar obligation in the national building law CTE (<i>Código Técnico de la Edificación</i>), introduced by RD 314/2006. It has to be noted however that a stronger consideration of other RES than solar thermal heat such as biomass and geothermal should be included in the obligation.
	<i>Do public buildings feature best practices?</i>	Solar applications in some municipalities. p.126

Table (Appendix) 113: Transport fuels from renewable sources support measure assessment (Spain)

Indicator	NREAP Assessment
4.5 RES-T support	<i>Is the long-term security of the support measures ensured?</i>
	Although the Spanish legislation foresees an exemption of biofuels from the excise duty/tax on hydrocarbons, this exemption only applies until the end of 2012. The Spanish NREAP makes no comment on a possible prolongation on that tax exemption.
	<i>Are there multiple measures of which a</i>
	Yes. The support measures in the transport sector for renewable

<i>project can benefit (e.g. tax credits+ obligation etc...)?</i>	energies consist of an obligatory share of renewables in transport fuels and of a tax exemption of renewable energies.
<i>Is there a concrete obligation/target per year (technology)?</i>	Spain's RES 2020 target for the transport sector: 13.6%. Annual targets for biofuels and other renewable fuels for transport which are compulsory as from 2009, reaching 5.83% in 2010.
<i>How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?</i>	Order ITC/2877/2008 designates the CNE as the body responsible for the issue of biofuel certificates, management of the certification and supervision mechanism and control of the mandatory commercialization of biofuels. Non-performance of the obligation shall be considered a breach of the obligations laid down for achievement of the annual targets set for minimum biofuel and other renewable fuel content and shall constitute a very serious breach according to Law 34/1998. Any imposition of administrative sanctions which may arise from the aforementioned breach is without prejudice to compensatory payments to be paid in any case.
<i>How is revision and optimization performed?</i>	The Special duty Act provides that, under the hydrocarbon tax, a special tax rate of 0 euro per 1000 liters will be levied on biofuels until 31 December 2012, when it will be revised.
<i>Is there an obligation for biofuels?</i>	Compulsory global targets for biofuels (2010: 5.83%).
<i>Is there a specific support for 2nd generation biofuels?</i>	There is no specific support for 2nd generation biofuels.

Table (Appendix) 114: Comparison of technology-specific national RES deployment by 2020 (Spain)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
REPAP industry road-map (proactive RES support)	26.5%	29186	6366	71	1.179	4725	64	-	328	214430	42390	340	29690	25980	840	79050	13230	16860	6050	-	3610	797	81	-	-	2733 *
NREAP	22.7%	22057	5654	10	644	4850	100	-	51	150031	31570	300	14316	15353	220	70502	7753	7400	2617	-	3885	400	2790	-	381	4
Difference	-19%	-32%	-13%	-649%	-83%	3%	36%	n.a.	545%	-43%	-34%	-13%	-107%	-69%	-282%	-12%	-71%	-128%	131%	n.a.	7%	-99%	97%	n.a.	n.a.	-

* incl. imports and 2nd generation biofuels

5.20 Annex for Sweden

Table (Appendix) 115: Assessment criteria for administrative procedures and spatial planning (Sweden)

Indicator	NREAP Assessment
<i>Presence of a one-stop shop scheme?</i>	Only for small-scale installations, those need only municipal notification. (NREAP, p. 32)
<i>Is the lead time for collecting all permits reasonable? If not, what is the lead-time for typical RES-E projects?</i>	Time depends on the size and type of the plant. For Solar plants the permission time is only 3-6 month. A permit for offshore wind power could last 15-24 month. (NREAP, p. 32) (AEON, p. 20)
<i>Is the estimated typical number of permits required (excl. small-scale system) adequate?</i>	2-6 permits depending on the size and the technology of the installed plan. (AEON, p. 20)
<i>Are timetables communicated in advance?</i>	Not applicable (n/a)
<i>Is there an exception from authorization of small-scale systems?</i>	Municipals decide if specific installations are exempted of some permits. There is no specific regulation at federal level. (NREAP, p. 32)
<i>What is the level of permitting costs of a large project?</i>	Depends on the technology installed: Wind power onshore < 2-3 % of the investment. Wind power offshore < 10 % of the investment. Hydropower and Biomass about € 50.000. (AEON, p. 19, 20)
<i>Are the fees required correlated to the administration costs?</i>	Costs for obtaining the permit for gas tubes and biogas installations and for geothermal heat pumps are considered too expensive. Fees are often set by local authorities therefore it is not guaranteed that this fees are correlated to the administrative costs. (NREAP, p. 33, 34) (AEON, p. 17, 14)
<i>Are renewables integrated in spatial planning?</i>	RES installations can generally be constructed in industrial zones if they are regarded as industrial plants. Municipalities can appoint "priority areas". In these areas a special technology has priority before other interests. (AEON, p. 18, 19)
<i>Is it assured that during the authorization process, the administration has no discretionary power?(e.g. denial or delay can be subject to legal options to the applicant)</i>	During the planning procedure of wind power local authorities can interpose their veto. (NREAP, p. 29)
<i>Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time?(e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)</i>	n/a
<i>Is information available on the process?</i>	An enormous amount of information is available; e.g. application forms via websites and brochures. The most information is available for wind power: e.g. A manual about wind power and four wind power coordinators are available. (NREAP, p. 32)
<i>Do administrative procedures consider RES specificities?</i>	There are specific sectoral rules for wind power. (NREAP, p. 32)
<i>Is there official guidance for local and regional administrative bodies?</i>	There are guidelines for planning and building industrial and residential areas available. Additionally the government agency provides training for the local climate advisor. (NREAP, p. 32)
<i>Are trainings planned for authorities in charge of authorization?</i>	n/a

4.2.1 Administrative procedures and spatial planning

Table (Appendix) 116: Electricity infrastructure development and electricity network operation (Sweden)

Indicator		NREAP Assessment
4.2.6 Electricity infrastructure development & 4.2.7 Electricity network operation	<i>Is the average time for grid connection adequate? If not, give examples.</i>	No average time is conducted, but government evaluated that the licensing process might take too long. It could happen that a wind farm is constructed before the connection line is ready. (NREAP, p. 61)
	<i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i>	All generated electricity is treated equally, but therefore grid access is guaranteed. Priority dispatch not possible. (NREAP, p. 62, 66)
	<i>What are the rules of cost sharing and bearing of network technical adaptations?</i>	Cost sharing depends on the grid owner. Mostly the “Point tariff” is used: The charge for utilising the main grid is determined per connection point and is based on the energy and power conditions at the connection point. Connection costs to the main grid are charged corresponding to the investment costs, minus any further utility values of benefit for all users. (NREAP, p. 63)
	<i>What are the costs for subsequently connected producers?</i>	Same costs for all producers (NREAP, p. 64)
	<i>Is the connection to existing electricity networks coordinated?</i>	Chapter 6 of the Environmental Code explains the consultation procedure, but receiving the environmental permit could last too long. (NREAP, p. 62)
	<i>Is the Member State contributing to the development of a trans-European electricity network?</i>	Three new lines connecting Sweden with Finland and Norway are planned. This will increase the capacity by 2.5 GW. (NREAP, p. 57, 58)
	<i>Are there grid- market related measures to minimize RES-E curtailment?</i>	The government intends to introduce a measure to prevent renewable energy sources being reduced more than necessary. (NREAP, p. 67)
	<i>Is information on costs and connection timetable available?</i>	A new proposal will come into force (1 December 2010). Therefore holders of the grid have to submit a timetable for the connection of facilities. (NREAP, p. 65)
	<i>Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?</i>	Yes, the costs are considered transparent, but they are depending on two different tariff systems. (NREAP, p. 63)
	<i>Are there simple administrative procedures for grid connection?</i>	n/a
<i>Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?</i>	n/a	

Table (Appendix) 117: Electricity from renewable sources support measure assessment (Sweden)

Indicator		NREAP Assessment	
4.3 RES-E support measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	According to a recent report funding for biomass and small hydro-power plants is sufficient. (RE-Shaping)
		<i>Is there a technology specific support?</i>	The certificate scheme is technology neutral, but there is a dedicated measure for the market introduction of solar cells implemented. (NREAP, p. 81, 82)
		<i>Is the long-term security of the support measures ensured?</i>	A plant receives certificates for 15 years. Financial support measures for PV and wind power are short time arrangements. Financing of wind power projects will end 2012 PV funding ends 2011. (NREAP, p. 81)
		<i>Is there a maximum or minimum size for support?</i>	n/e
		<i>Does the support depend on en-</i>	No, there is no dependence on energy efficiency criteria. (NREAP,

	<i>ergy efficiency criteria of the technology?</i>	p. 81)
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	Yes, there are multiple measures for wind power and solar cells introduced. Solar cells are profiting from certificate scheme and financing support. (NREAP, p. 81)
Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	The overall target is to increase electricity production by 25 TWh by 2020 compared to 2002. For solar energy the target is 2.5 GWh until 2011. p. 81, 87
	<i>How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?</i>	Control stations have been introduced. If the quota obligation is not fulfilled, a quota obligation fee will be payable. (NREAP, p. 81, 82)
	<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	The certificate scheme is not financed from the national budget, hence there is no limitation designated. Support for solar cells is limited due to decisions on the national budget. Total amount for solar aid is SEK 50-60 million for 2010 and 2011. (NREAP, p. 80-88)
	<i>How are revision and optimization performed?</i>	Currently the second revision of the certificate scheme is taking place which, inter alia, increases renewable electricity generation target by 25 TWh by 2020, from 17 TWh. (NREAP, p. 81)

Table (Appendix) 118: Heat from renewable sources support measure assessment (Sweden)

Indicator		NREAP Assessment	
4.3 RES-H sup-port measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Support measures for district and biomass CHP-plants are considered optimal. Heat pump aid is satisfactory whereby solar thermal and geothermal installations support is examined immature. (RE-Shaping)
		<i>Is there a technology specific support?</i>	Yes, heat pumps and solar energy are accosted. (NREAP, p 88-90)
		<i>Is the long-term security of the support measures ensured?</i>	Support for investment in solar energy and the aid for converting from direct-acting electrical heating in residential properties will both end this year. (NREAP, p. 89, 90)
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	The solar collector must be certified in accordance with the EU SolarKey mark label. (NREAP, p. 89)
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	A project could benefit from tax exemption (biofuel) and financial support (Aid for converting from direct acting electrical heating in residential properties). (NREAP, p. 88, 90)
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	The aid for investment in solar energy should provide 28 GWh during the years 2009 - 2010. (NREAP, p. 89)
		<i>How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?</i>	Due to the fact that there is only an approximated target, there is no sanction for not-fulfilment introduced.
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	No concrete budget is defined. Capacity is defined annually on the national budget. (NREAP, p. 89, 90)
		<i>How is revision and optimization performed?</i>	A number of beneficiaries will need to provide information for evaluation purpose. The industry association and state authorities will evaluate the aid. (NREAP, p. 89)
	Support scheme specific indicators:	<i>What measures are planned on the use of CHP from RES?</i>	CHP from RES profits by: Tax exemption for biofuels, electricity certificate scheme, aid for conversion from direct-acting electricity. However there is no scheme introduced to promote this specific point. (NREAP, p. 88.)
		<i>What measures are planned on the use of district heating from RES?</i>	District heating system could profit by: Tax exemption for biofuels, electricity certificate scheme, aid for conversion from direct-acting electricity. However there is no scheme introduced to promote this specific point. (NREAP, p. 88)
		<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	Small-scale system could profit by: Tax exemption for biofuels, electricity certificate scheme, aid for conversion from direct-acting electricity. However there is no scheme introduced to promote this specific point. (NREAP, p. 88)
		<i>What measures are planned on the use of heat from RES in industrial applications?</i>	RES system in industrial application could profit by: Electricity certificate scheme, tax exemption for biofuels. However there is no scheme introduced to promote this specific point. (NREAP, p. 88)
		<i>Is there a RES Obligation for the building sector?</i>	No specific requirement for RES in buildings is set. (NREAP, p. 43)
<i>Do public buildings feature best practices?</i>		n/a	

Table (Appendix) 119: Transport fuels from renewable sources support measure assessment (Sweden)

Indicator		NREAP Assessment
4.5 RES-T support measures	<i>Is the long-term security of the support measures ensured?</i>	Financial support for investment in biogas production will end 2013. Financial support for investment in biogas and other renewable gases ends 2011. (NREAP, p. 93, 95)
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ obligation etc...)?</i>	No multiple measures are possible.
	<i>Is there a concrete obligation/target per year (technology)?</i>	Goal for the “Financial support for investment for biogas production” is 0.6 TWh till 2013. Primary target is to ensure that 10 % of transport fuels are produced on the basis of renewables by 2020. (NREAP, p. 93, 10)
	<i>How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?</i>	There is no sanction system installed.
	<i>How is revision and optimization performed?</i>	Financial support for biogas production will be monitored and evaluated mostly through the Swedish Board of Agriculture. Experience with “Financial support for investments for biogas and other renewables” will be feedback after each round of application. (NREAP, p. 94, 95)
	<i>Is there an obligation for biofuels?</i>	No obligation is applied. (NREAP, p. 92)
	<i>Is there a specific support for 2nd generation biofuels?</i>	n/a

Table (Appendix) 120: Comparison of technology-specific national RES deployment by 2020 (Sweden)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe
REPAP industry roadmap (proactive RES support)	73 %	22303	10000	-	250	9050	100	0	-	117500	73300	0	4000	0	-	15000	5000	20000	100	0	2200	400	600	0	500	1000
NREAP	50.2 %	19914	10543	-	6	9415	11	65	1046	97258	68000	0	4	0	0	12000	500	16635	53	65	1008	465	251	0	198	94
Difference	39 %	-10.7%	+105 %	-	-97 %	+104%	-89 %	-	-	-17.2%	-7,2 %	-	-99 %	-	-	-20 %	-90 %	-16.8 %	-47 %	-	-54 %	+116%	-52 %	-	-60 %	-91 %

5.21 Annex for the United Kingdom

Table (Appendix) 121: Assessment criteria for administrative procedures and spatial planning (UK)

Indicator	NREAP Assessment
<i>Presence of a one-stop shop scheme?</i>	There is no one-stop shop arrangement for all forms of licensing for renewable energy installations in the UK. (NREAP, p. 54)
<i>Is the lead time for collecting all permits reasonable? If not, what is the lead time for typical RES-E projects?</i>	According to the NREAP 71% of all large-scale applications were decided within 13 weeks, and 76% of small-scale RES projects received all permits within 8 weeks. (NREAP, p. 57) In contrast to that, the AEON study indicates an average lead-time of 11 months. (AEON, p. 11)
<i>Is the estimated typical number of permits required (excl. small-scale system) adequate?</i>	Not applicable (n/a)
<i>Are timetables communicated in advance?</i>	Town and Country Planning Regulations set out time frames for dealing with planning applications, but additionally bodies are required to be consulted under other legislations. (NREAP, p. 54-56)
<i>Is there an exception from authorization of small-scale systems?</i>	Specific small-scale technologies are classified as “permitted development”. Town and Country Planning grants automatic planning permission for these systems in specific circumstances. Examples are PV, solar thermal, ground and water-coupled heat pumps and domestic microgeneration systems. (NREAP. p. 56,57)
<i>What is the level of permitting costs of a large project?</i>	Every applicant can calculate the planning fee on the Planning Portal website: www.planningportal.gov.uk (NREAP, p. 58) According to the AEON study, the actual fee sums up to about 10% of the investment costs and additionally a lump sum of 1700 £ per hectare. (AEON, p. 14)
<i>Are the fees required correlated to the administration costs?</i>	The Department of Communities and Local Government’s general policy is that fees should cover the cost of processing applications. Assessments indicate that if all overheads are taken into account then, a gap of about 10% occurs between actual costs and the income gained from planning fees. (NREAP, p. 58)
<i>Are renewables integrated in spatial planning?</i>	Not explicitly announced. Note that national, devolved, regional and local levels of administration currently have a role in authorizing, certifying and licensing renewable energy installations and spatial planning.
<i>Is it assured that during the authorization process, the administration has no discretionary power?(e.g. denial or delay can be subject to legal options to the applicant)</i>	n/a
<i>Is it assured that during the authorization process, the public has the opportunity to file objections against the project within a defined period of time?(e.g. objections which are raised afterwards have to be ignored by the permission authority and the courts)</i>	n/a
<i>Is information available on the process?</i>	Information on the application process is provided by the responsible authority in many forms, e.g. on websites and in published guidelines. (NREAP, p. 52)
<i>Do administrative procedures consider RES specificities?</i>	National policy and guidelines have been produced to ensure that the peculiarities of renewable energy are taken into account. (NREAP, p. 56)
<i>Is there official guidance for local and regional administrative bodies?</i>	Documentation is applicable that provides guidance on implementing the policies of the national planning framework. (NREAP, p. 61)

4.2.1 Administrative procedures and spatial planning

<p><i>Are trainings planned for authorities in charge of authorization?</i></p>	<p>Department of Energy and Climate (DECC) delivers generic training to planners, planning inspectors and councillors on renewable energy policy and technical issues. (NREAP, p. 62)</p>
---	---

Table (Appendix) 122: Electricity infrastructure development and electricity network operation (UK)

Indicator	NREAP Assessment
<p><i>Is the average time for grid connection adequate? If not, give examples.</i></p>	<p>Time for grid connection is considered as the main barrier for RES in the UK. It could take from 1 to 3 years. For some plants at certain locations grid connection is offered in 2025. (NREAP, p. 82) (AEON, p. 35)</p>
<p><i>Is there priority dispatch? Is there priority access or guaranteed access to the grid?</i></p>	<p>Guaranteed access to the grid is ensured for all types of technology. Priority dispatch is not implemented, but a consequence of the Renewables Obligation is that most renewable generators contract with electricity supply companies to sell all the power they are able to generate. If necessary the UK's market arrangement determines which generator has to reduce its output. (NREAP, p. 89)</p>
<p><i>What are the rules of cost sharing and bearing of network technical adaptations?</i></p>	<p>The Transmission System Operator (TSO) is required, under Standard License Condition C6 of its license, to prepare a statement of its connection charging and use of system charging methodologies. Similar conditions apply for connection to and the use of distribution networks (NREAP, p. 90)</p>
<p><i>What are the costs for subsequently connected producers?</i></p>	<p>The first connected producer receives an appropriate payback from the subsequent one, if the second connection takes place within 5 years after the first one. (NREAP, p. 90)</p>
<p><i>Is the connection to existing electricity networks coordinated?</i></p>	<p>n/a</p>
<p><i>Is the Member State contributing to the development of a trans-European electricity network?</i></p>	<p>Two new lines are under construction:</p> <ul style="list-style-type: none"> • A 1200 MW interconnector between the UK and the Netherlands, which is expected to be completed in 2011 • An interconnector across the Irish Sea between the Republic of Ireland and Wales is to be completed by 2012. <p>Other links with Belgium, France and Ireland are planned. (NREAP, p. 87)</p>
<p><i>Are there grid- market related measures to minimize RES-E curtailment?</i></p>	<p>The UK government plans to enhance grid infrastructure to minimize electricity losses. (NREAP, p. 93, 94)</p>
<p><i>Is information on costs and connection timetable available?</i></p>	<p>The Transmission System Operator (TSO) must provide terms of connection including costs to the potential generator within 3 months after receipt of an application. The timetable for processing a request shall be included in the charging statements in the future. (NREAP, p. 92, 93)</p>
<p><i>Are there transparent rules regarding the establishment of costs for grid connection? Are maximum levels defined?</i></p>	<p>The TSO sets out the rules for establishing the costs. Conditions of this method are available on request. (NREAP, p. 90)</p>
<p><i>Are there simple administrative procedures for grid connection?</i></p>	<p>n/a</p>
<p><i>Has a sanction system for TSO and DSO been initiated in case of delayed grid connection?</i></p>	<p>There are some penalties for late DNO connections.</p>

4.2.6 Electricity infrastructure development &
4.2.7 Electricity network operation

Table (Appendix) 123: Electricity from renewable sources support measure assessment (UK)

Indicator		NREAP Assessment	
4.3 RES-E sup-port measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	Support levels are broadly sufficient for all kind of biomasses, wind farms on- and offshore and for small hydro, through the RO. PV installations currently have adequate tariffs under the Feed-In Tariff, but an emergency review was announced in February 2011, after the NREAP was published. Wave, tidal and geothermal support is insufficient. (RE-Shaping)
		<i>Is there a technology specific support?</i>	The number of renewable certificates issued or alternatively the height as well as the guaranteed duration of feed in tariff payments differs by technology. (NREAP p. 114, 117)
		<i>Is the long-term security of the support measures ensured?</i>	The UK government has recognized the importance of grandfathering, providing confidence to those investing in renewable energy that their projects will be protected from future changes to support schemes. Biomass and bioenergy projects faced a large amount of uncertainty as these were not previously grandfathered. Projects in England and Wales are now grandfathered with the exception of bioliquids, the uplift currently given to energy crops and the uplift for CHP. However in Scotland it is proposed that dedicated biomass projects will not be grandfathered. In practical terms, most forms of RES generation can access the RO, and benefit from ROCs for 20 years of operation. The duration of feed-in tariffs for eligible small scale generators payments varies across the technologies, ranging from 20 to 25 years. The feed-in tariff scheme shall be applicable to new entrants until 2021. (NREAP, p. 115, 116)
		<i>Is there a maximum or minimum size for support?</i>	Microgeneration (up to 50 kW) is not allowed to participate in the renewable obligation certificate (ROC) scheme, while the feed-in tariff system is limited to small-scale RES producers (up to 5 MW) (NREAP, p. 112)
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	CHP plants must be accredited under the CHP Quality Assurance scheme in order to be qualified for the ROC scheme. (NREAP, p. 111)
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	New grants for certain RES plant receiving ROC are applicable, whereby the income receivable from the RO is taken account. (NREAP, p. 112) The situation for small-scale RES plant receiving feed-in tariffs and possible grants is not entirely clear. (NREAP, p. 118)
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	The RO sets out concrete targets on an annual basis until 2016 for the time being, while the system shall remain in place at least until 2027.
		<i>How is the system supervised and what happens in case of non-fulfilment of the targets mentioned above?</i>	Suppliers who cannot fulfil their obligation through the use of certificates are required to pay a buyout price, which transfers into a buyout fund. Actual buy out price is £ 37.2 per certificate. (NREAP, p. 109, 110) The fact that buyout funds are reimbursed to suppliers meeting their obligation leads to actual certificate prices being well above the penalty level.
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	Cost of the RO is passed through to electricity user's bill. The feed-in tariff system is financed directly by the electricity suppliers (and indirectly again by the consumer). (NREAP, p. 110, 116)
		<i>How are revision and optimization performed?</i>	The RO has been amended several times since its introduction, following representations from industry, changes in the electricity market and Government targets. Feed-in tariffs are periodically revised. Changes resulting from the review would be implemented in 2013. (NREAP, p. 111, 116)

Table (Appendix) 124: Heat from renewable sources support measure assessment (UK)

Indicator		NREAP Assessment	
4.3 RES-H sup-port measures	All support measures	<i>Are the support levels sufficient for each technology?</i>	No support scheme for RES in heating and cooling is currently implemented. A new measure called “Renewable Heat Incentive” (RHI) was due to come into force in April 2011 although this is now scheduled for June 2011. (NREAP, p. 121)
		<i>Is there a technology specific support?</i>	n/a
		<i>Is the long-term security of the support measures ensured?</i>	The new RHI scheme shall grant support for 10 to 23 years. (NREAP, p. 120)
		<i>Does the support depend on energy efficiency criteria of the technology?</i>	The incentives paid to households would be calculated on the basis of certain alternative energy efficiency measures. (NREAP, p. 121)
		<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ feed-in etc...)?</i>	n/a
	Regulatory framework	<i>Is there a concrete obligation/target per year (technology)?</i>	No concrete target is set.
		<i>How is the system supervised and what happens in case of non-fulfilment of the target mentioned in the line above?</i>	n/a
		<i>How is the system funded? Does it depend on annual budget decisions? Is the budget significant enough?</i>	The government considers the introduction of new levies in order to finance the scheme. (NREAP, p. 120)
		<i>How is revision and optimization performed?</i>	The proposal would be to start a review of the scheme in 2013 and implement changes coming from that review in 2014. (NREAP, p. 121)
	Support scheme specific indicators:	<i>What measures are planned on the use of CHP from RES?</i>	CHP is supported under the RO. A 0.5 ROCs uplift per MWh is implied for good quality renewable CHP, but no additional concrete measure promoting CHP from RES is implemented. (NREAP, p. 122)
		<i>What measures are planned on the use of district heating from RES?</i>	Government aims to support district heating from RES through the Renewable Heat Incentive. (NREAP, p. 122) The RHI consultation sought views on potential specific support for district heating. Heat used for cooling may be supported in certain circumstances. DECC introduced a new Enabling Framework for District Heating and Cooling in the UK with a view to creating market certainty and confidence and encourage deployment of low carbon and renewable district heating and cooling in those communities where it is economical and fits with the wider energy and climate change objectives. Key proposals include a potential uplift for district heating under the RHI, a new National Heat Map, and consideration of a commitment to connect the public estate to networks where they exist or are proposed. The Scottish Government is currently undertaking a heat mapping study in conjunction with Highland Council. The lessons learnt and output from this study will be used as an exemplar to other local authorities.
		<i>What measures are planned on the use of small scale heating and cooling from RES?</i>	The RHI will also support small-scale installations, but not specifically cooling systems. (NREAP, p. 123)

	<i>What measures are planned on the use of heat from RES in industrial applications?</i>	RHI will also support industrial applications. (NREAP, p. 124)
	<i>Is there a RES Obligation for the building sector?</i>	Building Regulations set functional requirements for energy efficiency and carbon emissions for new houses and buildings. Thus, the use of renewables is indirectly promoted. (NREAP, p. 68)
	<i>Do public buildings feature best practices?</i>	Government has put in place a range of initiatives to reduce carbon emissions and to encourage the adoption of RES in the public sector. (NREAP. p. 70, 71)

Table (Appendix) 125: Transport fuels from renewable sources support measure assessment (UK)

Indicator		NREAP Assessment
4.5 RES-T support measures	<i>Is the long-term security of the support measures ensured?</i>	The Renewable Transport Fuel Obligation (RTFO) will remain in force at least until 2020. The Used Cooking Oil Duty Differential will end in March 2012. (NREAP, p. 129)
	<i>Are there multiple measures of which a project can benefit (e.g. tax credits+ obligation etc...)?</i>	It is possible for biofuel producers using cooking oil to earn RTFO certificates and to benefit from the dedicated Cooking Oil Duty Incentive (as long as this is in place). (NREAP, p. 129)
	<i>Is there a concrete obligation/target per year (technology)?</i>	RTFO places a requirement that 3.5% (2010/11) of road transport fuel consumed are obtained from renewable fuels. Obligation will increase to 5% in 2013/14. (NREAP, p. 125)
	<i>How is the system supervised and what happens in case of non-fulfilment of the obligation mentioned in the line above?</i>	Suppliers have to report their biofuel volumes to the Renewable Fuels Agency (RFA). Suppliers who cannot fulfil their obligation through the use of certificates are required to pay a buyout price, which transfers into a buyout fund. Those who do not pay the buy-out price are liable to a civil penalty. (NREAP, p. 126)
	<i>How is revision and optimization performed?</i>	Cooking Oil Duty Differential has been optimized through stakeholder involvement, but due to the short lifetime of the scheme no further revision is planned. (NREAP, p. 133) For the RTFO no revision and optimization is planned for the time being. (NREAP, p. 127)
	<i>Is there an obligation for biofuels?</i>	Yes, see above for further details.
	<i>Is there a specific support for 2nd generation biofuels?</i>	n/a

Table (Appendix) 126: Comparison of technology-specific national RES deployment by 2020 (UK)

Comparison of (technology-specific) RES deployment by 2020	RES total - share in gross final energy demand	RES total	RES-H total	Geothermal	Solar	Biomass solid	Biomass biogas	Biomass bioliquids	Heat pumps	RES-E total	Hydro	Geothermal	Solar photovoltaic	Concentrated solar power	Tide Wave Ocean	Wind onshore	Wind offshore	Biomass solid	Biomass biogas	Biomass liquid	RES-T total	Bioethanol	Biodiesel	Hydrogen from renewables	Renewable electricity	Others
	%	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	ktoe	ktoe	ktoe	ktoe	ktoe
REPAP industry roadmap (proactive RES support)	18% to 20% ^o	27338	5434	19	743	2995	115	0	1562	206016	4732	0	15564	0	5240	33460	100172	46848**	n/a	n/a	4190	2620	1570	0	1.7%*	0
NREAP	15%	20729	6199	0	34	3612	302	0	2254	116970	6360	0	2240	0	3950	34150	44120	20590	5570	0	4472	1743	2462	0	267	0
Difference	-16% to -25%	-24%	12%	100%	-95%	17%	62%	-	31%	-43%	26%	-	-86%	-	-25%	2%	-56%	-56%	100%	n/a	6%	-33%	36%	-	-	-

^o Two different demand projections were used to reflect the uncertainty related to this appropriately.

* This figure is expressed only in percentage terms - i.e. as share of the sectoral 10% target for RES in the transport sector.

** Value is not subdivided into solid, biogas and liquid biomass.