Project no.:
241382

Project acronym

ATEsT

Project title:

Analysing Transition Planning and Systemic Energy Planning Tools for the implementation of the Energy Technology Information System

Instrument: Coordination and Support Action
Thematic priority: ENERGY.2009.9.1.1
European Energy Infrastructure Networks and Systems Transition Planning
Start date of project: 01 October 2009
Duration: 30 months

Models/Tools Ranking using the ATEsT Specifications

Organisation name of WP Coordinator for this deliverable:
CRES

Contents

1. Introduction

In order to achieve the goals of the European energy and climate change policy, in terms of greenhouse gas emissions, security of energy supply and competitiveness, the development and deployment of a diverse portfolio of low carbon energy technologies play a pivotal role (An Energy Policy for Europe COM (2007)1).

The European Strategic Energy Technology Plan (SET-Plan), adopted by the Commission on 22 November 2007, is the European Union's response to the challenge of accelerating the development of a low carbon future, leading to the market take-up of low carbon energy technologies. This plan comprises measures relating to planning, implementation, resources and international cooperation in the field of energy technology.

1.1. ATEsT project

The implementation of the SET-Plan involves different pillars:

- Effective Implementation:

- Creating European Industrial Initiatives (EII), focusing on technologies for which the barriers, scale of investments and risk can best be tackled collectively.
- Creating a European Energy Research Alliance (EERA), to enable greater co-operation across Europe of the research work going on in universities, research institutes and specialized centres.
- Planning the transition of European energy infrastructure networks and systems.

- Joint strategic planning:

- Creating a European Community Steering Group on Strategic Energy Technologies, which allows Member States and the Commission to plan joint actions and coordinate policies and programmes.
- Establishment of an information system on energy technologies and their innovation aspects, geared to supporting the decision-making of the SET-Plan (SETIS).
- Annual SET Plan summits.

- Increase in resources, both financial and human, and enhance international cooperation.

In the framework of the SET-Plan implementation pillar, related to addressing future European energy infrastructure networks and systems transition planning, the European Commission has launched an FP7 Support Action named ATEsT (Analysing Transition Planning and Systemic Energy Planning Tools for the implementation of the Energy Technology Information System).

The aim of the ATEsT project is to address the methodologies and modelling toolbox required to support the decision making of the SET-Plan Steering Group in the priority area of transition planning of the deployment of low carbon technologies and their supporting infrastructures. ATEsT is a joint effort between European research

institutes (CRES, ECN, ENEA, IER, VTT, PSI, CIEMAT, EIHP) and the JRC, the implementing body of the Information System of the SET-Plan (SETIS).

The "tools" that will be evaluated in the framework of ATEsT are methodologies for the analysis of energy policies and mathematical models that can be used in order to simulate the development of the energy system or analyse the transition planning in the energy system. The scope of the ATEsT project includes models and tools from both inside and outside Europe.

The objectives of the project are to:
1. Review models/tools used in European Countries, bearing in mind what is used outside Europe and what are the requirements of the SET-Plan.
2. Identify and recommend common tools and/or methods to be used in the Member States and in SETIS, and gain consensus on these models.
3. Identify and recommend existing sets of data (on technologies, energy resources, statistics, etc.), and provide a roadmap for the development of the data on a European and regional level.
4. Identify the roadmap for the improvement and development of the tools and methods in order to cover the needs of the SET-Plan implementation.

2. Model Ranking

The main aim of WP3 of the ATEsT project, is to develop a methodology on how to create and evaluate suitable combinations of tools (models or methodologies) in order to support energy policy making for the transition of Europe towards a low carbon society. This work package builds on the output of WP1 and WP2 of the project, where specifications were defined in consultation with SET-Plan stakeholders (WP1) and a characterisation of existing tools and methods was created (WP2). In the following WP6, the work will pinpoint the main shortfalls of existing approaches in these areas.

In the initial project work-programme the description of WP3 was to actually deliver a list of models that would be appropriate to be used in the analysis of the energy system transition of Europe, which can be translated into answering policy questions about the decisions that need to be taken. However the detailed list of specifications in WP1 and the analysis of a large inventory of models in WP2 showed that all policy questions need a combination of models in order to be answered, and this combination can vary depending on the type of question. This conclusion led to a restatement of the description of this workpackage. Instead of creating a unique list of models WP3 created a methodology that can be followed in order to find the best available alternative combination of models that can be used in order to answer a specific policy question. The methodology was applied to a list of relevant policy questions that were formulated by the project consortium, in order to demonstrate its functionality.
The first step in the application of the methodology is to determine the **usefulness of the models**, so the following linguistic values scale was proposed to answer the question:

"What is the usefulness of the model in addressing a given specification".

The linguistic weightings are:

None (N), Poor (P), Medium (M), Good (G), Very Good (VG) (1)

Individuals are likely to have different perceptions on what they mean by defining the usefulness of a model with none, poor, medium, good and very good. In order to account for this fact, for each of these linguistic weightings an upper, a lower (a) and a median (b) value is assigned. (Figure 1).

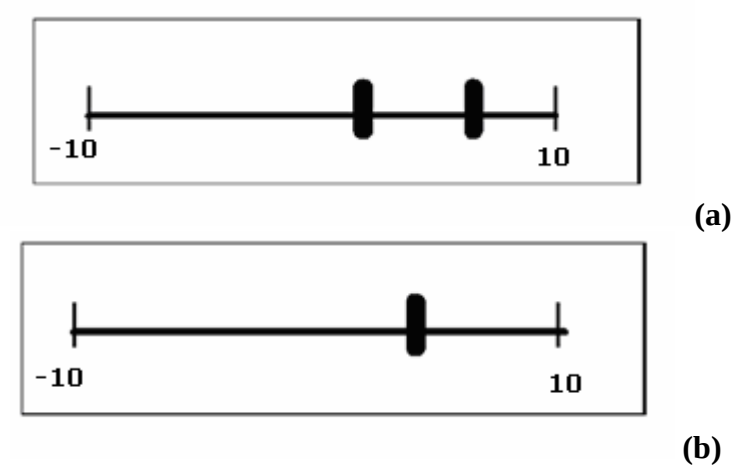


Figure 1: Definition of the range (a) and the median (b)

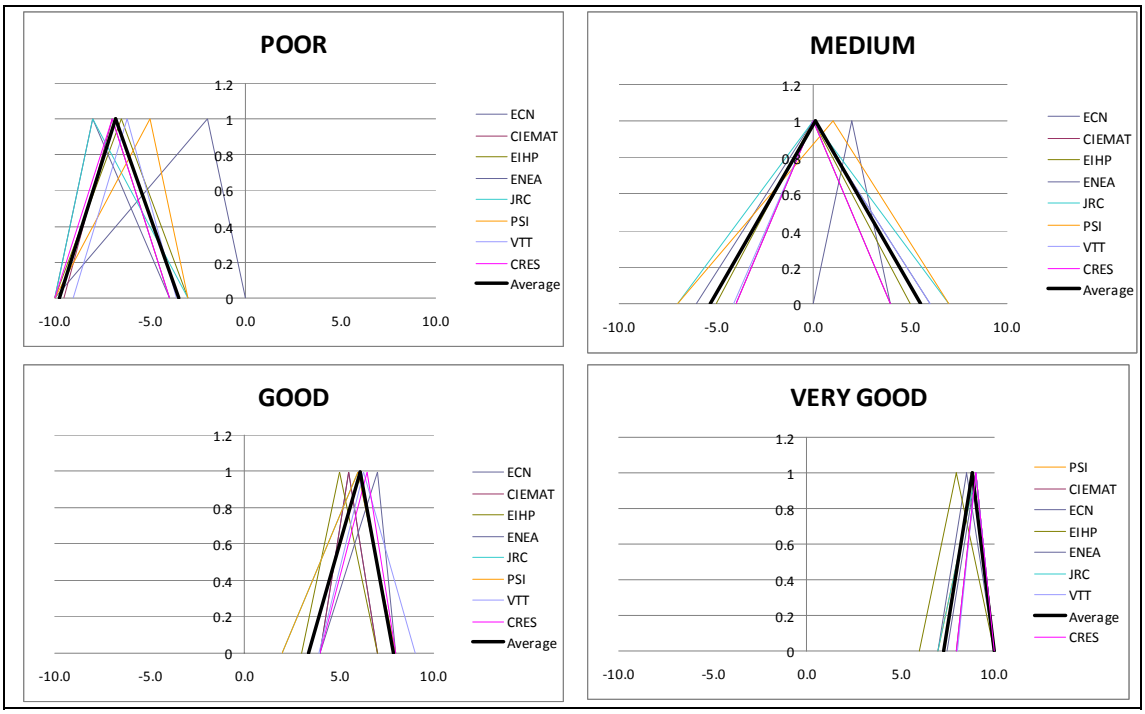
So, the figure above could, for example, be the characterization for "Medium", and is translated: "Medium" means that the quality of the model's answer is in the range [3,7], in the [-10,10] interval. And if we were to assign only one grade, "Medium" would mean 5 (Figure 1).
For each one of the words in the scale (1), the project consortium agreed on three numbers: a range (a,c) and a median b.

The definitions of the range for the *usefulness of the models* and the *importance weighting of the specifications* have been discussed among the project partners and a consensus has been reached among them to use the following sets:

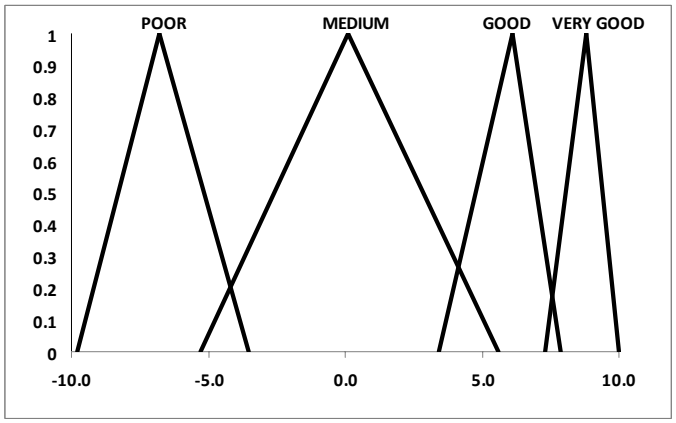
Regarding the usefulness of the model (i.e. how well does a model answer to a specification) the consensus sets are presented in Table 1. Figure 2 presents the input of each partner a) and the consensus sets b) in a graphical way. The consensus sets have been obtained as fuzzy averages of single contributions.

Table 1: Model Usefulness Scale Definitions (consensus sets)

Scale	**Corresponding Interval (triangular fuzzy number)**
NONE (N)	(-10 , -10 , -10)
POOR (P)	(-9.8 , -6.8 , -3.5)
MEDIUM (M)	(-5.3 , 0.1 , 5.6)
GOOD (G)	(3.4 , 6.1 , 7.9)
VERY GOOD (VG)	(7.3 , 8.8 , 10.0)



(a)



(b)

Figure 2: Usefulness of the model; fuzzy sets definitions as proposed by the partners (a) and average consensus sets (b).

The aim of the next step is to rank each model with respect to the quality of answers it can give to each one of the specifications. This step is independent of the policy question that needs to be answered.
The Models Characterisation Report (WP2)[1] presents for each of the models/tools, its ability to answer a specification or not, along with its primary focus specification. The

[1] "D2.1 - Models Characterization Report" available at www.atest-project.eu

analysis was done using the set of specifications that were derived from the public consultation and are presented in the Specifications Report (WP1).
In order to proceed with the methodology, it was necessary to analyze the specifications further, breaking them down into more detailed points, that can be used for a more detailed analysis of the models. Then for each of the models/tools, the project team assigned values for the *usefulness of the model* in answering each one of the specifications in the new list. The ranking was based on the literature review for the model use (proven capabilities) and/or references for model description, including the knowledge of the models by the project team. This evaluation is combined with the information included in the questionnaires used in WP1, that were filled in by the model developers.
The model rankings were then sent back to the modeling teams and their feedback was requested. A total of 18 replies were received, which were then re-evaluated by the project team and some of the suggestions were accepted, while in other cases the initial ranking was kept. So, at the end of this exercise an evaluation of the existing models/tools relative to the specifications of the SETPlan was provided. This evaluation, after the feedback procedure, is presented in the following pages.

Model Rankings

Transition Planning

ROM	SAMLAST	SGM	STSc	TEMPO	TIAM-WORLD	TIMESNordic	TIMES-FI	TIMES PanEU	UKENVI	COMBAT	COMPETES	DICE	DNE21+	WASP	WEM	WAGEM	WILMAR	Wilmar Plan. Tool	WITCH	Transition planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				Spatial planning				
N	M	M	M	N	G	G	G	G	N	N	M	P	VG	N	M	P	N	N	N	Ca1	Requirements for the supply chain	How well the tool considers the supply chain of natural sources, within the geographic scope of the tool. Rate highest if it includes GIS description of resources, next level if it considers the geographical aspects by for example different categories.		Section 3.3.1, p. 19
P	M	G	M	N	G	G	G	G	N	N	N	N	VG	N	M	P	P	M	N	Ca2	Regional potential for low-C technologies	Links to geography - Natural resource potential of an area to provide energy with a specific technology.		Section 3.3.1
P	vg	N	M	N	P	M	M	P	N	N	G	N	G	N	N	P	P	M	N	Ca3	Grid infrastructure existing and expansion within a country	Spatial planning of grid infrastructure: electricity grids, pipelines (gas, oil, hydrogen etc) within a country. For the electricity grids this includes infrastructure expansion to connect new generation capacity. For pipelines this refers to construction.		Section 3.3.1
P	vg	N	M	N	P	G	M	G	N	N	VG	N	G	N	N	N	P	M	N	Ca4	Cross-border grid infrastructure existing and expansion	Spatial Planning of the expansion of the cross-border capacity of grids (electricity and pipelines).		Section 3.3.1, p. 19
N	N	N	M	N	M	G	G	P	N	N	N	N	M	N	P	P	N	N	N	Ca5	Energy transport networks expansion - Non grid	Transportation of non grid distributed energy carriers. E.g.. Transportation of biomass, gasoline. Transported by truck, railway, ship etc.		Section 3.3.1, p. 19
P	vg	N	M	N	G	G	G	G	N	N	VG	N	M	N	M	P	M	VG	N	Ca6	Generation capacity	The location of the existing plants.		Section 3.3.1, p. 19
P	N	N	M	N	G	G	G	G	N	N	M	P	VG	N	G	N	N	N	N	Ca7	Generation capacity expansion	The spatial (dynamic) expansion of plants, considering both replacement and upgrades of existing plants.		Section 3.3.1, p. 19
P	M	N	M	N	G	G	M	G	N	N	G	N	G	P	M	P	M	G	P	Ca8	Cross-border energy infrastructure	Physical Import dependency. How is the import described? Can the uncertainty in the delivery of energy be considered? For example: Policy issues outside Europe, like policy issues in Northern Sahara countries in the case of Desertec.		Section 3.3.1
P	G	N	N	N	G	G	M	VG	N	N	M	N	VG	P	M	N	M	G	N	Ca9	Cost effective technology deployment	How well is the spatial difference in cost captured? Focus on how well the tool considers the "cost effectiveness" of the technology deployment within the spatial dimension, e.g. where is it more cost effective to install certain new technology.		Section 3.3.1, p. 19
P	VG	N	M	N	G	G	M	G	N	N	M	M	G	N	M	G	G	VG	P	Ca10	Demand	Spatial distribution of energy demand		
N	N	N	M	N	P	N	N	N	N	N	N	P	G	N	P	P	N	G	N	Ca11	Population density	The population density can help to provide information about the location of the residential demand of electricity, heating and cooling. For example when estimating the cost and needs of distribution.		Section 3.3.1, p. 19
N	N	N	G	N	N	N	N	G	N	N	N	N	N	N	N	N	N	N	P	Ca12	Land use	Considering different alternatives to use the land.		Section 3.3.1, p. 19

E2M2s	E3ME	E3MG	EDGE	EFDA-TIMES	EMELIE	EMM	EnergyPlan	ENPEP	ENV-Linkages	EPPA	ESPAUT	ESTEEM	ETP Model	FUND	GEM-CCGT	GEM-E3	GEMED	GEMINI-E3	GET	Transition planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
Spatial planning																								
N	M	M	M	G	N	N	P	G	P	M	P	P	G	N	P	N	P	N	N	Ca1	Requirements for the supply chain	How well the tool considers the supply chain of natural sources, within the geographic scope of the tool. Rate highest if it includes GIS description of resources, next level if it considers the geographical aspects by for example different categories.		Section 3.3.1, p. 19
N	P	M	N	G	M	P	P	M	N	p	N	P	G	P	P	N	P	N	N	Ca2	Regional potential for low-C technologies	Links to geography - Natural resource potential of an area to provide energy with a specific technology.		Section 3.3.1
N	N	N	N	P	G	N	M	P	N	p	VG	P	P	N	N	N	N	N	N	Ca3	Grid infrastructure existing and expansion within a country	Spatial planning of grid infrastructure: electricity grids, pipelines (gas, oil, hydrogen etc) within a country. For the electricity grids this includes infrastructure expansion to connect new generation capacity. For pipelines this refers to construction.		Section 3.3.1
N	M	P	N	P	G	N	P	P	N	p	G	P	P	N	N	N	N	N	N	Ca4	Cross-border grid infrastructure existing and expansion	Spatial Planning of the expansion of the cross-border capacity of grids (electricity and pipelines).		Section 3.3.1, p. 19
N	N	N	N	M	N	N	N	P	N	p	N	P	P	P	N	N	N	N	N	Ca5	Energy transport networks expansion - Non grid	Transportation of non grid distributed energy carriers. E.g.. Transportation of biomass, gasoline. Transported by truck, railway, ship etc.		Section 3.3.1, p. 19
VG	N	N	N	G	G	M	N	P	N	p	P	P	G	N	N	N	N	N	N	Ca6	Generation capacity	The location of the existing plants.		Section 3.3.1, p. 19
VG	N	N	N	G	G	N	N	P	N	p	M	P	G	N	N	N	N	N	N	Ca7	Generation capacity expansion	The spatial (dynamic) expansion of plants, considering both replacement and upgrades of existing plants.		Section 3.3.1, p. 19
N	N	M	N	G	N	N	G	M	P	p	G	N	M	P	P	N	P	N	N	Ca8	Cross-border energy infrastructure	Physical Import dependency. How is the import described? Can the uncertainty in the delivery of energy be considered? For example: Policy issues outside Europe, like policy issues in Northern Sahara countries in the case of Desertec.		Section 3.3.1
M	N	N	P	G	M	N	P	P	N	p	N	M	G	P	N	P	N	N	N	Ca9	Cost effective technology deployment	How well is the spatial difference in cost captured? Focus on how well the tool considers the "cost effectiveness" of the technology deployment within the spatial dimension, e.g. where is it more cost effective to install certain new technology.		Section 3.3.1, p. 19
G	M	M	M	G	M	P	N	M	M	G	N	P	G	P	p	P	N	P	N	Ca10	Demand	Spatial distribution of energy demand		
N	N	N	N	N	N	N	N	N	P	M	N	P	N	N	P	P	N	N	N	Ca11	Population density	The population density can help to provide information about the location of the residential demand of electricity, heating and cooling. For example when estimating the cost and needs of distribution.		Section 3.3.1, p. 19
N	N	N	N	N	N	N	N	N	P	VG	M	G	N	N	N	N	N	N	N	Ca12	Land use	Considering different alternatives to use the land.		Section 3.3.1, p. 19

GMM	GRAPE	GreenNET-Europe	GreenNET-Europe	GTAP-E	Horizonscan	IER - Model for Power	IGEM	iKnow	IMACLIM	IMAGE-TIMER	INVERT	IPAC	LEAP	MDM-E3	MECHanisms	MERGE	MESSAGE	Minicam	Minicam	Transition planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
Spatial planning																								
M	P	N	N	N	G	N	M	P	M	G	M	N	G	M	N	N	G	G	G	Ca1	Requirements for the supply chain	How well the tool considers the supply chain of natural sources, within the geographic scope of the tool. Rate highest if it includes GIS description of resources, next level if it considers the geographical aspects by for example different categories.		Section 3.3.1, p. 19
G	P	N	N	N	G	M	N	G	M	G	VG	N	G	P	N	N	G	G	G	Ca2	Regional potential for low-C technologies	Links to geography - Natural resource potential of an area to provide energy with a specific technology.		Section 3.3.1
P	N	N	N	N	G	VG	N	P	N	P	N	N	N	N	N	N	M	P	P	Ca3	Grid infrastructure existing and expansion within a country	Spatial planning of grid infrastructure: electricity grids, pipelines (gas, oil, hydrogen etc) within a country. For the electricity grids this includes infrastructure expansion to connect new generation capacity. For pipelines this refers to construction.		Section 3.3.1
P	N	N	N	N	G	M	N	P	N	P	N	N	N	P	N	N	P	M	M	Ca4	Cross-border grid infrastructure existing and expansion	Spatial Planning of the expansion of the cross-border capacity of grids (electricity and pipelines).		Section 3.3.1, p. 19
P	N	N	N	P	G	N	N	P	N	N	N	N	N	N	N	N	M	M	M	Ca5	Energy transport networks expansion - Non grid	Transportation of non grid distributed energy carriers. E.g.. Transportation of biomass, gasoline. Transported by truck, railway, ship etc.		Section 3.3.1, p. 19
G	P	N	N	N	N	VG	N	N	P	G	M	N	N	M	N	N	G	M	M	Ca6	Generation capacity	The location of the existing plants.		Section 3.3.1, p. 19
M	N	N	N	N	G	VG	N	P	P	G	M	N	N	P	N	N	G	G	G	Ca7	Generation capacity expansion	The spatial (dynamic) expansion of plants, considering both replacement and upgrades of existing plants.		Section 3.3.1, p. 19
G	N	N	N	P	G	N	N	M	N	M	N	N	N	N	N	M	G	M	M	Ca8	Cross-border energy infrastructure	Physical Import dependency. How is the import described? Can the uncertainty in the delivery of energy be considered? For example: Policy issues outside Europe, like policy issues in Northern Sahara countries in the case of Desertec.		Section 3.3.1
G	P	N	N	N	G	G	P	P	P	VG	G	N	N	N	N	N	G	VG	VG	Ca9	Cost effective technology deployment	How well is the spatial difference in cost captured? Focus on how well the tool considers the "cost effectiveness" of the technology deployment within the spatial dimension, e.g. where is it more cost effective to install certain new technology.		Section 3.3.1, p. 19
M	P	N	N	M	M	VG	G	P	M	VG	G	N	G	P	G	N	G	VG	VG	Ca10	Demand	Spatial distribution of energy demand		
P	N	N	N	P	M	G	N	P	N	M	N	N	N	N	N	N	M	M	M	Ca11	Population density	The population density can help to provide information about the location of the residential demand of electricity, heating and cooling. For example when estimating the cost and needs of distribution.		Section 3.3.1, p. 19
N	P	N	N	G	G	N	N	M	G	G	N	N	N	N	N	N	M	VG	VG	Ca12	Land use	Considering different alternatives to use the land.		Section 3.3.1, p. 19

MIRAGE	MoreHys	MTSIM	MURE	NEMESIS	NEMS	NEWAGE	PACE	POLES	POWERS	PRIMES	REMARK	REMIND-R	RESolve-E	RESolve-T	RICE	ROM	SAMLAST	SGM	STSc	Transition planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
Spatial planning																								
N	VG	N	N	N	M	P	P	G	N	M	N	M	P	G	N	N	M	M	M	Ca1	**Requirements for the supply chain**	How well the tool considers the supply chain of natural sources, within the geographic scope of the tool. Rate highest if it includes GIS description of resources, next level if it considers the geographical aspects by for example different categories.		Section 3.3.1, p. 19
N	G	N	N	N	G	P	P	G	G	M	N	G	VG	VG	N	P	M	G	M	Ca2	**Regional potential for low-C technologies**	Links to geography - Natural resource potential of an area to provide energy with a specific technology.		Section 3.3.1
N	VG	VG	N	N	M	N	N	P	P	N	VG	N	M	N	N	P	vg	N	M	Ca3	**Grid infrastructure existing and expansion within a country**	Spatial planning of grid infrastructure: electricity grids, pipelines (gas, oil, hydrogen etc) within a country. For the electricity grids this includes infrastructure expansion to connect new generation capacity. For pipelines this refers to construction.		Section 3.3.1
N	VG	VG	N	N	N	N	N	P	G	P	VG	N	M	N	N	P	vg	N	M	Ca4	**Cross-border grid infrastructure existing and expansion**	Spatial Planning of the expansion of the cross-border capacity of grids (electricity and pipelines).		Section 3.3.1, p. 19
N	N	N	N	N	M	P	P	M	N	P	N	N	N	M	N	N	N	N	M	Ca5	**Energy transport networks expansion - Non grid**	Transportation of non grid distributed energy carriers. E.g.. Transportation of biomass, gasoline. Transported by truck, railway, ship etc.		Section 3.3.1, p. 19
N	G	P	N	N	G	P	N	G	VG	M	P	N	VG	N	N	P	vg	N	M	Ca6	**Generation capacity**	The location of the existing plants.		Section 3.3.1, p. 19
N	G	M	N	N	G	P	N	G	VG	M	G	N	VG	N	N	P	N	N	M	Ca7	**Generation capacity expansion**	The spatial (dynamic) expansion of plants, considering both replacement and upgrades of existing plants.		Section 3.3.1, p. 19
N	G	VG	N	N	N	P	P	VG	N	M	VG	P	P	VG	N	P	M	N	M	Ca8	**Cross-border energy infrastructure**	Physical Import dependency. How is the import described? Can the uncertainty in the delivery of energy be considered? For example: Policy issues outside Europe, like policy issues in Northern Sahara countries in the case of Desertec.		Section 3.3.1
N	G	N	N	N	G	P	N	G	M	M	N	G	VG	VG	N	P	G	N	N	Ca9	**Cost effective technology deployment**	How well is the spatial difference in cost captured? Focus on how well the tool considers the "cost effectiveness" of the technology deployment within the spatial dimension, e.g. where is it more cost effective to install certain new technology.		Section 3.3.1, p. 19
N	G	N	N	N	VG	G	G	G	N	M	P	M	M	VG	N	P	VG	N	M	Ca10	**Demand**	Spatial distribution of energy demand		
P	G	N	N	N	P	N	P	N	N	P	N	N	N	N	N	N	N	N	M	Ca11	**Population density**	The population density can help to provide information about the location of the residential demand of electricity, heating and cooling. For example when estimating the cost and needs of distribution.		Section 3.3.1, p. 19
P	N	N	N	VG	N	N	N	N	N	P	M	N	P	N	N	N	N	N	G	Ca12	**Land use**	Considering different alternatives to use the land.		Section 3.3.1, p. 19

TEMPO	TIAM-WORLD	TIMES-FI	TIMES PanEU	TIMES Nordic	UKENVI	E2M2s - IER	E2M2s - Duisburg-Essen	Transition planning				
								Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
								Spatial planning				
N	G	G	G	G	N	N	M	Ca1	**Requirements for the supply chain**	How well the tool considers the supply chain of natural sources, within the geographic scope of the tool. Rate highest if it includes GIS description of resources, next level if it considers the geographical aspects by for example different categories.		Section 3.3.1, p. 19
N	G	G	G	G	N	N	M	Ca2	**Regional potential for low-C technologies**	Links to geography - Natural resource potential of an area to provide energy with a specific technology.		Section 3.3.1
N	P	M	P	M	N	N	P	Ca3	**Grid infrastructure existing and expansion within a country**	Spatial planning of grid infrastructure: electricity grids, pipelines (gas, oil, hydrogen etc) within a country. For the electricity grids this includes infrastructure expansion to connect new generation capacity. For pipelines this refers to construction.		Section 3.3.1
N	P	M	G	G	N	N	P	Ca4	**Cross-border grid infrastructure existing and expansion**	Spatial Planning of the expansion of the cross-border capacity of grids (electricity and pipelines).		Section 3.3.1, p. 19
N	M	G	P	G	N	N	N	Ca5	**Energy transport networks expansion - Non grid**	Transportation of non grid distributed energy carriers. E.g.. Transportation of biomass, gasoline. Transported by truck, railway, ship etc.		Section 3.3.1, p. 19
N	G	G	G	G	N	VG	VG	Ca6	**Generation capacity**	The location of the existing plants.		Section 3.3.1, p. 19
N	G	G	G	G	N	VG	G	Ca7	**Generation capacity expansion**	The spatial (dynamic) expansion of plants, considering both replacement and upgrades of existing plants.		Section 3.3.1, p. 19
N	G	M	G	G	N	N	P	Ca8	**Cross-border energy infrastructure**	Physical Import dependency. How is the import described? Can the uncertainty in the delivery of energy be considered? For example: Policy issues outside Europe, like policy issues in Northern Sahara countries in the case of Desertec.		Section 3.3.1
N	G	M	VG	G	N	M	VG	Ca9	**Cost effective technology deployment**	How well is the spatial difference in cost captured? Focus on how well the tool considers the "cost effectiveness" of the technology deployment within the spatial dimension, e.g. where is it more cost effective to install certain new technology.		Section 3.3.1, p. 19
N	G	M	G	G	N	G	G	Ca10	**Demand**	Spatial distribution of energy demand		
N	P	N	N	N	N	N	N	Ca11	**Population density**	The population density can help to provide information about the location of the residential demand of electricity, heating and cooling. For example when estimating the cost and needs of distribution.		Section 3.3.1, p. 19
N	N	N	G	N	N	N	N	Ca12	**Land use**	Considering different alternatives to use the land.		Section 3.3.1, p. 19

ROM	SAMLAST	SGM	STSc	TEMPO	TIAM-WORLD	TIMESNordic	TIMES-FI	TIMES PanEU	UKENVI	COMBAT	COMPETES	DICE	DNE21+	WASP	WEM	WIAGEM	WILMAR	Wilmar Plan. Tool	WITCH	Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
Transition planning																								
Deployment pathways																								
P	N	G	G	G	VG	G	M	VG	VG	M	M	P	VG	M	G	G	P	M	VG	Ca13	**Time evolution of energy demand**	Modeling the time evolution of the energy demand.		
N	G	M	G	P	VG	M	P	N	N	N	N	P	VG	N	G	VG	N	N	VG	Ca14	**Connection between local demand and national/global supply**	Assess the interaction between local demand and global supply. For example how the European demand for biomass affects the global price of biomass, the price of food etc.		Section 3.3.2, p. 20
P	G	P	G	N	P	M	M	P	N	N	M	N	M	N	N	N	M	G	N	Ca15	**Evolution of Grid infrastructure**	Time evolution of grid infrastructure within a region.		Section 3.3.2, p. 20
P	G	N	G	N	P	M	P	G	N	N	M	N	M	N	P	N	P	G	N	Ca16	**Evolution of cross-border infrastructure**	The time-evolution of the cross-border grid infrastructure.		Section 3.3.2, p. 20
G	VG	P	M	P	M	M	P	G	N	N	N	N	VG	P	M	M	VG	VG	N	Ca17	**Balancing capacity requirements**	Need of flexibility for balancing intermittency of renewables or the fluctuations of demand. For example requirements of rapid response conventional power plants (e.g. gas turbines) to balance the high penetration of renewables.		Section 3.3.2
N	n	P	G	N	M	M	P	P	N	N	N	N	M	N	M	N	N	N	P	Ca18	**Evolution of energy transport networks - Non grid**	The time evolution of supply chain logistics.		Section 3.3.2, p. 20
P	M	M	G	N	VG	VG	VG	VG	N	N	M	P	VG	vg	G	P	P	N	G	Ca19	**Evolution of the Generation Capacity**	The evolution of the generation capacity.		Section 3.3.2, p. 20
N	N	P	VG	N	G	N	M	N	N	N	M	N	M	N	N	P	N	N	M	Ca20	**Interaction between technology deployment and industry**	A systemic approach is required combining the results from top-down and bottom-up as-assessments to deal with synergies and interdependencies between technological and industrial levels. For example the development of electricity storage is boosted by the electrical vehicles industry.		Section 3.3.2, p. 20
N	M	N	VG	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Ca21	**Public-private agent behaviours and partnerships**	Account for agent behaviours both public and private, according to their respective role and considering also public-private partnerships.		Section 3.3.2, p. 20
N	N	N	VG	N	N	N	M	N	M	N	P	N	P	N	N	N	N	N	P	Ca22	**Technology uptake**	To assess the impact of the transition of the energy system on sectoral changes (e.g. implementation of solar energy in buildings makes the construction sector stakeholder in the energy system and stimulates adoption of this new technology into their construction methods.)		Section 3.3.2
M	G	M	VG	P	M	P	M	P	N	p	VG	N	M	N	P	N	N	P	M	Ca23	**Time evolution of the Supply chain**	The development of the supply chain over time. How well the tool considers the needs for? Assess whether requirements for deploying a technology are or can be fulfilled reasonably. Include impact of the energy system transition (e.g. impact of changes of the energy system). For example, before wind power can be fully integrated the grid might need to be extended.		Section 3.3.2, p. 20
N	N	N	VG	N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	M	Ca24	**Closure of gap between demonstration and commercialization**	How well does the tool consider the gap between demonstration and commercialization of a certain technology.		Section 3.3.2, p. 21
P	N	M	G	N	G	M	G	M	VG	M	VG	M	M	N	N	M	P	N	G	Ca25	**Links between the energy system and the economy**	Changes in energy demand and sectoral changes resulting from changes in the energy system. For example, how well changes in demand as a result of the application of certain technologies (e.g. zero energy buildings) can be considered.		Section 3.3.2
P	N	N	M	N	G	P	P	P	N	N	N	N	N	P	N	N	N	N	N	Ca26	**Time lag between investment decision and entering into construction/operation.**	To estimate the time lag will weight the tool higher compared with including the assumed time lag in the model. Include the effect of the different regulatory frameworks in the MS on the time lag. The effect of different regulatory frameworks in Member States (e.g. the length of permitting procedures) should be accounted for in the model toolbox. Regulatory frameworks are one of the mechanisms affecting the time lag between investment decisions and actually producing electricity.		Section 3.3.2, p. 21
P	M	P	G	N	N	N	N	N	N	N	M	N	N	N	N	G	N	N	N	Ca27	**Behavioural Change**	Energy End users behaviour		
P	N	M	G	N	M	M	M	P	G	M	VG	N	P	N	M	G	P	N	M	Ca28	**Market barriers**	Barriers for new entry or expansion of technologies. Example of market barrier: Capital requirements, Government policy, Regulations, Organizational, Switching costs.		Section 3.3.2, p. 22

E2M2s	E3ME	E3MG	EDGE	EFDA-TIMES	EMELIE	EMM	EnergyPlan	ENPEP	ENV-Linkages	EPPA	ESPAUT	ESTEEM	ETP Model	FUND	GEM-CCGT	GEM-E3	GEMED	GEMINI-E3	GET	Transition planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				Deployment pathways				
VG	G	VG	M	VG	M	N	P	VG	M	G	N	N	G	M	N	VG	P	M	N	Ca13	Time evolution of energy demand	Modeling the time evolution of the energy demand.		
N	M	VG	P	VG	N	N	N	N	M	G	M	P	G	N	G	M	M	N	N	Ca14	Connection between local demand and national/global supply	Assess the interaction between local demand and global supply. For example how the European demand for biomass affects the global price of biomass, the price of food etc.		Section 3.3.2, p. 20
N	N	N	N	P	M	N	p	N	N	P	VG	N	P	N	N	N	N	N	N	Ca15	Evolution of Grid infrastructure	Time evolution of grid infrastructure within a region.		Section 3.3.2, p. 20
N	N	P	N	P	G	P	M	M	N	P	VG	N	P	N	N	N	P	N	N	Ca16	Evolution of cross-border infrastructure	The time-evolution of the cross-border grid infrastructure.		Section 3.3.2, p. 20
VG	N	N	N	M	VG	N	VG	p	N	P	G	N	M	N	N	N	N	N	N	Ca17	Balancing capacity requirements	Need of flexibility for balancing intermittency of renewables or the fluctuations of demand. For example requirements of rapid response conventional power plants (e.g. gas turbines) to balance the high penetration of renewables.		Section 3.3.2
N	N	N	N	M	N	N	N	N	N	N	N	P	P	N	N	N	N	N	N	Ca18	Evolution of energy transport networks - Non grid	The time evolution of supply chain logistics.		Section 3.3.2, p. 20
VG	G	M	N	VG	VG	P	N	VG	N	P	P	P	VG	N	P	P	G	N	M	Ca19	Evolution of the Generation Capacity	The evolution of the generation capacity.		Section 3.3.2, p. 20
N	M	M	N	G	N	N	N	N	M	M	N	P	N	N	P	M	G	M	N	Ca20	Interaction between technology deployment and industry	A systemic approach is required combining the results from top-down and bottom-up as-assessments to deal with synergies and interdependencies between technological and industrial levels. For example the development of electricity storage is boosted by the electrical vehicles industry.		Section 3.3.2, p. 20
N	N	N	N	P	N	N	N	N	P	M	N	VG	N	N	N	P	M	P	N	Ca21	Public-private agent behaviours and partnerships	Account for agent behaviours both public and private, according to their respective role and considering also public-private partnerships.		Section 3.3.2, p. 20
N	M	M	N	M	N	N	N	M	N	N	N	G	N	N	N	P	M	N	N	Ca22	Technology uptake	To assess the impact of the transition of the energy system on sectoral changes (e.g. implementation of solar energy in buildings makes the construction sector stakeholder in the energy system and stimulates adoption of this new technology into their construction methods.)		Section 3.3.2
N	P	N	N	VG	N	N	N	N	N	N	N	P	P	N	N	N	P	N	G	Ca23	Time evolution of the Supply chain	The development of the supply chain over time. How well the tool considers the needs for? Assess whether requirements for deploying a technology are or can be fulfilled reasonably. Include impact of the energy system transition (e.g. impact of changes of the energy system). For example, before wind power can be fully integrated the grid might need to be extended.		Section 3.3.2, p. 20
N	N	N	N	P	N	N	N	N	N	N	N	VG	N	N	N	N	P	N	N	Ca24	Closure of gap between demonstration and commercialization	How well does the tool consider the gap between demonstration and commercialization of a certain technology.		Section 3.3.2, p. 21
N	VG	VG	P	VG	N	N	N	G	G	VG	N	M	M	N	G	G	G	P	P	Ca25	Links between the energy system and the economy	Changes in energy demand and sectoral changes resulting from changes in the energy system. For example, how well changes in demand as a result of the application of certain technologies (e.g. zero energy buildings) can be considered.		Section 3.3.2
N	N	N	M	G	N	N	N	N	N	N	N	M	P	N	N	N	G	N	N	Ca26	Time lag between investment decision and entering into construction/operation.	To estimate the time lag will weight the tool higher compared with including the assumed time lag in the model. Include the effect of the different regulatory frameworks in the MS on the time lag. The effect of different regulatory frameworks in Member States (e.g. the length of permitting procedures) should be accounted for in the model toolbox. Regulatory frameworks are one of the mechanisms affecting the time lag between investment decisions and actually producing electricity.		Section 3.3.2, p. 21
N	P	N	N	N	N	N	N	G	N	M	N	M	N	N	N		G	N	N	Ca27	Behavioural Change	Energy End users behaviour		
M	M	N	N	M	P	P	N	G	P	G	N	M	M	N	G	G	M	N	N	Ca28	Market barriers	Barriers for new entry or expansion of technologies. Example of market barrier: Capital requirements, Government policy, Regulations, Organizational, Switching costs.		Section 3.3.2, p. 22

GMM	GRAPE	GreenNET-Europe	GreenNET-Europe	GTAP-E	Horizonscan	IER - Model for Power	IGEM	IKnow	IMACLIM	IMAGE-TIMER	INVERT	IPAC	LEAP	MDM-E3	MECHanisms	MERGE	MESSAGE	Minicam	Minicam	Transition planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
Deployment pathways																								
G	VG	G	G	G	M	VG	VG	P	VG	VG	VG	G	G	G	G	VG	VG	VG	VG	Ca13	Time evolution of energy demand	Modeling the time evolution of the energy demand.		
G	VG	N	N	G	G	N	G	M	VG	VG	N	VG	N	M	N	VG	VG	G	G	Ca14	Connection between local demand and national/global supply	Assess the interaction between local demand and global supply. For example how the European demand for biomass affects the global price of biomass, the price of food etc.		Section 3.3.2, p. 20
P	P	G	G	N	G	VG	N	P	N	P	N	N	N	N	N	P	M	N	N	Ca15	Evolution of Grid infrastructure	Time evolution of grid infrastructure within a region.		Section 3.3.2, p. 20
P	P	N	N	N	G	M	N	P	N	N	N	N	N	P	N	N	M	P	P	Ca16	Evolution of cross-border infrastructure	The time-evolution of the cross-border grid infrastructure.		Section 3.3.2, p. 20
M	N	VG	VG	N	G	G	N	M	M	G	N	N	N	N	N	N	P	P	M	Ca17	Balancing capacity requirements	Need of flexibility for balancing intermittency of renewables or the fluctuations of demand. For example requirements of rapid response conventional power plants (e.g. gas turbines) to balance the high penetration of renewables.		Section 3.3.2
M	P	N	N	N	G	N	N	P	N	G	N	N	N	N	N	N	M	P	P	Ca18	Evolution of energy transport networks - Non grid	The time evolution of supply chain logistics.		Section 3.3.2, p. 20
VG	M	VG	VG	N	G	G	G	P	VG	VG	G	M	M	M	N	G	G	M	M	Ca19	Evolution of the Generation Capacity	The evolution of the generation capacity.		Section 3.3.2, p. 20
G	M	N	N	N	VG	N	M	G	VG	M	N	N	N	M	M	M	G	M	M	Ca20	Interaction between technology deployment and industry	A systemic approach is required combining the results from top-down and bottom-up as-assessments to deal with synergies and interdependencies between technological and industrial levels. For example the development of electricity storage is boosted by the electrical vehicles industry.		Section 3.3.2, p. 20
N	N	N	N	N	VG	N	N	VG	N	N	N	N	N	N	VG	N	N	N	N	Ca21	Public-private agent behaviours and partnerships	Account for agent behaviours both public and private, according to their respective role and considering also public-private partnerships.		Section 3.3.2, p. 20
G	M	N	N	N	VG	N	N	G	VG	N	N	N	N	M	VG	N	N	N	N	Ca22	Technology uptake	To assess the impact of the transition of the energy system on sectoral changes (e.g. implementation of solar energy in buildings makes the construction sector stakeholder in the energy system and stimulates adoption of this new technology into their construction methods.)		Section 3.3.2
N	VG	N	N	N	VG	P	M	G	P	P	N	N	P	N	N	N	G	M	M	Ca23	Time evolution of the Supply chain	The development of the supply chain over time. How well the tool considers the needs for? Assess whether requirements for deploying a technology are or can be fulfilled reasonably. Include impact of the energy system transition (e.g. impact of changes of the energy system). For example, before wind power can be fully integrated the grid might need to be extended.		Section 3.3.2, p. 20
P	P	N	N	N	VG	N	N	G	N	N	N	N	N	N	VG	N	N	N	N	Ca24	Closure of gap between demonstration and commercialization	How well does the tool consider the gap between demonstration and commercialization of a certain technology.		Section 3.3.2, p. 21
VG	VG	N	N	M	M	N	G	P	VG	M	N	VG	N	VG	N	VG	M	G	G	Ca25	Links between the energy system and the economy	Changes in energy demand and sectoral changes resulting from changes in the energy system. For example, how well changes in demand as a result of the application of certain technologies (e.g. zero energy buildings) can be considered.		Section 3.3.2
M	N	N	N	N	N	N	N	N	N	N	N	N	P	P	G	N	P	P	P	Ca26	Time lag between investment decision and entering into construction/operation.	To estimate the time lag will weight the tool higher compared with including the assumed time lag in the model. Include the effect of the different regulatory frameworks in the MS on the time lag. The effect of different regulatory frameworks in Member States (e.g. the length of permitting procedures) should be accounted for in the model toolbox. Regulatory frameworks are one of the mechanisms affecting the time lag between investment decisions and actually producing electricity.		Section 3.3.2, p. 21
P	N	N	N	P	G	N	N	M	P	N	N	N	N	P	VG	N	N	P	P	Ca27	Behavioural Change	Energy End users behaviour		
M	M	M	M	M	G	N	N	M	M	P	G	N	N	M	VG	N	P	P	P	Ca28	Market barriers	Barriers for new entry or expansion of technologies. Example of market barrier: Capital requirements, Government policy, Regulations, Organizational, Switching costs.		Section 3.3.2, p. 22

MIRAGE	MoreHys	MTSIM	MURE	NEMESIS	NEMS	NEWAGE	PACE	POLES	POWERS	PRIMES	REMARK	REMIND-R	RESolve-E	RESolve-T	RICE	ROM	SAMLAST	SGM	STSc	Transition planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				Deployment pathways				
N	VG	N	VG	M	VG	G	G	VG	VG	VG	N	G	M	P	VG	P	N	G	G	Ca13	Time evolution of energy demand	Modeling the time evolution of the energy demand.		
M	N	N	N	N	M	G	VG	VG	M	G	P	P	M	G	G	N	G	M	G	Ca14	Connection between local demand and national/global supply	Assess the interaction between local demand and global supply. For example how the European demand for biomass affects the global price of biomass, the price of food etc.		Section 3.3.2, p. 20
N	G	VG	N	N	M	N	N	P	P	N	VG	N	M	N	N	P	G	P	G	Ca15	Evolution of Grid infrastructure	Time evolution of grid infrastructure within a region.		Section 3.3.2, p. 20
N	N	VG	N	N	N	P	N	P	G	M	VG	N	M	N	N	P	G	N	G	Ca16	Evolution of cross-border infrastructure	The time-evolution of the cross-border grid infrastructure.		Section 3.3.2, p. 20
N	N	VG	N	N	G	N	M	P	M	P	VG	N	P	N	N	G	VG	P	M	Ca17	Balancing capacity requirements	Need of flexibility for balancing intermittency of renewables or the fluctuations of demand. For example requirements of rapid response conventional power plants (e.g. gas turbines) to balance the high penetration of renewables.		Section 3.3.2
N	N	N	N	N	p	N	N	M	N	P	N	P	N	M	N	N	n	P	G	Ca18	Evolution of energy transport networks - Non grid	The time evolution of supply chain logistics.		Section 3.3.2, p. 20
N	VG	N	N	N	G	P	P	VG	VG	VG	M	G	VG	N	N	P	M	M	G	Ca19	Evolution of the Generation Capacity	The evolution of the generation capacity.		Section 3.3.2, p. 20
N	N	N	N	N	P	N	P	M	P	M	N	N	N	P	N	N	N	P	VG	Ca20	Interaction between technology deployment and industry	A systemic approach is required combining the results from top-down and bottom-up as-assessments to deal with synergies and interdependencies between technological and industrial levels. For example the development of electricity storage is boosted by the electrical vehicles industry.		Section 3.3.2, p. 20
N	N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	M	N	VG	Ca21	Public-private agent behaviours and partnerships	Account for agent behaviours both public and private, according to their respective role and considering also public-private partnerships.		Section 3.3.2, p. 20
N	G	N	N	N	N	N	N	P	N	N	N	N	M	M	N	N	N	N	VG	Ca22	Technology uptake	To assess the impact of the transition of the energy system on sectoral changes (e.g. implementation of solar energy in buildings makes the construction sector stakeholder in the energy system and stimulates adoption of this new technology into their construction methods.)		Section 3.3.2
N	VG	N	N	N	N	N	N	G	N	M	N	P	M	M	P	M	G	M	VG	Ca23	Time evolution of the Supply chain	The development of the supply chain over time. How well the tool considers the needs for? Assess whether requirements for deploying a technology are or can be fulfilled reasonably. Include impact of the energy system transition (e.g. impact of changes of the energy system). For example, before wind power can be fully integrated the grid might need to be extended.		Section 3.3.2, p. 20
N	N	N	M	N	N	N	N	P	N	M	N	N	N	N	N	N	N	N	VG	Ca24	Closure of gap between demonstration and commercialization	How well does the tool consider the gap between demonstration and commercialization of a certain technology.		Section 3.3.2, p. 21
N	N	N	N	N	VG	G	G	G	P	G	N	G	P	N	VG	P	N	M	G	Ca25	Links between the energy system and the economy	Changes in energy demand and sectoral changes resulting from changes in the energy system. For example, how well changes in demand as a result of the application of certain technologies (e.g. zero energy buildings) can be considered.		Section 3.3.2
N	N	N	N	N	N	N	N	G	P	M	N	N	G	N	N	P	N	N	M	Ca26	Time lag between investment decision and entering into construction/operation.	To estimate the time lag will weight the tool higher compared with including the assumed time lag in the model. Include the effect of the different regulatory frameworks in the MS on the time lag. The effect of different regulatory frameworks in Member States (e.g. the length of permitting procedures) should be accounted for in the model toolbox. Regulatory frameworks are one of the mechanisms affecting the time lag between investment decisions and actually producing electricity.		Section 3.3.2, p. 21
N	P	N	M	M	N	P	G	N	N	P	N	P	N	N	N	P	M	P	G	Ca27	Behavioural Change	Energy End users behaviour		
N	N	N	M	N	M	M	G	M	M	G	N	G	G	M	N	P	N	M	G	Ca28	Market barriers	Barriers for new entry or expansion of technologies. Example of market barrier: Capital requirements, Government policy, Regulations, Organizational, Switching costs.		Section 3.3.2, p. 22

TEMPO	TIAM-WORLD	TIMES-FI	TIMES PanEU	TIMES Nordic	UKENVI	E2M2s - IER	E2M2s - Duisburg-Essen	Transition planning				
								Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
								Deployment pathways				
G	VG	M	VG	G	VG	VG	P	Ca13	**Time evolution of energy demand**	Modeling the time evolution of the energy demand.		
P	VG	P	N	M	N	N	N	Ca14	**Connection between local demand and national/global supply**	Assess the interaction between local demand and global supply. For example how the European demand for biomass affects the global price of biomass, the price of food etc.		Section 3.3.2, p. 20
N	P	M	P	M	N	N	G	Ca15	**Evolution of Grid infrastructure**	Time evolution of grid infrastructure within a region.		Section 3.3.2, p. 20
N	P	P	G	M	N	N	G	Ca16	**Evolution of cross-border infrastructure**	The time-evolution of the cross-border grid infrastructure.		Section 3.3.2, p. 20
P	M	P	G	M	N	VG	G	Ca17	**Balancing capacity requirements**	Need of flexibility for balancing intermittency of renewables or the fluctuations of demand. For example requirements of rapid response conventional power plants (e.g. gas turbines) to balance the high penetration of renewables.		Section 3.3.2
N	M	P	P	M	N	N	P	Ca18	**Evolution of energy transport networks - Non grid**	The time evolution of supply chain logistics.		Section 3.3.2, p. 20
N	VG	VG	VG	VG	N	VG	VG	Ca19	**Evolution of the Generation Capacity**	The evolution of the generation capacity.		Section 3.3.2, p. 20
N	G	M	N	N	N	N	N	Ca20	**Interaction between technology deployment and industry**	A systemic approach is required combining the results from top-down and bottom-up as-assessments to deal with synergies and interdependencies between technological and industrial levels. For example the development of electricity storage is boosted by the electrical vehicles industry.		Section 3.3.2, p. 20
N	N	N	N	N	N	N	N	Ca21	**Public-private agent behaviours and partnerships**	Account for agent behaviours both public and private, according to their respective role and considering also public-private partnerships.		Section 3.3.2, p. 20
N	N	M	N	N	M	N	N	Ca22	**Technology uptake**	To assess the impact of the transition of the energy system on sectoral changes (e.g. implementation of solar energy in buildings makes the construction sector stakeholder in the energy system and stimulates adoption of this new technology into their construction methods.)		Section 3.3.2
P	M	M	P	P	N	N	N	Ca23	**Time evolution of the Supply chain**	The development of the supply chain over time. How well the tool considers the needs for? Assess whether requirements for deploying a technology are or can be fulfilled reasonably. Include impact of the energy system transition (e.g. impact of changes of the energy system). For example, before wind power can be fully integrated the grid might need to be extended.		Section 3.3.2, p. 20
N	N	M	N	N	N	N	N	Ca24	**Closure of gap between demonstration and commercialization**	How well does the tool consider the gap between demonstration and commercialization of a certain technology.		Section 3.3.2, p. 21
N	G	G	M	M	VG	N	P	Ca25	**Links between the energy system and the economy**	Changes in energy demand and sectoral changes resulting from changes in the energy system. For example, how well changes in demand as a result of the application of certain technologies (e.g. zero energy buildings) can be considered.		Section 3.3.2
N	G	P	P	P	N	N	P	Ca26	**Time lag between investment decision and entering into construction/operation.**	To estimate the time lag will weight the tool higher compared with including the assumed time lag in the model. Include the effect of the different regulatory frameworks in the MS on the time lag. The effect of different regulatory frameworks in Member States (e.g. the length of permitting procedures) should be accounted for in the model toolbox. Regulatory frameworks are one of the mechanisms affecting the time lag between investment decisions and actually producing electricity.		Section 3.3.2, p. 21
N	N	N	N	N	N	N	N	Ca27	**Behavioural Change**	Energy End users behaviour		
N	M	M	P	M	G	M	M	Ca28	**Market barriers**	Barriers for new entry or expansion of technologies. Example of market barrier: Capital requirements, Government policy, Regulations, Organizational, Switching costs.		Section 3.3.2, p. 22

ROM	SAMLAST	SGM	STSc	TEMPO	TIAM-WORLD	TIMESNordic	TIMES-FI	TIMES PanEU	UKENVI	COMBAT	COMPETES	DICE	DNE21+	WASP	WEM	WIAGEM	WILMAR	Wilmar Plan. Tool	WITCH	Transition planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				Socio-Economics				
P	M	G	N	G	VG	G	G	G	VG	M	P	G	VG	N	G	VG	P	P	M	Ca29	Energy demand	Overall energy demand of different economic agents (industrial sectors, households, government, etc.).	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the impact on the technology deployments - the tool should score high.	
N	N	M	N	N	N	N	N	N	VG	N	N	N	N	N	N	G	N	N	N	Ca30	Quantification of labour demand in the whole economy	Example: how well are the direct and indirect effects of energy prices on the labour demand considered in the tool. General equilibrium model will typical score high.		Section 3.3.1, p. 19
N	N	P	N	N	N	N	N	N	G	N	N	N	N	N	N	G	N	N	N	Ca31	Quantification of labour demand from supply chain perspective	Quantify direct and indirect employment that can result from the deployment of low carbon technologies (especially when the implementation phase starts) from the supply chain perspective and the technology deployment.		Section 3.3.5
N	N	P	N	N	N	N	N	N	N	N	N	N	N	N	N	P	N	N	N	Ca32	Migration flows	Migration flows associated to changes/transition of the energy system.		Section 3.3.5
M	G	G	M	M	VG	G	G	G	G	G	VG	G	G	M	G	VG	G	VG	VG	Ca33	Energy prices	Does the model consider energy prices?	Tools with endogenously prices will rate higher compared with tools with exogenous prices.	Section 3.3.1, p. 19
P	n	P	N	N	M	N	P	G	N	N	P	N	G	N	M	P	N	N	N	Ca34	Energy prices for different groups	Higher rating for models having different user groups, and moreover for different income or socio-professional household groups.		Section 3.3.5
N	G	P	G	N	N	N	P	N	N	N	G	N	N	N	N	P	N	N	M	Ca35	Distribution of local costs and benefits.	Effects from different technologies on local costs and benefits; the distribution of the benefits.		Section 3.3.5

E2M2s	E3ME	E3MG	EDGE	EFDA-TIMES	EMELIE	EMM	EnergyPlan	ENPEP	ENV-Linkages	EPPA	ESPAUT	ESTEEM	ETP Model	FUND	GEM-CCGT	GEM-E3	GEMED	GEMINI-E3	GET	Transition planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				Socio-Economics				
P	VG	VG	M	VG	N	M	p	VG	M	G	N	N	G	N	VG	VG	G	VG	VG	Ca29	Energy demand	Overall energy demand of different economic agents (industrial sectors, households, government, etc.).	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the impact on the technology deployments - the tool should score high.	
N	VG	VG	M	N	N	N	N	N	G	G	N	N	N	N	VG	VG	VG	VG	N	Ca30	Quantification of labour demand in the whole economy	Example: how well are the direct and indirect effects of energy prices on the labour demand considered in the tool. General equilibrium model will typical score high.		Section 3.3.1, p. 19
N	G	VG	N	N	N	N	N	N	M	M	N	N	N	N	G	G	G	M	N	Ca31	Quantification of labour demand from supply chain perspective	Quantify direct and indirect employment that can result from the deployment of low carbon technologies (especially when the implementation phase starts) from the supply chain perspective and the technology deployment.		Section 3.3.5
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P	N	N	P	N	Ca32	Migration flows	Migration flows associated to changes/transition of the energy system.		Section 3.3.5
VG	VG	VG	M	VG	G	VG	M	VG	M	G	M	G	G	N	G	P	G	VG	VG	Ca33	Energy prices	Does the model consider energy prices?	Tools with endogenously prices will rate higher compared with tools with exogenous prices.	Section 3.3.1, p. 19
N	P	N	N	G	N	P	N	N	P	M	N	N	N	N	M	P	G	VG	N	Ca34	Energy prices for different groups	Higher rating for models having different user groups, and moreover for different income or socio-professional household groups.		Section 3.3.5
N	N	N	N	P	N	N	N	N	P	P	N	VG	N	N	P	P	VG	N	N	Ca35	Distribution of local costs and benefits.	Effects from different technologies on local costs and benefits; the distribution of the benefits.		Section 3.3.5

GMM	GRAPE	GreenNET-Europe	GreenNET-Europe	GTAP-E	Horizonscan	IER - Model for Power	IGEM	IKnow	IMACLIM	IMAGE-TIMER	INVERT	IPAC	LEAP	MDM-E3	MECHanisms	MERGE	MESSAGE	Minicam	Minicam	Transition planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				Socio-Economics				
G	VG	VG	VG	G	M	N	VG	M	M	G	G	VG	G	G	VG	VG	VG	M	M	Ca29	Energy demand	Overall energy demand of different economic agents (industrial sectors, households, government, etc.).	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the impact on the technology deployments - the tool should score high.	
P	N	N	N	VG	M	N	VG	P	VG	N	N	VG	N	VG	N	VG	N	P	P	Ca30	Quantification of labour demand in the whole economy	Example: how well are the direct and indirect effects of energy prices on the labour demand considered in the tool. General equilibrium model will typical score high.		Section 3.3.1, p. 19
N	N	N	N	M	M	N	P	P	N	N	N	N	N	G	N	VG	N	N	N	Ca31	Quantification of labour demand from supply chain perspective	Quantify direct and indirect employment that can result from the deployment of low carbon technologies (especially when the implementation phase starts) from the supply chain perspective and the technology deployment.		Section 3.3.5
N	N	N	N	P	G	N	N	M	N	N	N	N	N	N	N	N	N	N	N	Ca32	Migration flows	Migration flows associated to changes/transition of the energy system.		Section 3.3.5
VG	VG	M	M	G	M	VG	VG	P	VG	G	M	VG	VG	VG	P	G	VG	VG	VG	Ca33	Energy prices	Does the model consider energy prices?	Tools with endogenously prices will rate higher compared with tools with exogenous prices.	Section 3.3.1, p. 19
M	N	N	N	P	M	N	N	M	N	N	N	N	N	G	N	N	VG	G	G	Ca34	Energy prices for different groups	Higher rating for models having different user groups, and moreover for different income or socio-professional household groups.		Section 3.3.5
N	N	N	N	P	G	N	N	G	N	N	N	N	n	P	VG	N	N	P	P	Ca35	Distribution of local costs and benefits.	Effects from different technologies on local costs and benefits; the distribution of the benefits.		Section 3.3.5

MIRAGE	MoreHys	MTSIM	MURE	NEMESIS	NEMS	NEWAGE	PACE	POLES	POWERS	PRIMES	REMARK	REMIND-R	RESolve-E	RESolve-T	RICE	ROM	SAMLAST	SGM	STSc	Transition planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				Socio-Economics				
G	VG	N	VG	VG	VG	VG	VG	G	G	VG	N	G	N	M	VG	P	M	G	N	Ca29	**Energy demand**	Overall energy demand of different economic agents (industrial sectors, households, government, etc.).	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the impact on the technology deployments - the tool should score high.	
VG	N	N	N	VG	VG	G	VG	N	N	N	N	G	N	N	VG	N	N	M	N	Ca30	**Quantification of labour demand in the whole economy**	Example: how well are the direct and indirect effects of energy prices on the labour demand considered in the tool. General equilibrium model will typical score high.		Section 3.3.1, p. 19
G	N	N	N	G	N	G	VG	N	N	N	N	M	N	N	N	N	N	P	N	Ca31	**Quantification of labour demand from supply chain perspective**	Quantify direct and indirect employment that can result from the deployment of low carbon technologies (especially when the implementation phase starts) from the supply chain perspective and the technology deployment.		Section 3.3.5
P	N	N	N	N	N	N	P	N	N	N	N	N	N	N	N	N	N	P	N	Ca32	**Migration flows**	Migration flows associated to changes/transition of the energy system.		Section 3.3.5
G	M	M	N	VG	G	G	G	VG	VG	VG	M	G	P	M	VG	M	G	G	M	Ca33	**Energy prices**	Does the model consider energy prices?	Tools with endogenously prices will rate higher compared with tools with exogenous prices.	Section 3.3.1, p. 19
M	N	N	N	VG	M	P	M	G	VG	G	N	M	N	N	N	P	n	P	N	Ca34	**Energy prices for different groups**	Higher rating for models having different user groups, and moreover for different income or socio-professional household groups.		Section 3.3.5
N	N	N	N	N	P	P	P	P	N	P	N	P	N	N	N	N	G	P	G	Ca35	**Distribution of local costs and benefits.**	Effects from different technologies on local costs and benefits; the distribution of the benefits.		Section 3.3.5

TEMPO	TIAM-WORLD	TIMES-FI	TIMES PanEU	TIMES Nordic	UKENVI	E2M2s - IER	E2M2s - Duisburg-Essen	Transition planning				
								Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
								Socio-Economics				
G	VG	G	G	G	VG	P	P	Ca29	**Energy demand**	Overall energy demand of different economic agents (industrial sectors, households, government, etc.).	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the impact on the technology deployments - the tool should score high.	
N	N	N	N	N	VG	N	N	Ca30	**Quantification of labour demand in the whole economy**	Example: how well are the direct and indirect effects of energy prices on the labour demand considered in the tool. General equilibrium model will typical score high.		Section 3.3.1, p. 19
N	N	N	N	N	G	N	N	Ca31	**Quantification of labour demand from supply chain perspective**	Quantify direct and indirect employment that can result from the deployment of low carbon technologies (especially when the implementation phase starts) from the supply chain perspective and the technology deployment.		Section 3.3.5
N	N	N	N	N	N	N	N	Ca32	**Migration flows**	Migration flows associated to changes/transition of the energy system.		Section 3.3.5
M	VG	G	G	G	G	VG	M	Ca33	**Energy prices**	Does the model consider energy prices?	Tools with endogenously prices will rate higher compared with tools with exogenous prices.	Section 3.3.1, p. 19
N	M	P	G	N	N	N	N	Ca34	**Energy prices for different groups**	Higher rating for models having different user groups, and moreover for different income or socio-professional household groups.		Section 3.3.5
N	N	P	N	N	N	N	N	Ca35	**Distribution of local costs and benefits.**	Effects from different technologies on local costs and benefits; the distribution of the benefits.		Section 3.3.5

ROM	SAMLAST	SGM	STSc	TEMPO	TIAM-WORLD	TIMESNordic	TIMES-FI	TIMES PanEU	UKENVI	COMBAT	COMPETES	DICE	DNE21+	WASP	WEM	WIAGEM	WILMAR	Wilmar Plan. Tool	WITCH	Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
Transition planning																							
Acceptance and technology perception																							
N	N	N	M	N	N	N	N	P	N	N	N	N	N	N	P	N	N	N	N	Ca36	**Public acceptance**	Public acceptance of technologies - Necessity for and level of public awareness		Section 3.3.5
N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Ca37	**Public perception**	Public acceptance of technologies - Necessity for and level of public understanding on		Section 3.3.5
N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	P	N	N	N	N	Ca38	**Public opinion obstacles**	- The technology in itself		Section 3.3.5
N	N	N	P	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Ca39	**Public participation**	- How to make use of a technology		Section 3.3.5, p. 22
N	N	N	M	M	G	N	P	P	N	N	N	N	N	N	N	N	N	N	N	Ca40	**Financial risk perception**	- A technology's implications		Section 3.3.5, p.23
N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Ca41	**Perceptions on reliability of a technology as energy source**	Public acceptance of technologies - Relations between the expectations and current implementation scale		Section 3.3.5, **p. 23**
N	N	N	G	N	N	N	N	N	N	N	N	N	N	N	P	N	N	N	N	Ca42	**Resistance based on issues of principle**	Public participation such as "Generally public participation seeks and facilitates the involvement of those potentially affected by or interested in a decision. The principle of public participation holds that those who are affected by a decision have a right to be involved in the decision-making process. Public participation implies that the public's contribution will influence the decision" (http://www.iap2.org/displaycommon.cfm?an=4, http://www.co-intelligence.org/CIPol_publicparticipation.html).		
N	N	N	P	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Ca43	**Concerns for window dressing**	Risk perception:		
N	N	N	P	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Ca44	**Concerns of competences developers and constructors**	§ Individual investments; high transition and transaction costs		
N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Ca45	**Perception on management local supply chain**	§ Immaturity of technologies (high investment, low income)		
N	N	N	G	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Ca46	**Safety issues and related perception - Concerns on health impacts**	§ Reputation of the operator or initiator		Section 3.3.5, p. 23
N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Ca47	**The perception based on cost/benefits sharing**	§ Management of risks.		Section 3.3.5
N	N	N	G	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Ca48	**Competing technologies**	Mistrust in a technology as a reliable energy source.		Section 3.3.5, p. 23
Environmental impacts																							
N	N	M	M	N	N	N	N	P	N	N	N	N	P	N	N	N	N	N	P	Ca49	**Land-use intensity**	This means how agricultural intensive a land is used, i.e. mechanical ploughing, chemical fertilizers, pesticides etc.		Section 3.3.5, p.23
N	G	VG	G	VG	G	G	VG	VG	VG	VG	VG	G	VG	M	G	G	G	G	VG	Ca50	**Emissions**			Section 3.3.5, p.23
N	G	P	G	N	N	N	N	P	N	N	N	N	N	N	N	N	N	N	N	Ca51	**Hydrological resources**	Effects from different technologies on the Hydrological resources. For example, effects on the aquifers (ground water), effects of river dams to the water levels downstream, water footprint.		Section 3.3.5, p.23
N	N	N	G	N	N	N	N	P	N	N	N	N	N	N	N	N	N	N	N	Ca52	**Protected areas**	Existence of protected areas taken into account in the sitting of technologies. (D.1.1, Section 3.3.5, pg23)		Section 3.3.5, p.23
N	N	P	G	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Ca53	**Soil erosion**	Effects of the technology on soil erosion.		Section 3.3.5, p.23
N	N	P	G	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P	Ca54	**The ecosystem**	Effects from different technologies on element in the ecosystem, e.g. flora, fauna and biodiversity.		Section 3.3.5, p.23

E2M2s	E3ME	E3MG	EDGE	EFDA-TIMES	EMELIE	EMM	EnergyPlan	ENPEP	ENV-Linkages	EPPA	ESPAUT	ESTEEM	ETP Model	FUND	GEM-CCGT	GEM-E3	GEMED	GEMINI-E3	GET	Transition planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
Acceptance and technology perception																								
N	N	N	N	N	N	N	N	P	N	N	N	VG	N	N	N	N	N	N	N	Ca36	Public acceptance	Public acceptance of technologies - Necessity for and level of public awareness		Section 3.3.5
N	N	N	N	N	N	N	N	N	N	N	N	VG	N	N	N	N	N	N	N	Ca37	Public perception	Public acceptance of technologies - Necessity for and level of public understanding on		Section 3.3.5
N	N	N	N	N	N	N	N	N	N	N	N	VG	N	N	N	N	N	N	N	Ca38	Public opinion obstacles	- The technology in itself		Section 3.3.5
N	N	N	N	N	N	N	N	N	N	N	N	VG	N	N	N	N	N	N	N	Ca39	Public participation	- How to make use of a technology		Section 3.3.5, p. 22
N	N	N	N	M	N	N	N	N	N	N	N	G	N	N	N	P	N	N	N	Ca40	Financial risk perception	- A technology's implications		Section 3.3.5, p.23
N	N	N	N	N	N	N	N	N	N	N	N	VG	N	N	N	N	N	N	N	Ca41	Perceptions on reliability of a technology as energy source	Public acceptance of technologies - Relations between the expectations and current implementation scale		Section 3.3.5, **p. 23**
N	N	N	N	N	N	N	N	N	N	N	N	VG	N	N	N	N	N	N	N	Ca42	Resistance based on issues of principle	Public participation such as "Generally public participation seeks and facilitates the involvement of those potentially affected by or interested in a decision. The principle of public participation holds that those who are affected by a decision have a right to be involved in the decision-making process. Public participation implies that the public's contribution will influence the decision" (http://www.iap2.org/displaycommon.cfm?an=4, http://www.co-intelligence.org/CIPol_publicparticipation.html).		
N	N	N	N	N	N	N	N	N	N	N	N	VG	N	N	N	N	N	N	N	Ca43	Concerns for window dressing	Risk perception:		
N	N	N	N	N	N	N	N	N	N	N	N	VG	N	N	N	N	N	N	N	Ca44	Concerns of competences developers and constructors	§ Individual investments; high transition and transaction costs		
N	N	N	N	N	N	N	N	N	N	N	N	VG	N	N	N	P	N	N	N	Ca45	Perception on management local supply chain	§ Immaturity of technologies (high investment, low income)		
N	N	N	N	N	N	N	N	N	N	M	N	VG	N	G	N	P	N	N	N	Ca46	Safety issues and related perception - Concerns on health impacts	§ Reputation of the operator or initiator		Section 3.3.5, p. 23
N	N	N	N	N	N	N	N	n	N	N	N	VG	N	N	N	N	N	N	N	Ca47	The perception based on cost/benefits sharing	§ Management of risks.		Section 3.3.5
N	N	N	N	N	N	N	N	N	N	N	N	M	N	N	N	N	N	N	N	Ca48	Competing technologies	Mistrust in a technology as a reliable energy source.		Section 3.3.5, p. 23
Environmental impacts																								
N	N	N	N	N	N	N	N	N	P	G	G	P	N	N	N	N	N	N	N	Ca49	Land-use intensity	This means how agricultural intensive a land is used, i.e. mechanical ploughing, chemical fertilizers, pesticides etc.		Section 3.3.5, p.23
G	G	VG	G	G	G	M	VG	VG	G	VG	N	M	G	VG	G	VG	M	VG	VG	Ca50	Emissions			Section 3.3.5, p.23
N	N	N	N	N	N	N	N	N	N	N	N	M	N	N	N	N	N	N	N	Ca51	Hydrological resources	Effects from different technologies on the Hydrological resources. For example, effects on the aquifers (ground water), effects of river dams to the water levels downstream, water footprint.		Section 3.3.5, p.23
N	N	N	N	N	N	N	N	N	N	N	N	VG	N	N	N	N	N	N	N	Ca52	Protected areas	Existence of protected areas taken into account in the sitting of technologies. (D.1.1, Section 3.3.5, pg23)		Section 3.3.5, p.23
N	N	N	N	N	N	N	N	N	N	N	N	P	N	N	N	N	N	N	N	Ca53	Soil erosion	Effects of the technology on soil erosion.		Section 3.3.5, p.23
N	N	N	N	N	N	N	N	N	P	M	N	G	N	VG	N	N	N	N	N	Ca54	The ecosystem	Effects from different technologies on element in the ecosystem, e.g. flora, fauna and biodiversity.		Section 3.3.5, p.23

GMM	GRAPE	GreenNET-Europe	GreenNET-Europe	GTAP-E	Horizonscan	IER - Model for Power	IGEM	IKnow	IMACLIM	IMAGE-TIMER	INVERT	IPAC	LEAP	MDM-E3	MECHanisms	MERGE	MESSAGE	Minicam	Minicam	Transition planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				Acceptance and technology perception				
N	N	N	M	N	G	N	N	VG	N	N	N	N	P	N	M	N	N	N	N	Ca36	Public acceptance	Public acceptance of technologies - Necessity for and level of public awareness		Section 3.3.5
N	N	N	N	N	G	N	N	VG	N	N	N	N	n	N	M	N	N	N	N	Ca37	Public perception	Public acceptance of technologies - Necessity for and level of public understanding on		Section 3.3.5
N	N	N	N	N	VG	N	N	VG	N	N	N	N	N	N	P	N	N	N	N	Ca38	Public opinion obstacles	- The technology in itself		Section 3.3.5
N	N	N	N	N	M	N	N	VG	N	N	N	N	N	N	VG	N	N	N	N	Ca39	Public participation	- How to make use of a technology		Section 3.3.5, p. 22
P	N	N	N	N	VG	N	N	G	N	N	N	N	n	N	M	N	P	N	N	Ca40	Financial risk perception	- A technology's implications		Section 3.3.5, p.23
N	N	N	N	N	VG	N	N	VG	N	N	N	N	N	N	P	N	N	N	N	Ca41	Perceptions on reliability of a technology as energy source	Public acceptance of technologies - Relations between the expectations and current implementation scale		Section 3.3.5, **p. 23**
N	N	N	N	N	P	N	N	VG	N	N	N	N	N	N	P	N	N	N	N	Ca42	Resistance based on issues of principle	Public participation such as "Generally public participation seeks and facilitates the involvement of those potentially affected by or interested in a decision. The principle of public participation holds that those who are affected by a decision have a right to be involved in the decision-making process. Public participation implies that the public's contribution will influence the decision" (http://www.iap2.org/displaycommon.cfm?an=4, http://www.co-intelligence.org/CIPol_publicparticipation.html).		
N	N	N	N	N	P	N	N	G	N	N	N	N	N	N	P	N	N	N	N	Ca43	Concerns for window dressing	Risk perception:		
N	N	N	N	N	G	N	N	G	N	N	N	N	N	N	VG	N	N	N	N	Ca44	Concerns of competences developers and constructors	§ Individual investments; high transition and transaction costs		
N	N	N	N	N	G	N	N	VG	N	N	N	N	N	N	P	N	N	N	N	Ca45	Perception on management local supply chain	§ Immaturity of technologies (high investment, low income)		
P	N	N	N	N	G	N	N	G	N	N	N	N	N	N	M	N	N	N	N	Ca46	Safety issues and related perception - Concerns on health impacts	§ Reputation of the operator or initiator		Section 3.3.5, p. 23
N	N	N	N	N	G	N	N	VG	N	N	N	N	N	N	G	N	N	N	N	Ca47	The perception based on cost/benefits sharing	§ Management of risks.		Section 3.3.5
N	N	N	N	N	VG	N	N	VG	N	N	N	N	n	N	P	N	N	N	N	Ca48	Competing technologies	Mistrust in a technology as a reliable energy source.		Section 3.3.5, p. 23
																				Environmental impacts				
N	VG	N	N	P	G	N	N	G	N	VG	N	N	N	N	N	N	P	G	G	Ca49	Land-use intensity	This means how agricultural intensive a land is used, i.e. mechanical ploughing, chemical fertilizers, pesticides etc.		Section 3.3.5, p.23
G	VG	N	N	VG	G	G	N	G	G	VG	VG	G	VG	G	N	VG	G	VG	VG	Ca50	Emissions			Section 3.3.5, p.23
N	N	N	N	N	G	N	N	G	N	M	N	N	N	N	N	N	P	N	N	Ca51	Hydrological resources	Effects from different technologies on the Hydrological resources. For example, effects on the aquifers (ground water), effects of river dams to the water levels downstream, water footprint.		Section 3.3.5, p.23
N	N	N	N	N	G	N	N	G	N	P	N	N	N	N	N	N	P	P	P	Ca52	Protected areas	Existence of protected areas taken into account in the sitting of technologies. (D.1.1, Section 3.3.5, pg23)		Section 3.3.5, p.23
N	N	N	N	N	G	N	N	G	N	N	N	N	N	N	N	N	N	N	N	Ca53	Soil erosion	Effects of the technology on soil erosion.		Section 3.3.5, p.23
N	N	N	N	N	G	N	N	G	N	G	N	M	N	N	N	VG	N	N	N	Ca54	The ecosystem	Effects from different technologies on element in the ecosystem, e.g. flora, fauna and biodiversity.		Section 3.3.5, p.23

MIRAGE	MoreHys	MTSIM	MURE	NEMESIS	NEMS	NEWAGE	PACE	POLES	POWERS	PRIMES	REMARK	REMIND-R	RESolve-E	RESolve-T	RICE	ROM	SAMLAST	SGM	STSc	Transition planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				Acceptance and technology perception				
N	N	N	M	N	N	N	N	N	N	P	N	N	N	N	N	N	N	N	M	Ca36	**Public acceptance**	Public acceptance of technologies - Necessity for and level of public awareness		Section 3.3.5
N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	Ca37	**Public perception**	Public acceptance of technologies - Necessity for and level of public understanding on		Section 3.3.5
N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	Ca38	**Public opinion obstacles**	- The technology in itself		Section 3.3.5
N	N	N	P	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P	Ca39	**Public participation**	- How to make use of a technology		Section 3.3.5, p. 22
N	N	N	M	N	N	N	N	P	N	P	N	N	G	P	N	N	N	N	M	Ca40	**Financial risk perception**	- A technology's implications		Section 3.3.5, p.23
N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	Ca41	**Perceptions on reliability of a technology as energy source**	Public acceptance of technologies - Relations between the expectations and current implementation scale		Section 3.3.5, **p. 23**
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	G	Ca42	**Resistance based on issues of principle**	Public participation such as "Generally public participation seeks and facilitates the involvement of those potentially affected by or interested in a decision. The principle of public participation holds that those who are affected by a decision have a right to be involved in the decision-making process. Public participation implies that the public's contribution will influence the decision" (http://www.iap2.org/displaycommon.cfm?an=4, http://www.co-intelligence.org/CIPol_publicparticipation.html).		
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P	Ca43	**Concerns for window dressing**	Risk perception:		
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P	Ca44	**Concerns of competences developers and constructors**	§ Individual investments; high transition and transaction costs		
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	Ca45	**Perception on management local supply chain**	§ Immaturity of technologies (high investment, low income)		
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	G	Ca46	**Safety issues and related perception - Concerns on health impacts**	§ Reputation of the operator or initiator		Section 3.3.5, p. 23
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	Ca47	**The perception based on cost/benefits sharing**	§ Management of risks.		Section 3.3.5
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	G	Ca48	**Competing technologies**	Mistrust in a technology as a reliable energy source.		Section 3.3.5, p. 23
																				Environmental impacts				
M	N	N	N	G	N	N	N	N	N	N	N	N	N	N	N	N	N	M	M	Ca49	**Land-use intensity**	This means how agricultural intensive a land is used, i.e. mechanical ploughing, chemical fertilizers, pesticides etc.		Section 3.3.5, p.23
N	G	G	VG	VG	M	G	G	G	VG	G	N	VG	N	G	VG	N	G	VG	G	Ca50	**Emissions**			Section 3.3.5, p.23
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	G	P	G	Ca51	**Hydrological resources**	Effects from different technologies on the Hydrological resources. For example, effects on the aquifers (ground water), effects of river dams to the water levels downstream, water footprint.		Section 3.3.5, p.23
N	N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	G	Ca52	**Protected areas**	Existence of protected areas taken into account in the sitting of technologies. (D.1.1, Section 3.3.5, pg23)		Section 3.3.5, p.23
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P	G	Ca53	**Soil erosion**	Effects of the technology on soil erosion.		Section 3.3.5, p.23
N	N	N	N	N	N	N	N	N	N	N	N	M	N	N	G	N	N	P	G	Ca54	**The ecosystem**	Effects from different technologies on element in the ecosystem, e.g. flora, fauna and biodiversity.		Section 3.3.5, p.23

TEMPO	TIAM-WORLD	TIMES-FI	TIMES PanEU	TIMES Nordic	UKENVI	E2M2s - IER	E2M2s - Duisburg-Essen	Transition planning				
								Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
								Acceptance and technology perception				
N	N	N	P	N	N	N	N	Ca36	**Public acceptance**	Public acceptance of technologies - Necessity for and level of public awareness		Section 3.3.5
N	N	N	N	N	N	N	N	Ca37	**Public perception**	Public acceptance of technologies - Necessity for and level of public understanding on		Section 3.3.5
N	N	N	N	N	N	N	N	Ca38	**Public opinion obstacles**	- The technology in itself		Section 3.3.5
N	N	N	N	N	N	N	N	Ca39	**Public participation**	- How to make use of a technology		Section 3.3.5, p. 22
M	G	P	P	N	N	N	N	Ca40	**Financial risk perception**	- A technology's implications		Section 3.3.5, p.23
N	N	N	N	N	N	N	N	Ca41	**Perceptions on reliability of a technology as energy source**	Public acceptance of technologies - Relations between the expectations and current implementation scale		Section 3.3.5**, p. 23**
N	N	N	N	N	N	N	N	Ca42	**Resistance based on issues of principle**	Public participation such as "Generally public participation seeks and facilitates the involvement of those potentially affected by or interested in a decision. The principle of public participation holds that those who are affected by a decision have a right to be involved in the decision-making process. Public participation implies that the public's contribution will influence the decision" (http://www.iap2.org/displaycommon.cfm?an=4, http://www.co-intelligence.org/CIPol_publicparticipation.html).		
N	N	N	N	N	N	N	N	Ca43	**Concerns for window dressing**	Risk perception:		
N	N	N	N	N	N	N	N	Ca44	**Concerns of competences developers and constructors**	§ Individual investments; high transition and transaction costs		
N	N	N	N	N	N	N	N	Ca45	**Perception on management local supply chain**	§ Immaturity of technologies (high investment, low income)		
N	N	N	N	N	N	N	N	Ca46	**Safety issues and related perception - Concerns on health impacts**	§ Reputation of the operator or initiator		Section 3.3.5, p. 23
N	N	N	N	N	N	N	N	Ca47	**The perception based on cost/benefits sharing**	§ Management of risks.		Section 3.3.5
N	N	N	N	N	N	N	N	Ca48	**Competing technologies**	Mistrust in a technology as a reliable energy source.		Section 3.3.5, p. 23
								Environmental impacts				
N	N	N	P	N	N	N	N	Ca49	**Land-use intensity**	This means how agricultural intensive a land is used, i.e. mechanical ploughing, chemical fertilizers, pesticides etc.		Section 3.3.5, p.23
VG	G	VG	VG	G	VG	G	VG	Ca50	**Emissions**			Section 3.3.5, p.23
N	N	N	P	N	N	N	N	Ca51	**Hydrological resources**	Effects from different technologies on the Hydrological resources. For example, effects on the aquifers (ground water), effects of river dams to the water levels downstream, water footprint.		Section 3.3.5, p.23
N	N	N	P	N	N	N	N	Ca52	**Protected areas**	Existence of protected areas taken into account in the sitting of technologies. (D.1.1, Section 3.3.5, pg23)		Section 3.3.5, p.23
N	N	N	N	N	N	N	N	Ca53	**Soil erosion**	Effects of the technology on soil erosion.		Section 3.3.5, p.23
N	N	N	N	N	N	N	N	Ca54	**The ecosystem**	Effects from different technologies on element in the ecosystem, e.g. flora, fauna and biodiversity.		Section 3.3.5, p.23

Strategic Planning

ROM	SAMLAST	SGM	STSc	TEMPO	TIAM-WORLD	TIMESNordic	TIMES-FI	TIMES PanEU	UKENVI	COMBAT	COMPETES	DICE	DNE21+	WASP	WEM	WIAGEM	WILMAR	Wilmar Plan. Tool	WITCH	Strategic planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				GENERAL SPECIFICATIONS				
M	VG	M	G	N	G	G	M	VG	M	N	G	G	VG	m	M	N	P	N	M	B1	Resilience from extreme energy prices	Resilience of the energy system against shocks of extreme energy prices		Section 3.2
M	VG	P	G	N	M	P	P	M	N	N	G	N	VG	M	N	N	M	VG	N	B2	Resilience from electric infrastructure failures	Resilience of the energy system against shocks of power system failures, either grid or large scale power plants. Extra crucial for the electricity system, when electricity have to be generated at same moment as being used.		Section 3.2
P	G	P	G	N	M	G	P	G	N	N	G	N	G	N	P	N	P	N	N	B3	Resilience from failures of energy supply	Resilience of the energy system against shocks of failures of non electric energy supply.		Section 3.2
M	VG	N	G	N	G	P	N	M	N	N	G	M	N	N	N	N	P	VG	N	B4	Resilience from extreme weather	Resilience of the energy system against shocks of extreme weather events/conditions - e.g. cooling problems for nuclear plants due to hot weather.		Section 3.2
																				TECHNOLOGY PERFORMANCE AND DEVELOPMENT POTENTIAL				
M	P	G	N	G	VG	VG	VG	VG	P	N	P	N	VG	vg	G	M	N	N	G	B5	Investment costs	Investment Costs		Section 3.2.1
M	vg	G	N	G	VG	VG	VG	VG	P	N	G	N	VG	vg	P	N	VG	VG	G	B6	O&M costs	O&M costs		Section 3.2.1
M	vg	M	P	G	VG	G	VG	VG	P	N	VG	N	VG	g	G	P	VG	VG	G	B7	Technical performance	Technical performance		
M	P	VG	P	VG	VG	G	M	G	P	N	VG	G	VG	g	G	P	G	G	G	B8	Environmental performance	Environmental performance		
N	N	P	N	N	G	P	N	M	N	N	N	N	G	N	G	P	N	N	VG	B9	Cost Reduction Learning By Doing	Cost reduction as a function of time through increased accumulated installed Capacity. Potential and expected cost reduction - as a function of deployment (economy of scale).		Section 3.2.1
M	G	N	N	M	VG	G	M	G	N	N	VG	N	VG	N	G	M	N	N	G	B10	Efficiency gains	Overall efficiency gain and efficiency gain per tech/per kWh.		Section 3.2.1
N	N	N	N	N	N	P	N	P	N	N	N	N	N	N	N	P	N	N	VG	B11	Cost Learning By Researching	Cost reduction as a function of time through Research, Development and Demonstration (RD&D).		Section 3.2.1

E2M2s	E3ME	E3MG	EDGE	EFDA-TIMES	EMELIE	EMM	EnergyPlan	ENPEP	ENV-Linkages	EPPA	ESPAUT	ESTEEM	ETP Model	FUND	GEM-CCGT	GEM-E3	GEMED	GEMINI-E3	GET	Strategic planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				GENERAL SPECIFICATIONS				
N	G	G	P	G	M	M	G	M	M	P	M	P	G	P	P	VG	G	VG	N	B1	Resilience from extreme energy prices	Resilience of the energy system against shocks of extreme energy prices		Section 3.2
N	N	N	N	M	M	M	N	p	N	N	VG	P	P	P	N	P	G	N	N	B2	Resilience from electric infrastructure failures	Resilience of the energy system against shocks of power system failures, either grid or large scale power plants. Extra crucial for the electricity system, when electricity have to be generated at same moment as being used.		Section 3.2
N	P	P	N	M	M	N	N	p	M	P	VG	P	G	P	N	N	G	N	N	B3	Resilience from failures of energy supply	Resilience of the energy system against shocks of failures of non electric energy supply.		Section 3.2
N	N	N	N	M	N	N	N	n	N	N	VG	P	P	M	N	N	N	N	N	B4	Resilience from extreme weather	Resilience of the energy system against shocks of extreme weather events/conditions - e.g. cooling problems for nuclear plants due to hot weather.		Section 3.2
																				TECHNOLOGY PERFORMANCE AND DEVELOPMENT POTENTIAL				
VG	M	G	N	VG	VG	N	VG	VG	P	M	G	N	VG	VG	N	P	M	P	VG	B5	Investment costs	Investment Costs		Section 3.2.1
VG	M	G	N	VG	VG	VG	VG	VG	N	P	G	N	VG	G	N	P	G	P	VG	B6	O&M costs	O&M costs		Section 3.2.1
VG	M	G	N	VG	VG	G	VG	VG	N	N	G	N	G	N	N	N	G	N	VG	B7	Technical performance	Technical performance		
G	M	G	N	VG	G	P	VG	VG	P	M	N	M	G	VG	N	M	G	N	VG	B8	Environmental performance	Environmental performance		
G	G	G	N	G	P	N	N	p	N	G	N	N	P	G	N	N	VG	N	G	B9	Cost Reduction Learning By Doing	Cost reduction as a function of time through increased accumulated installed Capacity. Potential and expected cost reduction - as a function of deployment (economy of scale).		Section 3.2.1
G	M	M	N	VG	P	P	N	n	P	P	N	N	G	G	N	N	G	N	VG	B10	Efficiency gains	Overall efficiency gain and efficiency gain per tech/per kWh.		Section 3.2.1
N	M	M	N	M	N	N	N	n	N	N	N	N	P	M	N	N	P	N	G	B11	Cost Learning By Researching	Cost reduction as a function of time through Research, Development and Demonstration (RD&D).		Section 3.2.1

GMM	GRAPE	GreenNET-Europe	GreenNET-Europe	GTAP-E	Horizonscan	IER - Model for Power Plant and	IGEM	iKnow	IMACLIM	IMAGE-TIMER	INVERT	IPAC	LEAP	MDM-E3	MECHanisms	MERGE	MESSAGE	Minicam	Minicam	Strategic planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				GENERAL SPECIFICATIONS				
G	P	M	M	M	VG	N	VG	VG	VG	VG	M	VG	G	G	N	VG	G	G	G	B1	Resilience from extreme energy prices	Resilience of the energy system against shocks of extreme energy prices		Section 3.2
M	N	N	N	N	VG	M	P	VG	N	P	M	N	m	N	N	N	M	P	P	B2	Resilience from electric infrastructure failures	Resilience of the energy system against shocks of power system failures, either grid or large scale power plants. Extra crucial for the electricity system, when electricity have to be generated at same moment as being used.		Section 3.2
M	N	N	N	N	VG	N	M	VG	VG	VG	N	G	m	P	N	G	M	P	P	B3	Resilience from failures of energy supply	Resilience of the energy system against shocks of failures of non electric energy supply.		Section 3.2
P	N	N	N	N	VG	M	N	VG	N	N	N	N	p	N	N	N	G	P	P	B4	Resilience from extreme weather	Resilience of the energy system against shocks of extreme weather events/conditions - e.g. cooling problems for nuclear plants due to hot weather.		Section 3.2
																				TECHNOLOGY PERFORMANCE AND DEVELOPMENT POTENTIAL				
VG	VG	VG	VG	N	N	VG	N	N	VG	G	VG	VG	vg	M	P	VG	VG	M	M	B5	Investment costs	Investment Costs		Section 3.2.1
VG	VG	VG	VG	N	N	VG	N	N	VG	G	VG	VG	vg	M	P	VG	VG	G	G	B6	O&M costs	O&M costs		Section 3.2.1
VG	G	G	G	N	P	VG	N	P	VG	G	VG	VG	vg	M	M	VG	G	G	G	B7	Technical performance	Technical performance		
VG	G	N	N	P	P	G	N	P	VG	VG	VG	VG	vg	G	M	VG	VG	G	G	B8	Environmental performance	Environmental performance		
VG	N	VG	VG	N	N	N	G	N	VG	G	VG	N	m	M	M	G	VG	P	P	B9	Cost Reduction Learning By Doing	Cost reduction as a function of time through increased accumulated installed Capacity. Potential and expected cost reduction - as a function of deployment (economy of scale).		Section 3.2.1
VG	P	VG	VG	N	N	N	N	N	VG	G	N	N	m	M	M	N	G	VG	VG	B10	Efficiency gains	Overall efficiency gain and efficiency gain per tech/per kWh.		Section 3.2.1
M	N	N	N	N	N	N	N	N	VG	N	M	N	n	M	N	N	P	P	P	B11	Cost Learning By Researching	Cost reduction as a function of time through Research, Development and Demonstration (RD&D).		Section 3.2.1

MIRAGE	MoreHys	MTSIM	MURE	NEMESIS	NEMS	NEWAGE	PACE	POLES	POWERS	PRIMES	REMARK	REMIND-R	RESolve-E	RESolve-T	RICE	ROM	SAMLAST	SGM	STSc	Strategic planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				GENERAL SPECIFICATIONS				
G	G	M	M	VG	VG	G	N	M	VG	G	M	M	P	P	VG	M	VG	M	G	B1	Resilience from extreme energy prices	Resilience of the energy system against shocks of extreme energy prices		Section 3.2
N	P	VG	P	N	M	N	N	P	VG	P	VG	N	N	N	N	M	VG	P	G	B2	Resilience from electric infrastructure failures	Resilience of the energy system against shocks of power system failures, either grid or large scale power plants. Extra crucial for the electricity system, when electricity have to be generated at same moment as being used.		Section 3.2
N	P	N	M	N	VG	G	N	P	VG	P	N	M	P	G	N	P	G	P	G	B3	Resilience from failures of energy supply	Resilience of the energy system against shocks of failures of non electric energy supply.		Section 3.2
N	N	N	P	N	N	N	N	N	VG	N	N	N	N	N	G	M	VG	N	G	B4	Resilience from extreme weather	Resilience of the energy system against shocks of extreme weather events/conditions - e.g. cooling problems for nuclear plants due to hot weather.		Section 3.2
																				TECHNOLOGY PERFORMANCE AND DEVELOPMENT POTENTIAL				
N	VG	VG	VG	M	VG	G	G	VG	VG	VG	VG	G	VG	G	N	M	P	G	N	B5	Investment costs	Investment Costs		Section 3.2.1
N	VG	VG	VG	M	VG	N	N	M	VG	VG	VG	G	VG	G	N	M	vg	G	N	B6	O&M costs	O&M costs		Section 3.2.1
N	VG	G	VG	N	VG	P	P	M	VG	G	G	G	G	G	N	M	vg	M	P	B7	Technical performance	Technical performance		
N	VG	G	VG	G	VG	P	P	G	VG	M	N	G	N	G	N	M	P	VG	P	B8	Environmental performance	Environmental performance		
N	N	N	G	VG	N	P	P	VG	P	G	N	G	VG	VG	P	N	N	P	N	B9	Cost Reduction Learning By Doing	Cost reduction as a function of time through increased accumulated installed Capacity. Potential and expected cost reduction - as a function of deployment (economy of scale).		Section 3.2.1
N	N	N	VG	VG	G	N	G	VG	P	P	N	G	VG	P	N	M	G	N	N	B10	Efficiency gains	Overall efficiency gain and efficiency gain per tech/per kWh.		Section 3.2.1
N	N	N	M	VG	N	P	P	G	N	M	N	N	N	N	N	N	N	N	N	B11	Cost Learning By Researching	Cost reduction as a function of time through Research, Development and Demonstration (RD&D).		Section 3.2.1

TEMPO	TIAM-WORLD	TIMES-FI	TIMES PanEU	TIMES Nordic	UKENVI	E2M2s - IER	E2M2s - Duisburg-Essen	Strategic planning				
								Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
								GENERAL SPECIFICATIONS				
N	G	M	VG	G	M	N	M	B1	Resilience from extreme energy prices	Resilience of the energy system against shocks of extreme energy prices		Section 3.2
N	M	P	M	P	N	N	P	B2	Resilience from electric infrastructure failures	Resilience of the energy system against shocks of power system failures, either grid or large scale power plants. Extra crucial for the electricity system, when electricity have to be generated at same moment as being used.		Section 3.2
N	M	P	G	G	N	N	P	B3	Resilience from failures of energy supply	Resilience of the energy system against shocks of failures of non electric energy supply.		Section 3.2
N	G	N	M	P	N	N	N	B4	Resilience from extreme weather	Resilience of the energy system against shocks of extreme weather events/conditions - e.g. cooling problems for nuclear plants due to hot weather.		Section 3.2
								TECHNOLOGY PERFORMANCE AND DEVELOPMENT POTENTIAL				
G	VG	VG	VG	VG	P	VG	VG	B5	Investment costs	Investment Costs		Section 3.2.1
G	VG	VG	VG	VG	P	VG	VG	B6	O&M costs	O&M costs		Section 3.2.1
G	VG	VG	VG	G	P	VG	G	B7	Technical performance	Technical performance		
VG	VG	M	G	G	P	G	G	B8	Environmental performance	Environmental performance		
N	G	N	M	P	N	G	P	B9	Cost Reduction Learning By Doing	Cost reduction as a function of time through increased accumulated installed Capacity. Potential and expected cost reduction - as a function of deployment (economy of scale).		Section 3.2.1
M	VG	M	G	G	N	G	N	B10	Efficiency gains	Overall efficiency gain and efficiency gain per tech/per kWh.		Section 3.2.1
N	N	N	P	P	N	N	N	B11	Cost Learning By Researching	Cost reduction as a function of time through Research, Development and Demonstration (RD&D).		Section 3.2.1

ROM	SAMLAST	SGM	STSc	TEMPO	TIAM-WORLD	TIMESNordic	TIMES-FI	TIMES PanEU	UKENVI	COMBAT	COMPETES	DICE	DNE21+	WASP	WEM	WIAGEM	WILMAR	Wilmar Plan. Tool	WITCH	Strategic planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				TECHNOLOGY DEPLOYMENT				
M	G	P	P	N	G	M	P	P	N	N	VG	N	M	P	P	P	P	VG	M	B12	Identifying Technical barriers	To what extent can the tool provide help to identify technical barriers. Technical barriers and technology complementarities (impact on the energy system structure; interdependency between different technologies: e.g. wind turbines and electric grid development)		Section 3.2.2
N	G	P	VG	N	N	P	P	N	M	N	G	N	P	N	N	P	N	N	P	B13	Identifying non Technical barriers	To what extent can the tool provide help to identify non-technical barriers.		Section 3.2.2
N	P	M	N	P	N	M	VG	G	M	N	N	N	VG	P	M	P	N	N	M	B14	Technical potential		if the tool considers regional differences--> higher rating	Section 3.2.2
N	P	M	N	P	G	G	VG	VG	M	N	VG	N	VG	M	M	VG	N	N	G	B15	Economic potential	Economic potential (in contrast to the technical potential which is always larger or equal to the economic potential).	if the tool considers regional differences--> higher rating	Section 3.2.2
N	N	P	G	P	M	P	N	P	N	N	M	N	P	N	N	P	N	N	M	B16	Bottlenecks in technology deployment	Bottlenecks to technology deployment (industry not ready to follow the demand).		
																				POLICY INDICATORS				
M	M	G	M	P	G	G	M	VG	G	N	G	N	G	P	G	G	M	N	M	B17	Support mechanisms	Different support mechanisms (e.g. feed-in tariffs, quotas, fiscal measures, information).	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the impact on the technology deployments of different technologies - the tool should score high.	Section 3.2.3
P	P	N	G	P	G	P	M	M	N	N	N	N	M	N	P	M	P	N	N	B18	Identify lock-in situations	Can the tool identify lock-in situations and then address policy measures aimed to change/solve them?		Section 3.2.2
M	VG	P	N	N	P	N	P	N	N	N	N	N	P	N	N	P	P	N	N	B19	System failure	Can the tool address system failure?		Section 3.2.2
M	G	M	M	N	VG	M	M	G	N	N	P	VG	N	M	M	P	G	G	M	B20	Uncertainties	Can the tool deal with uncertainties?		Section 3.2.2
N	N	VG	N	M	P	G	G	VG	N	N	VG	N	N	P	M	M	G	N	M	B21	CO2 reduction per technology	Life time CO2 emissions per technology (Life cycle emission).		Section 3.2.2
N	N	VG	M	N	N	N	N	N	VG	N	N	N	N	N	N	VG	N	N	M	B22	Total employment in the economy			Section 3.2.2
N	N	VG	M	N	P	N	P	N	VG	N	N	N	N	N	N	VG	N	N	G	B23	Change in GDP			Section 3.2.2
N	N	G	N	N	G	M	G	M	N	N	N	N	N	M	P	N	P	N	N	B24	Life cycle costs	The tools capacity to consider the life cycle costs.		Section 3.2.2
N	N	VG	N	N	N	M	G	M	N	N	N	N	N	M	N	N	P	N	N	B25	Life cycle energy input	The tools capacity to consider the total use of energy over the entire life cycle.		Section 3.2.2
N	N	VG	N	P	P	M	G	M	N	N	N	N	N	M	P	N	P	N	N	B26	Life cycle emissions	The tools capacity to consider the total amount of emissions over the entire life cycle.		Section 3.2.2
N	N	P	M	N	P	N	N	N	M	N	VG	N	M	N	N	G	N	N	G	B27	Competitiveness considerations for regional industry			Section 3.2.2

E2M2s	E3ME	E3MG	EDGE	EFDA-TIMES	EMELIE	EMM	EnergyPlan	ENPEP	ENV-Linkages	EPPA	ESPAUT	ESTEEM	ETP Model	FUND	GEM-CCGT	GEM-E3	GEMED	GEMINI-E3	GET	Strategic planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				TECHNOLOGY DEPLOYMENT				
N	N	N	N	G	N	M	M	n	N	N	P	P	M	N	N	N	M	N	VG	B12	Identifying Technical barriers	To what extent can the tool provide help to identify technical barriers. Technical barriers and technology complementarities (impact on the energy system structure; interdependency between different technologies: e.g. wind turbines and electric grid development)		Section 3.2.2
N	N	N	N	M	N	N	P	N	N	P	N	VG	P	N	N	N	N	N	M	B13	Identifying non Technical barriers	To what extent can the tool provide help to identify non-technical barriers.		Section 3.2.2
N	N	N	N	G	M	M	M	n	N	P	N	N	P	N	N	P	M	N	G	B14	Technical potential		if the tool considers regional differences--> higher rating	Section 3.2.2
N	M	M	N	G	M	M	G	G	N	P	N	N	G	N	M	P	M	N	G	B15	Economic potential	Economic potential (in contrast to the technical potential which is always larger or equal to the economic potential).	if the tool considers regional differences--> higher rating	Section 3.2.2
N	N	N	N	G	N	N	N	n	N	N	N	M	P	N	N	N	N	N	N	B16	Bottlenecks in technology deployment	Bottlenecks to technology deployment (industry not ready to follow the demand).		
																				POLICY INDICATORS				
G	G	G	N	VG	G	N	M	VG	M	G	N	G	G	G	G	VG	VG	P	M	B17	Support mechanisms	Different support mechanisms (e.g. feed-in tariffs, quotas, fiscal measures, information).	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the impact on the technology deployments of different technologies - the tool should score high.	Section 3.2.3
N	N	N	N	G	N	N	N	n	N	N	N	VG	P	M	N	VG	M	P	N	B18	Identify lock-in situations	Can the tool identify lock-in situations and then address policy measures aimed to change/solve them?		Section 3.2.2
N	N	N	N	M	N	N	G	n	N	N	M	M	N	P	N	P	M	N	N	B19	System failure	Can the tool address system failure?		Section 3.2.2
G	P	M	N	G	N	VG	N	N	P	G	M	VG	M	M	N	N	M	N	N	B20	Uncertainties	Can the tool deal with uncertainties?		Section 3.2.2
N	M	M	N	P	P	P	P	n	N	P	N	P	G	VG	N	VG	M	N	VG	B21	CO2 reduction per technology	Life time CO2 emissions per technology (Life cycle emission).		Section 3.2.2
N	VG	VG	G	N	N	N	N	N	G	VG	N	N	N	VG	VG	VG	G	VG	N	B22	Total employment in the economy			Section 3.2.2
N	VG	VG	G	P	N	N	N	n	VG	VG	N	N	N	M	VG	VG	VG	VG	N	B23	Change in GDP			Section 3.2.2
P	N	N	N	G	N	N	N	n	N	P	N	N	M	P	N	VG	N	P	N	B24	Life cycle costs	The tools capacity to consider the life cycle costs.		Section 3.2.2
N	N	N	N	N	N	N	N	n	N	P	N	N	M	M	N	VG	N	N	N	B25	Life cycle energy input	The tools capacity to consider the total use of energy over the entire life cycle.		Section 3.2.2
N	N	N	N	N	N	N	N	n	N	P	N	N	M	VG	N	VG	N	N	N	B26	Life cycle emissions	The tools capacity to consider the total amount of emissions over the entire life cycle.		Section 3.2.2
N	VG	VG	M	P	N	N	N	n	G	G	N	M	N	N	G	P	P	VG	N	B27	Competitiveness considerations for regional industry			Section 3.2.2

GMM	GRAPE	GreenNET-Europe	GreenNET-Europe	GTAP-E	Horizonscan	IER - Model for Power Plant and	IGEM	iKnow	IMACLIM	IMAGE-TIMER	INVERT	IPAC	LEAP	MDM-E3	MECHanisms	MERGE	MESSAGE	Minicam	Minicam	Strategic planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				TECHNOLOGY DEPLOYMENT				
G	M	VG	VG	N	G	VG	N	G	VG	P	G	N	G	N	P	N	M	P	P	B12	Identifying Technical barriers	To what extent can the tool provide help to identify technical barriers. Technical barriers and technology complementarities (impact on the energy system structure; interdependency between different technologies: e.g. wind turbines and electric grid development)		Section 3.2.2
M	P	M	M	P	VG	N	N	VG	G	N	G	N	G	N	VG	N	N	P	P	B13	Identifying non Technical barriers	To what extent can the tool provide help to identify non-technical barriers.		Section 3.2.2
M	G	VG	VG	N	M	N	N	M	VG	VG	G	N	G	N	N	N	N	VG	VG	B14	Technical potential		if the tool considers regional differences--> higher rating	Section 3.2.2
G	VG	VG	VG	P	P	N	M	P	VG	VG	G	G	G	M	N	N	G	VG	VG	B15	Economic potential	Economic potential (in contrast to the technical potential which is always larger or equal to the economic potential).	if the tool considers regional differences--> higher rating	Section 3.2.2
G	P	VG	VG	P	G	N	N	M	N	N	N	N	N	N	G	N	N	P	P	B16	Bottlenecks in technology deployment	Bottlenecks to technology deployment (industry not ready to follow the demand).		
																				POLICY INDICATORS				
G	G	M	M	P	N	N	M	N	VG	G	VG	VG	vg	G	VG	G	G	M	G	B17	Support mechanisms	Different support mechanisms (e.g. feed-in tariffs, quotas, fiscal measures, information).	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the impact on the technology deployments of different technologies - the tool should score high.	Section 3.2.3
M	N	P	P	N	M	N	N	M	VG	M	N	N	N	N	N	N	P	P	P	B18	Identify lock-in situations	Can the tool identify lock-in situations and then address policy measures aimed to change/solve them?		Section 3.2.2
P	N	P	P	P	VG	N	N	G	VG	P	N	N	N	N	N	N	P	P	P	B19	System failure	Can the tool address system failure?		Section 3.2.2
M	G	M	M	G	M	N	N	VG	N	N	N	N	N	M	G	N	VG	P	P	B20	Uncertainties	Can the tool deal with uncertainties?		Section 3.2.2
P	VG	N	N	N	N	N	N	P	VG	G	G	G	G	M	N	N	M	M	M	B21	CO2 reduction per technology	Life time CO2 emissions per technology (Life cycle emission).		Section 3.2.2
N	P	N	N	VG	M	N	VG	P	VG	N	N	VG	N	VG	N	VG	N	M	N	B22	Total employment in the economy			Section 3.2.2
P	VG	N	N	VG	M	N	VG	P	VG	P	N	VG	N	VG	N	VG	VG	G	G	B23	Change in GDP			Section 3.2.2
M	VG	VG	VG	N	N	N	N	N	N	N	N	N	N	N	N	N	G	P	P	B24	Life cycle costs	The tools capacity to consider the life cycle costs.		Section 3.2.2
P	VG	N	N	N	N	N	N	N	P	N	N	N	N	N	N	N	P	N	N	B25	Life cycle energy input	The tools capacity to consider the total use of energy over the entire life cycle.		Section 3.2.2
P	VG	N	N	N	N	N	N	N	VG	N	N	N	N	N	N	N	P	N	N	B26	Life cycle emissions	The tools capacity to consider the total amount of emissions over the entire life cycle.		Section 3.2.2
N	P	N	N	G	M	N	G	M	VG	N	N	G	N	VG	N	VG	N	P	P	B27	Competitiveness considerations for regional industry			Section 3.2.2

MIRAGE	MoreHys	MTSIM	MURE	NEMESIS	NEMS	NEWAGE	PACE	POLES	POWERS	PRIMES	REMARK	REMIND-R	RESolve-E	RESolve-T	RICE	ROM	SAMLAST	SGM	STSc	Strategic planning				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				TECHNOLOGY DEPLOYMENT				
N	N	P	G	N	N	N	P	N	N	P	P	G	N	M	N	M	G	P	P	B12	Identifying Technical barriers	To what extent can the tool provide help to identify technical barriers. Technical barriers and technology complementarities (impact on the energy system structure; interdependency between different technologies: e.g. wind turbines and electric grid development)		Section 3.2.2
N	N	N	G	N	N	N	P	N	N	P	N	N	P	N	N	N	G	P	VG	B13	Identifying non Technical barriers	To what extent can the tool provide help to identify non-technical barriers.		Section 3.2.2
N	G	N	G	N	VG	N	P	G	N	G	N	M	M	N	N	N	P	M	N	B14	Technical potential		if the tool considers regional differences--> higher rating	Section 3.2.2
N	G	N	G	N	M	N	VG	G	N	G	N	M	VG	M	N	N	P	M	N	B15	Economic potential	Economic potential (in contrast to the technical potential which is always larger or equal to the economic potential).	if the tool considers regional differences--> higher rating	Section 3.2.2
N	N	N	G	N	N	N	P	G	N	N	N	M	M	G	N	N	N	P	G	B16	Bottlenecks in technology deployment	Bottlenecks to technology deployment (industry not ready to follow the demand).		
																				POLICY INDICATORS				
N	M	N	VG	N	M	G	G	VG	VG	VG	N	G	VG	G	G	M	M	G	M	B17	Support mechanisms	Different support mechanisms (e.g. feed-in tariffs, quotas, fiscal measures, information).	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the impact on the technology deployments of different technologies - the tool should score high.	Section 3.2.3
N	VG	N	P	N	N	N	N	G	N	G	N	N	VG	VG	N	P	P	N	G	B18	Identify lock-in situations	Can the tool identify lock-in situations and then address policy measures aimed to change/solve them?		Section 3.2.2
N	N	M	P	N	P	N	N	P	N	P	M	P	P	N	N	M	VG	P	N	B19	System failure	Can the tool address system failure?		Section 3.2.2
N	N	N	P	N	N	N	N	G	M	M	N	N	G	G	N	M	G	M	M	B20	Uncertainties	Can the tool deal with uncertainties?		Section 3.2.2
N	G	N	G	M	P	N	M	G	N	M	N	G	N	G	N	N	N	VG	N	B21	CO2 reduction per technology	Life time CO2 emissions per technology (Life cycle emission).		Section 3.2.2
VG	N	N	N	VG	VG	VG	VG	N	N	N	N	G	N	N	VG	N	N	VG	M	B22	Total employment in the economy			Section 3.2.2
VG	N	N	N	VG	VG	VG	VG	N	N	N	N	G	N	N	VG	N	N	VG	M	B23	Change in GDP			Section 3.2.2
N	N	N	G	M	N	N	N	G	P	G	N	G	N	N	N	N	N	G	N	B24	Life cycle costs	The tools capacity to consider the life cycle costs.		Section 3.2.2
N	N	N	G	M	N	N	N	G	N	G	N	N	N	N	N	N	N	VG	N	B25	Life cycle energy input	The tools capacity to consider the total use of energy over the entire life cycle.		Section 3.2.2
N	N	N	G	M	N	N	N	G	P	M	N	N	N	M	N	N	N	VG	N	B26	Life cycle emissions	The tools capacity to consider the total amount of emissions over the entire life cycle.		Section 3.2.2
VG	N	N	N	N	G	G	G	N	N	N	N	G	P	N	G	N	N	P	M	B27	Competitiveness considerations for regional industry			Section 3.2.2

TEMPO	TIAM-WORLD	TIMES-FI	TIMES PanEU	TIMES Nordic	UKENVI	E2M2s - IER	E2M2s - Duisburg-Essen	Strategic planning				
								Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
								TECHNOLOGY DEPLOYMENT				
N	G	P	P	M	N	N	G	B12	Identifying Technical barriers	To what extent can the tool provide help to identify technical barriers. Technical barriers and technology complementarities (impact on the energy system structure; interdependency between different technologies: e.g. wind turbines and electric grid development)		Section 3.2.2
N	N	P	N	P	M	N	P	B13	Identifying non Technical barriers	To what extent can the tool provide help to identify non-technical barriers.		Section 3.2.2
P	N	VG	G	M	M	N	N	B14	Technical potential		if the tool considers regional differences--> higher rating	Section 3.2.2
P	G	VG	VG	G	M	N	N	B15	Economic potential	Economic potential (in contrast to the technical potential which is always larger or equal to the economic potential).	if the tool considers regional differences--> higher rating	Section 3.2.2
P	M	N	P	P	N	N	N	B16	Bottlenecks in technology deployment	Bottlenecks to technology deployment (industry not ready to follow the demand).		
								POLICY INDICATORS				
P	G	M	VG	G	G	G	G	B17	Support mechanisms	Different support mechanisms (e.g. feed-in tariffs, quotas, fiscal measures, information).	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the impact on the technology deployments of different technologies - the tool should score high.	Section 3.2.3
P	G	M	M	P	N	N	G	B18	Identify lock-in situations	Can the tool identify lock-in situations and then address policy measures aimed to change/solve them?		Section 3.2.2
N	P	P	N	N	N	N	M	B19	System failure	Can the tool address system failure?		Section 3.2.2
N	VG	M	G	M	N	G	G	B20	Uncertainties	Can the tool deal with uncertainties?		Section 3.2.2
M	P	G	VG	G	N	N	VG	B21	CO2 reduction per technology	Life time CO2 emissions per technology (Life cycle emission).		Section 3.2.2
N	N	N	N	N	VG	N	N	B22	Total employment in the economy			Section 3.2.2
N	P	P	N	N	VG	N	P	B23	Change in GDP			Section 3.2.2
N	G	G	M	M	N	P	VG	B24	Life cycle costs	The tools capacity to consider the life cycle costs.		Section 3.2.2
N	N	G	M	M	N	N	M	B25	Life cycle energy input	The tools capacity to consider the total use of energy over the entire life cycle.		Section 3.2.2
P	P	G	M	M	N	N	G	B26	Life cycle emissions	The tools capacity to consider the total amount of emissions over the entire life cycle.		Section 3.2.2
N	P	N	N	N	M	N	N	B27	Competitiveness considerations for regional industry			Section 3.2.2

International Cooperation

ROM	SAMLAST	SGM	STSc	TEMPO	TIAM-WORLD	TIMESNordic	TIMES-FI	TIMES PanEU	UKENVI	COMBAT	COMPETES	DICE	DNE21+	WASP	WEM	WIAGEM	WILMAR	Wilmar Plan. Tool	WITCH	International cooperation				
																				Nr	Specification	Description	Guidlines to evaluation	Location in Specification Report
																				GENERAL SPECIFICATIONS				
N	N	G	G	N	VG	M	M	P	M	VG	N	G	VG	P	M	M	P	N	VG	E1	JI and CDM	The potential CO2 reduction through JI and CDM and its cost.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5
																				INTERNATIONAL COOPERATION ON R&D				
N	N	P	VG	N	N	N	N	N	N	P	N	M	N	N	P	N	N	N	VG	E2	International Cooperation	The possibility of the tools to identify potentialities of international cooperation on R&D. Monitor benefits of international cooperation on R&D. Assess mutual needs on R&D (win-win situations).	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.1
N	N	P	VG	N	N	N	N	N	N	N	N	M	N	N	N	N	N	N	N	E3	Past International Cooperation	The possibility of the tool to assess past cooperation initiatives and to estimate their results.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.1
N	N	P	VG	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	E4	Global centers of excellence	Need for global "centers of excellence" (existence and fields of activity), e.g. by monitoring technologies with structural high cost or performance lagging behind	If the tool maps existing centres - the tool should not score higher than average. If the tool evaluates the needs of global centres - the tool should score high.	Section 3.5.1
N	N	M	VG	N	M	N	N	N	N	N	N	N	N	N	M	N	N	N	N	E5	Technology Mapping	Technology mapping: international comparison of the state-of-the-art in different technologies (not technology fields) at the world level. Compare which technologies connect to European knowledge.		Section 3.5.1
N	N	P	VG	N	N	N	N	N	N	N	N	P	N	N	P	N	N	N	M	E6	Potential R&D cooperations	Determine which countries are potential partners or main competitors.		Section 3.5.1
N	N	P	G	N	N	N	N	N	N	N	N	N	N	N	P	N	N	N	N	E7	Identify large scale R&D projects	Map total technology development investment and capabilities that need international cooperation. For example fusion technology.		Section 3.5.1
N	N	P	G	N	P	P	N	N	N	N	N	N	N	N	P	N	N	N	G	E8	R&D outside EU	Mapping of knowledge produced outside of the EU. Potential fields where additional R&D within EU is not needed for further Technology Learning (free-riding possibilities) since outside EU there is a high level of technical knowledge.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.1
																				INTERNATIONAL INTERACTION IN TECHNOLOGY DEPLOYMENT				
N	N	N	M	N	M	P	N	N	N	N	N	N	G	N	P	M	N	N	VG	E9	Spillover - Between Regions	Spillover from Technology Learning between different regions of the world	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.2
N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	E10	Spillover Between Institutes/Companies	Spillover from Technology Learning between different international companies and/or research institutes. To distinguish between horizontal and vertical spillover effects. Having vertical (cross-sectors) impacts could give an information on how the research is fundamental or not, and gives a more clear idea of the R&D impact on Technology Learning. Horizontal is spillovers between companies/institutes within the same branch.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.2
N	N	M	M	N	G	P	N	N	N	N	N	N	VG	N	M	N	N	N	VG	E11	Deployment of Technologies outside Europe			Section 3.5.2
N	N	M	M	N	G	M	N	N	N	N	N	N	VG	N	M	N	N	N	VG	E12	Technology Cost outside Europe			Section 3.5.2

E2M2s	E3ME	E3MG	EDGE	EFDA-TIMES	EMELIE	EMM	EnergyPlan	ENPEP	ENV-Linkages	EPPA	ESPAUT	ESTEEM	ETP Model	FUND	GEM-CCGT	GEM-E3	GEMED	GEMINI-E3	GET	International cooperation				
																				Nr	Specification	Description	Guidlines to evaluation	Location in Specification Report
																				GENERAL SPECIFICATIONS				
N	p	P	VG	G	N	N	N	p	G	M	N	P	G	M	G	G	N	G	N	E1	JI and CDM	The potential CO2 reduction through JI and CDM and its cost.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5
																				INTERNATIONAL COOPERATION ON R&D				
N	N	G	N	P	N	N	N	N	N	N	N	P	P	P	N	N	N	N	N	E2	International Cooperation	The possibility of the tools to identify potentialities of international cooperation on R&D. Monitor benefits of international cooperation on R&D. Assess mutual needs on R&D (win-win situations).	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.1
N	N	N	N	N	N	N	N	N	N	N	N	P	N	P	N	N	N	N	N	E3	Past International Cooperation	The possibility of the tool to assess past cooperation initiatives and to estimate their results.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.1
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	E4	Global centers of excellence	Need for global "centers of excellence" (existence and fields of activity), e.g. by monitoring technologies with structural high cost or performance lagging behind	If the tool maps existing centres - the tool should not score higher than average. If the tool evaluates the needs of global centres - the tool should score high.	Section 3.5.1
N	N	N	N	G	N	N	N	N	N	N	N	N	P	P	N	N	N	P	N	E5	Technology Mapping	Technology mapping: international comparison of the state-of-the-art in different technologies (not technology fields) at the world level. Compare which technologies connect to European knowledge.		Section 3.5.1
N	N	P	N	N	N	N	N	N	N	N	N	P	N	M	N	N	N	N	N	E6	Potential R&D cooperations	Determine which countries are potential partners or main competitors.		Section 3.5.1
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	E7	Identify large scale R&D projects	Map total technology development investment and capabilities that need international cooperation. For example fusion technology.		Section 3.5.1
N	N	G	N	N	N	N	N	N	N	P	N	N	M	N	N	N	N	N	N	E8	R&D outside EU	Mapping of knowledge produced outside of the EU. Potential fields where additional R&D within EU is not needed for further Technology Learning (free-riding possibilities) since outside EU there is a high level of technical knowledge.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.1
																				INTERNATIONAL INTERACTION IN TECHNOLOGY DEPLOYMENT				
N	G	G	N	P	N	N	N	N	N	P	N	VG	P	VG	N	N	N	N	N	E9	Spillover - Between Regions	Spillover from Technology Learning between different regions of the world	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.2
N	N	N	N	N	N	N	N	N	N	N	N	VG	N	N	N	N	N	N	N	E10	Spillover Between Institutes/Companies	Spillover from Technology Learning between different international companies and/or research institutes. To distinguish between horizontal and vertical spillover effects. Having vertical (cross-sectors) impacts could give an information on how the research is fundamental or not, and gives a more clear idea of the R&D impact on Technology Learning. Horizontal is spillovers between companies/institutes within the same branch.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.2
N	N	G	M	G	N	N	N	N	P	P	N	N	G	P	N	P	N	P	N	E11	Deployment of Technologies outside Europe			Section 3.5.2
N	N	G	M	G	N	N	N	N	P	P	N	N	G	M	N	P	N	P	N	E12	Technology Cost outside Europe			Section 3.5.2

GMM	GRAPE	GreenNET-Europe	GreenNET-Europe	GTAP-E	Horizonscan	IER - Model for Power	IGEM	iKnow	IMACLIM	IMAGE-TIMER	INVERT	IPAC	LEAP	MDM-E3	MECHanisms	MERGE	MESSAGE	Minicam	Minicam	International cooperation				
																				Nr	Specification	Description	Guidlines to evaluation	Location in Specification Report
																				GENERAL SPECIFICATIONS				
G	VG	N	N	G	M	N	N	M	VG	VG	N	N	N	N	N	G	VG	G	G	E1	JI and CDM	The potential CO2 reduction through JI and CDM and its cost.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5
																				INTERNATIONAL COOPERATION ON R&D				
M	N	N	N	N	VG	N	N	VG	VG	N	N	N	N	N	N	VG	N	N	N	E2	International Cooperation	The possibility of the tools to identify potentialities of international cooperation on R&D. Monitor benefits of international cooperation on R&D. Assess mutual needs on R&D (win-win situations).	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.1
N	N	N	N	N	N	N	N	M	P	N	N	N	N	N	N	VG	N	N	N	E3	Past International Cooperation	The possibility of the tool to assess past cooperation initiatives and to estimate their results.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.1
N	N	N	N	N	VG	N	N	VG	N	N	N	N	N	N	N	N	N	N	N	E4	Global centers of excellence	Need for global "centers of excellence" (existence and fields of activity), e.g. by monitoring technologies with structural high cost or performance lagging behind	If the tool maps existing centres - the tool should not score higher than average. If the tool evaluates the needs of global centres - the tool should score high.	Section 3.5.1
G	N	M	M	N	VG	N	N	VG	P	N	N	G	N	N	N	N	N	N	N	E5	Technology Mapping	Technology mapping: international comparison of the state-of-the-art in different technologies (not technology fields) at the world level. Compare which technologies connect to European knowledge.		Section 3.5.1
P	N	N	N	N	VG	N	N	VG	P	N	N	N	N	N	N	N	N	N	N	E6	Potential R&D cooperations	Determine which countries are potential partners or main competitors.		Section 3.5.1
P	N	N	N	N	VG	N	N	VG	N	N	N	N	N	N	N	N	N	N	N	E7	Identify large scale R&D projects	Map total technology development investment and capabilities that need international cooperation. For example fusion technology.		Section 3.5.1
G	N	N	N	N	VG	N	N	VG	P	N	N	N	N	N	N	N	N	N	N	E8	R&D outside EU	Mapping of knowledge produced outside of the EU. Potential fields where additional R&D within EU is not needed for further Technology Learning (free-riding possibilities) since outside EU there is a high level of technical knowledge.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.1
																				INTERNATIONAL INTERACTION IN TECHNOLOGY DEPLOYMENT				
M	P	N	N	N	M	N	N	M	M	G	N	N	N	N	M	G	VG	P	P	E9	Spillover - Between Regions	Spillover from Technology Learning between different regions of the world	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.2
N	N	N	N	N	M	N	N	M	M	N	N	N	N	N	VG	N	N	N	N	E10	Spillover Between Institutes/Companies	Spillover from Technology Learning between different international companies and/or research institutes. To distinguish between horizontal and vertical spillover effects. Having vertical (cross-sectors) impacts could give an information on how the research is fundamental or not, and gives a more clear idea of the R&D impact on Technology Learning. Horizontal is spillovers between companies/institutes within the same branch.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.2
G	VG	N	N	N	VG	N	N	G	N	VG	N	N	N	N	N	N	VG	G	G	E11	Deployment of Technologies outside Europe			Section 3.5.2
G	VG	N	N	N	P	N	N	M	N	VG	N	N	N	N	N	N	VG	G	G	E12	Technology Cost outside Europe			Section 3.5.2

MIRAGE	MoreHys	MTSIM	MURE	NEMESIS	NEMS	NEWAGE	PACE	POLES	POWERS	PRIMES	REMARK	REMIND-R	RESolve-E	RESolve-T	RICE	ROM	SAMLAST	SGM	STSc	International cooperation				
																				Nr	Specification	Description	Guidlines to evaluation	Location in Specification Report
																				GENERAL SPECIFICATIONS				
N	N	N	N	N	N	N	M	VG	N	M	N	P	N	N	VG	N	N	G	G	E1	JI and CDM	The potential CO2 reduction through JI and CDM and its cost.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5
																				INTERNATIONAL COOPERATION ON R&D				
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	G	N	N	P	VG	E2	International Cooperation	The possibility of the tools to identify potentialities of international cooperation on R&D. Monitor benefits of international cooperation on R&D. Assess mutual needs on R&D (win-win situations).	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.1
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	G	N	N	P	VG	E3	Past International Cooperation	The possibility of the tool to assess past cooperation initiatives and to estimate their results.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.1
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P	VG	E4	Global centers of excellence	Need for global "centers of excellence" (existence and fields of activity), e.g. by monitoring technologies with structural high cost or performance lagging behind	If the tool maps existing centres - the tool should not score higher than average. If the tool evaluates the needs of global centres - the tool should score high.	Section 3.5.1
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	VG	E5	Technology Mapping	Technology mapping: international comparison of the state-of-the-art in different technologies (not technology fields) at the world level. Compare which technologies connect to European knowledge.		Section 3.5.1
N	N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	P	VG	E6	Potential R&D cooperations	Determine which countries are potential partners or main competitors.		Section 3.5.1
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P	G	E7	Identify large scale R&D projects	Map total technology development investment and capabilities that need international cooperation. For example fusion technology.		Section 3.5.1
N	N	N	N	VG	N	N	N	N	N	N	N	N	N	N	N	N	N	P	G	E8	R&D outside EU	Mapping of knowledge produced outside of the EU. Potential fields where additional R&D within EU is not needed for further Technology Learning (free-riding possibilities) since outside EU there is a high level of technical knowledge.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.1
																				INTERNATIONAL INTERACTION IN TECHNOLOGY DEPLOYMENT				
N	N	N	N	G	P	P	M	M	N	N	N	N	G	G	G	N	N	N	M	E9	Spillover - Between Regions	Spillover from Technology Learning between different regions of the world	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.2
N	N	N	N	VG	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	E10	Spillover Between Institutes/Companies	Spillover from Technology Learning between different international companies and/or research institutes. To distinguish between horizontal and vertical spillover effects. Having vertical (cross-sectors) impacts could give an information on how the research is fundamental or not, and gives a more clear idea of the R&D impact on Technology Learning. Horizontal is spillovers between companies/institutes within the same branch.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.2
N	N	N	N	G	N	N	N	M	N	N	N	G	N	N	N	N	N	M	M	E11	Deployment of Technologies outside Europe			Section 3.5.2
N	N	N	N	VG	N	N	N	M	N	N	N	G	N	N	N	N	N	M	M	E12	Technology Cost outside Europe			Section 3.5.2

TEMPO	TIAM-WORLD	TIMES-FI	TIMES PanEU	TIMES Nordic	UKENVI	E2M2s - IER	E2M2s - Duisburg-Essen	International cooperation				
								Nr	Specification	Description	Guidlines to evaluation	Location in Specification Report
								GENERAL SPECIFICATIONS				
N	VG	M	P	M	M	N	M	E1	JI and CDM	The potential CO2 reduction through JI and CDM and its cost.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5
								INTERNATIONAL COOPERATION ON R&D				
N	N	N	N	N	N	N	N	E2	International Cooperation	The possibility of the tools to identify potentialities of international cooperation on R&D. Monitor benefits of international cooperation on R&D. Assess mutual needs on R&D (win-win situations).	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.1
N	N	N	N	N	N	N	N	E3	Past International Cooperation	The possibility of the tool to assess past cooperation initiatives and to estimate their results.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.1
N	N	N	N	N	N	N	N	E4	Global centers of excellence	Need for global "centers of excellence" (existence and fields of activity), e.g. by monitoring technologies with structural high cost or performance lagging behind	If the tool maps existing centres - the tool should not score higher than average. If the tool evaluates the needs of global centres - the tool should score high.	Section 3.5.1
N	M	N	N	N	N	N	N	E5	Technology Mapping	Technology mapping: international comparison of the state-of-the-art in different technologies (not technology fields) at the world level. Compare which technologies connect to European knowledge.		Section 3.5.1
N	N	N	N	N	N	N	N	E6	Potential R&D cooperations	Determine which countries are potential partners or main competitors.		Section 3.5.1
N	N	N	N	N	N	N	N	E7	Identify large scale R&D projects	Map total technology development investment and capabilities that need international cooperation. For example fusion technology.		Section 3.5.1
N	P	N	N	P	N	N	N	E8	R&D outside EU	Mapping of knowledge produced outside of the EU. Potential fields where additional R&D within EU is not needed for further Technology Learning (free-riding possibilities) since outside EU there is a high level of technical knowledge.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.1
								INTERNATIONAL INTERACTION IN TECHNOLOGY DEPLOYMENT				
N	M	N	N	P	N	N	N	E9	Spillover - Between Regions	Spillover from Technology Learning between different regions of the world	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.2
N	N	N	N	N	N	N	N	E10	Spillover Between Institutes/Companies	Spillover from Technology Learning between different international companies and/or research institutes. To distinguish between horizontal and vertical spillover effects. Having vertical (cross-sectors) impacts could give an information on how the research is fundamental or not, and gives a more clear idea of the R&D impact on Technology Learning. Horizontal is spillovers between companies/institutes within the same branch.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.5.2
N	G	N	N	P	N	N	N	E11	Deployment of Technologies outside Europe			Section 3.5.2
N	G	N	N	M	N	N	N	E12	Technology Cost outside Europe			Section 3.5.2

Innovation and R&D

ROM	SAMLAST	SGM	STSc	TEMPO	TIAM-WORLD	TIMESNordic	TIMES-FI	TIMES PanEU	UKENVI	COMBAT	COMPETES	DICE	DNE21+	WASP	WEM	WAGEM	WILMAR	Wilmar Plan. Tool	WITCH	Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				Innovation and R&D				
																				GENERAL SPECIFICATIONS				
N	N	G	P	N	VG	G	G	VG	P	M	VG	N	VG	M	G	M	M	M	VG	D1	Long-term economic perspectives of			Section 3.4
																				R&D				
N	N	N	M	N	N	P	N	N	N	N	N	N	N	N	N	N	N	N	N	D2	Long-term risk assessment	Risks involved in research activities within a long-term perspective. Risks that R&D will not deliver the cost reductions/technology improvement hoped for.		Section 3.4
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D3	R&D spendings vs. number of patents	R&D spending output in terms of patents.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.4.1
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D4	R&D spendings vs. number of publications	R&D spending output in terms of publications.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	VG	D5	R&D spendings vs. Deployment	R&D spendings in terms of e.g. amounts of new installed RES-capacity.		Section 3.4.1
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P	N	N	N	VG	D6	Link between R&D and Technology Learning	Assess expected impacts from R&D on the technology development, e.g. econometric models based on historical observations.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D7	Public vs. Private R&D - effects technology development	Distinguish between the effects on technology development (KPIs) by public and private R&D. (The nature of public and private R&D may differ; public tends to be more fundamental, private more applied).		Section 3.4.1
N	N	N	VG	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D8	Public vs. Private R&D - effectiveness of stimulating cooperation	Is the tool capable of determining which actors are involved in technology development		Section 3.4.1
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D9	Public vs. Private R&D - timing	Can the tool start R&D support at different times and assess its effect on e.g. the overall mix of technologies later on.		Section 3.4.1
N	N	N	M	N	N	P	N	P	N	N	N	N	N	N	P	N	N	N	N	D10	Monitoring R&D targets	Are technologies on track with promises from e.g. roadmaps (achievements)?		Section 3.4.1
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P	N	N	N	N	D11	Impact assessment of actions to catch up with the intended time schedule	Can we feed the tool with actions (e.g. increased R&D funding, lowering targets) to determine its effect to catch up a technology's development with the original time schedule (in case the technology development is delayed)?		Section 3.4.1
N	N	N	N	N	N	P	N	N	N	N	N	N	N	N	N	N	N	N	N	D12	Monitor depletion of funding	Amount of available funding being spent; this gives insight in whether there is a structural problem that needs more attention or a logical explanation of why developments lag behind.		Section 3.4.1
N	N	N	G	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D13	Map effectiveness of R&D funding mechanisms	To answer policy questions like:		Section 3.4.1
																				INNOVATION				
N	N	P	M	N	N	P	N	N	N	N	N	N	M	N	P	G	N	N	N	D14	Mapping of the size of industrial sectors relative to the World	To identify strong and weak industrial sectors		Section 3.4.2
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D15	Patenting	Number of Patents in order to measure innovation.		
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D16	Publications	Number of Publications in order to measure innovation.		
N	N	N	P	N	M	N	N	N	N	N	N	N	P	N	N	G	N	N	VG	D17	Trade	Share of Energy Technologies in the international trade flows. Consider if relative or absolute advantage.		

E2M2s	E3ME	E3MG	EDGE	EFDA-TIMES	EMELIE	EMM	EnergyPlan	ENPEP	ENV-Linkages	EPPA	ESPAUT	ESTEEM	ETP Model	FUND	GEM-CCGT	GEM-E3	GEMED	GEMINI-E3	GET	Innovation and R&D				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				GENERAL SPECIFICATIONS				
VG	M	M	N	VG	G	P	N	m	N	P	N	M	G	M	P	P	N	N	vg	D1	Long-term economic perspectives of technologies			Section 3.4
																				R&D				
N	N	N	N	P	N	N	N	N	N	N	N	P	P	N	N	N	N	N	N	D2	Long-term risk assessment	Risks involved in research activities within a long-term perspective. Risks that R&D will not deliver the cost reductions/technology improvement hoped for.		Section 3.4
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D3	R&D spendings vs. number of patents	R&D spending output in terms of patents.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.4.1
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D4	R&D spendings vs. number of publications	R&D spending output in terms of publications.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D5	R&D spendings vs. Deployment	R&D spendings in terms of e.g. amounts of new installed RES-capacity.		Section 3.4.1
N	M	M	N	M	N	N	N	n	N	N	N	N	P	N	N	N	N	N	N	D6	Link between R&D and Technology Learning	Assess expected impacts from R&D on the technology development, e.g. econometric models based on historical observations.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D7	Public vs. Private R&D - effects technology development	Distinguish between the effects on technology development (KPIs) by public and private R&D. (The nature of public and private R&D may differ; public tends to be more fundamental, private more applied).		Section 3.4.1
N	N	N	N	N	N	N	N	N	P	N	N	N	N	N	N	N	N	N	N	D8	Public vs. Private R&D - effectiveness of stimulating cooperation	Is the tool capable of determining which actors are involved in technology development		Section 3.4.1
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D9	Public vs. Private R&D - timing	Can the tool start R&D support at different times and assess its effect on e.g. the overall mix of technologies later on.		Section 3.4.1
N	N	N	N	M	N	N	N	N	N	N	N	N	P	N	N	N	N	N	N	D10	Monitoring R&D targets	Are technologies on track with promises from e.g. roadmaps (achievements)?		Section 3.4.1
N	N	N	N	G	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D11	Impact assessment of actions to catch up with the intended time schedule	Can we feed the tool with actions (e.g. increased R&D funding, lowering targets) to determine its effect to catch up a technology's development with the original time schedule (in case the technology development is delayed)?		Section 3.4.1
N	N	N	N	N	N	N	N	N	N	N	N	P	N	N	N	N	N	N	N	D12	Monitor depletion of funding	Amount of available funding being spent; this gives insight in whether there is a structural problem that needs more attention or a logical explanation of why developments lag behind.		Section 3.4.1
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D13	Map effectiveness of R&D funding mechanisms	To answer policy questions like:		Section 3.4.1
																				INNOVATION				
N	N	N	N	N	N	N	N	N	M	M	N	N	N	N	G	M	N	M	N	D14	Mapping of the size of industrial sectors relative to the World	To identify strong and weak industrial sectors		Section 3.4.2
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D15	Patenting	Number of Patents in order to measure innovation.		
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D16	Publications	Number of Publications in order to measure innovation.		
N	N	N	G	M	N	N	N	N	P	P	N	N	N	N	N	G	N	P	n	D17	Trade	Share of Energy Technologies in the international trade flows. Consider if relative or absolute advantage.		

GMM	GRAPE	GreenNET-Europe	GreenNET-Europe	GTAP-E	Horizonscan	IER - Model for Power	IGEM	iKnow	IMACLIM	IMAGE-TIMER	INVERT	IPAC	LEAP	MDM-E3	MECHanisms	MERGE	MESSAGE	Minicam	Minicam	Innovation and R&D				
																				Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
																				GENERAL SPECIFICATIONS				
VG	VG	VG	VG	N	G	VG	N	G	M	M	M	G	M	M	N	M	VG	G	G	D1	Long-term economic perspectives of technologies			Section 3.4
																				R&D				
N	N	P	P	N	VG	N	N	VG	N	N	N	M	N	N	N	N	N	N	N	D2	Long-term risk assessment	Risks involved in research activities within a long-term perspective. Risks that R&D will not deliver the cost reductions/technology improvement hoped for.		Section 3.4
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D3	R&D spendings vs. number of patents	R&D spending output in terms of patents.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.4.1
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D4	R&D spendings vs. number of publications	R&D spending output in terms of publications.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	
P	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P	N	N	D5	R&D spendings vs. Deployment	R&D spendings in terms of e.g. amounts of new installed RES-capacity.		Section 3.4.1
M	N	N	N	N	G	N	N	M	M	N	N	N	N	P	N	N	P	N	N	D6	Link between R&D and Technology Learning	Assess expected impacts from R&D on the technology development, e.g. econometric models based on historical observations.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	
P	N	N	N	N	G	N	N	G	N	N	N	N	N	N	N	N	P	N	N	D7	Public vs. Private R&D - effects technology development	Distinguish between the effects on technology development (KPIs) by public and private R&D. (The nature of public and private R&D may differ; public tends to be more fundamental, private more applied).		Section 3.4.1
P	N	N	N	N	G	N	N	G	N	N	N	N	N	N	N	N	N	N	N	D8	Public vs. Private R&D - effectiveness of stimulating cooperation	Is the tool capable of determining which actors are involved in technology development		Section 3.4.1
P	N	N	N	N	N	N	N	G	N	N	N	N	N	N	N	N	P	N	N	D9	Public vs. Private R&D - timing	Can the tool start R&D support at different times and assess its effect on e.g. the overall mix of technologies later on.		Section 3.4.1
G	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P	N	N	D10	Monitoring R&D targets	Are technologies on track with promises from e.g. roadmaps (achievements)?		Section 3.4.1
M	N	N	N	N	M	N	N	G	G	N	N	N	N	N	N	N	P	N	N	D11	Impact assessment of actions to catch up with the intended time schedule	Can we feed the tool with actions (e.g. increased R&D funding, lowering targets) to determine its effect to catch up a technology's development with the original time schedule (in case the technology development is delayed)?		Section 3.4.1
N	N	N	N	N	N	N	N	M	G	N	N	N	N	N	N	N	N	N	N	D12	Monitor depletion of funding	Amount of available funding being spent; this gives insight in whether there is a structural problem that needs more attention or a logical explanation of why developments lag behind.		Section 3.4.1
N	N	N	N	N	M	N	N	G	N	N	N	N	N	N	N	N	N	N	N	D13	Map effectiveness of R&D funding mechanisms	To answer policy questions like:		Section 3.4.1
																				INNOVATION				
P	N	N	N	M	VG	N	N	VG	P	M	N	N	N	N	N	N	N	G	G	D14	Mapping of the size of industrial sectors relative to the World	To identify strong and weak industrial sectors		Section 3.4.2
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D15	Patenting	Number of Patents in order to measure innovation.		
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D16	Publications	Number of Publications in order to measure innovation.		
M	N	N	N	N	M	N	N	M	N	P	N	G	N	N	N	VG	N	N	N	D17	Trade	Share of Energy Technologies in the international trade flows. Consider if relative or absolute advantage.		

MIRAGE	MoreHys	MTSIM	MURE	NEMESIS	NEMS	NEWAGE	PACE	POLES	POWERS	PRIMES	REMARK	REMIND-R	RESolve-E	RESolve-T	RICE	ROM	SAMLAST	SGM	STSc	Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
Innovation and R&D																								
GENERAL SPECIFICATIONS																								
N	VG	N	G	N	P	P	M	VG	M	G	N	M	G	M	N	N	N	G	P	D1	Long-term economic perspectives of technologies			Section 3.4
R&D																								
N	N	N	N	M	N	N	N	P	N	N	N	M	N	G	N	N	N	N	M	D2	Long-term risk assessment	Risks involved in research activities within a long-term perspective. Risks that R&D will not deliver the cost reductions/technology improvement hoped for.		Section 3.4
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D3	R&D spendings vs. number of patents	R&D spending output in terms of patents.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.4.1
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D4	R&D spendings vs. number of publications	R&D spending output in terms of publications.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	
N	N	N	N	VG	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D5	R&D spendings vs. Deployment	R&D spendings in terms of e.g. amounts of new installed RES-capacity.		Section 3.4.1
N	N	N	N	VG	P	P	N	G	N	G	N	N	N	N	N	N	N	N	N	D6	Link between R&D and Technology Learning	Assess expected impacts from R&D on the technology development, e.g. econometric models based on historical observations.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	
N	N	N	N	G	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D7	Public vs. Private R&D - effects technology development	Distinguish between the effects on technology development (KPIs) by public and private R&D. (The nature of public and private R&D may differ; public tends to be more fundamental, private more applied).		Section 3.4.1
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	VG	D8	Public vs. Private R&D - effectiveness of stimulating cooperation	Is the tool capable of determining which actors are involved in technology development		Section 3.4.1
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D9	Public vs. Private R&D - timing	Can the tool start R&D support at different times and assess its effect on e.g. the overall mix of technologies later on.		Section 3.4.1
N	N	N	N	N	N	N	N	G	N	N	N	N	N	N	N	N	N	N	M	D10	Monitoring R&D targets	Are technologies on track with promises from e.g. roadmaps (achievements)?		Section 3.4.1
N	N	N	N	VG	N	N	N	G	N	N	N	N	G	M	N	N	N	N	N	D11	Impact assessment of actions to catch up with the intended time schedule	Can we feed the tool with actions (e.g. increased R&D funding, lowering targets) to determine its effect to catch up a technology's development with the original time schedule (in case the technology development is delayed)?		Section 3.4.1
N	N	N	N	VG	N	N	N	N	N	N	N	N	VG	N	N	N	N	N	N	D12	Monitor depletion of funding	Amount of available funding being spent; this gives insight in whether there is a structural problem that needs more attention or a logical explanation of why developments lag behind.		Section 3.4.1
N	N	N	N	VG	N	N	N	N	N	N	N	N	G	P	N	N	N	N	G	D13	Map effectiveness of R&D funding mechanisms	To answer policy questions like:		Section 3.4.1
INNOVATION																								
VG	N	N	N	G	P	P	G	N	N	N	N	M	N	N	N	N	N	P	M	D14	Mapping of the size of industrial sectors relative to the World	To identify strong and weak industrial sectors		Section 3.4.2
N	N	N	N	VG	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D15	Patenting	Number of Patents in order to measure innovation.		
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D16	Publications	Number of Publications in order to measure innovation.		
N	N	N	N	G	P	P	M	P	N	N	N	N	N	N	N	N	N	N	P	D17	Trade	Share of Energy Technologies in the international trade flows. Consider if relative or absolute advantage.		

TEMPO	TIAM-WORLD	TIMES-FI	TIMES PanEU	TIMES Nordic	UKENVI	E2M2s - IER	E2M2s - Duisburg-Essen	Nr	Specification	Description	Guidelines to evaluation	Location in Specification Report
								Innovation and R&D				
								GENERAL SPECIFICATIONS				
N	VG	G	VG	G	P	VG	G	D1	**Long-term economic perspectives of technologies**			Section 3.4
								R&D				
N	N	N	N	P	N	N	P	D2	**Long-term risk assessment**	Risks involved in research activities within a long-term perspective. Risks that R&D will not deliver the cost reductions/technology improvement hoped for.		Section 3.4
N	N	N	N	N	N	N	N	D3	**R&D spendings vs. number of patents**	R&D spending output in terms of patents.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	Section 3.4.1
N	N	N	N	N	N	N	N	D4	**R&D spendings vs. number of publications**	R&D spending output in terms of publications.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	
N	N	N	N	N	N	N	N	D5	**R&D spendings vs. Deployment**	R&D spendings in terms of e.g. amounts of new installed RES-capacity.		Section 3.4.1
N	N	N	N	N	N	N	N	D6	**Link between R&D and Technology Learning**	Assess expected impacts from R&D on the technology development, e.g. econometric models based on historical observations.	If the tool includes the Specification - the tool should not score higher than average. If the tool evaluates the Specification - the tool should score high.	
N	N	N	N	N	N	N	N	D7	**Public vs. Private R&D - effects technology development**	Distinguish between the effects on technology development (KPIs) by public and private R&D. (The nature of public and private R&D may differ; public tends to be more fundamental, private more applied).		Section 3.4.1
N	N	N	N	N	N	N	N	D8	**Public vs. Private R&D - effectiveness of stimulating cooperation**	Is the tool capable of determining which actors are involved in technology development		Section 3.4.1
N	N	N	N	N	N	N	N	D9	**Public vs. Private R&D - timing**	Can the tool start R&D support at different times and assess its effect on e.g. the overall mix of technologies later on.		Section 3.4.1
N	N	N	P	P	N	N	N	D10	**Monitoring R&D targets**	Are technologies on track with promises from e.g. roadmaps (achievements)?		Section 3.4.1
N	N	N	N	N	N	N	N	D11	**Impact assessment of actions to catch up with the intended time schedule**	Can we feed the tool with actions (e.g. increased R&D funding, lowering targets) to determine its effect to catch up a technology's development with the original time schedule (in case the technology development is delayed)?		Section 3.4.1
N	N	N	N	P	N	N	N	D12	**Monitor depletion of funding**	Amount of available funding being spent; this gives insight in whether there is a structural problem that needs more attention or a logical explanation of why developments lag behind.		Section 3.4.1
N	N	N	N	N	N	N	N	D13	**Map effectiveness of R&D funding mechanisms**	To answer policy questions like:		Section 3.4.1
								INNOVATION				
N	N	N	N	P	N	N	N	D14	**Mapping of the size of industrial sectors relative to the World**	To identify strong and weak industrial sectors		Section 3.4.2
N	N	N	N	N	N	N	N	D15	**Patenting**	Number of Patents in order to measure innovation.		
N	N	N	N	N	N	N	N	D16	**Publications**	Number of Publications in order to measure innovation.		
N	M	N	N	N	N	N	N	D17	**Trade**	Share of Energy Technologies in the international trade flows. Consider if relative or absolute advantage.		