

**Analysis of the European energy system
under the aspects of flexibility and technological progress**

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Deliverable

D7.3 Dissemination and Communication Plan

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1. EXECUTIVE SUMMARY

The aim of REFLEX is to communicate and disseminate the project results as widely as possible, targeting all actors in the energy system area, including policy makers and regulators, industry and associations as well as the scientific community. This report summarizes communication and dissemination activities during the first period of the project (M1 – M18) and provides a plan for these activities in the second period (M19 – M36).

2. STRATEGY FOR KNOWLEDGE MANAGEMENT AND DISSEMINATION

Dissemination and exploitation of data and results will be executed in accordance with EU laws and with respect to specific laws in the participating countries. Within REFLEX the dissemination and exploitation of results concerning data, knowledge, insights, source code etc. are coordinated by the Exploitation and Innovation Manager (EIM) – Martin Jakob (ESA²/TEP) – regarding knowledge management and innovation activities. The EIM is responsible for:

- maintaining a registry of background knowledge and data;
- maintaining a registry of knowledge and data produced and gathered in the work packages during the project;
- assessing the opportunities for exploitation, for example by following political events in the energy sector or searches of other scientific databases for similar developments; and
- proposing specific exploitation measures, e.g. policy briefs and events.

In REFLEX periodic analysis of transfer opportunities to adjust the exploitation strategies will take place. All consortium partners will contribute to the exploitation plan of the project throughout its life span. Thereby, the EIM will be in close contact and regularly informed about the exploitation plans of the partners to use synergies and to ensure the best and suitable use and exploitation of results. Furthermore, the EIM will regularly advise the consortium and individual partners about possible strategies.

The exploitation strategy defines that it will be decided whether to disseminate a result and in what way. Participants inform the EIM and other consortium members if they wish to publish or disseminate any results, whether in a direct way or indirectly. Before any dissemination activity may take place, the participants must examine the possibility of protecting generated results. Upon (affirmative) dissemination decision the following cases are distinguished:

- Open access publication (typically for the types of research data: public model input data, intermediate and final results, survey data): Owners will be granting royalty-free access of a meaningful selection of generated results to other participants and to the public, possibly restricted by appropriate embargo periods and/or respecting restrictions from editors of scientific journals and organizers of conferences.
- Commercial exploitation: Preferred partner for commercial exploitation is ESA², which was founded after completion of the EU funded innovation project ESA² explicitly with

the purpose to exploit research results and outcomes related to (coupled) energy systems modelling. Such exploitation may include the further use of structure, content and source code of the model coupling activity (DWH, DIE).

3. TARGET AUDIENCES FOR DISSEMINATION AND COMMUNICATION

Potential recipients and contacts for dissemination are all actors in the energy system. They can be classified into

- Policy makers and regulators (such as politicians at European and national level, ministries and public authorities setting energy policy, e.g. ACER – Agency for the Cooperation of Energy Regulators);
- Industry and associations (such as energy suppliers, transmission and distribution companies, manufacturers of electric vehicles, manufacturers of RES-plants, ENTSO-E, ...); and
- Scientific community (especially in the research fields of experience curves, energy system modelling and life cycle assessment)
- General public (particularly people with an interest in the European energy system).

4. COMMUNICATION OBJECTIVES

The objectives for all communication activities are:

- To show how the REFLEX project can contribute to support the scientific underpinning for the implementation of the SET-Plan and thereby to achieve the European energy targets;
- To involve stakeholders during the entire project lifetime for discussing assumptions and results;
- To ensure that results are taken up by policy makers, professionals and the public.

5. DISSEMINATION ACTIVITIES

5.1 PROJECT IDENTITY

A project visual identity was developed for REFLEX at the beginning of the project and is used in all communication and dissemination activities. Figure 1 shows the REFLEX logo, which is often used in combination with one or more key visuals, examples of which are shown in Figure 2.



Figure 1: REFLEX logo

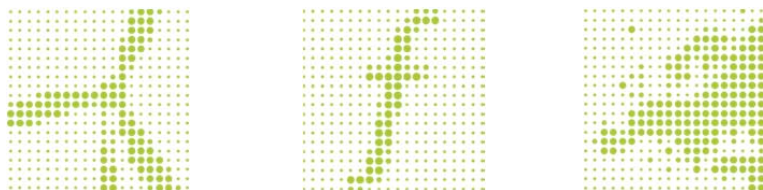


Figure 2: REFLEX key visuals

Templates are available for flyers, posters and PowerPoint presentations. These are consistently used by all partners for external communication activities.

5.2 REFLEX WEBSITE

The REFLEX website is the most effective communication tool. It presents the REFLEX vision, its objectives and approaches and the consortium. Over the course of the project, the web site will reflect the achievements of REFLEX, including all public deliverables. It is continuously updated with project documentation, such as the thematic reports or policy briefs, and links to other communications (e.g. published research articles and conference presentations). Project events, such as expert workshops, are advertised through the website. Later on, the website will include a download package for the data collected in the project.

In addition, a mailing list service has been established to disseminate the policy briefs as well as information about upcoming events at which REFLEX results will be presented, such as talks and workshops.

The REFLEX website can be accessed through the following link:

<http://reflex-project.eu/>

A QR code (Quick Response) leading to the REFLEX website is included in all printed communication of REFLEX.



Figure 3 shows a screenshot of the start page of the REFLEX website.

Abstract Background Project Aims Methodology

REFLEX - Analysis of the European energy system under the aspects of flexibility and technological progress

Project Abstract

The future energy system is challenged by the intermittent nature of renewables and requires therefore several flexibility options. Still, the interaction between different options, the optimal portfolio, and the impact on environment and society are unknown. It is thus the core objective of REFLEX to analyse and evaluate the development towards a low-carbon energy system with focus on flexibility options in the EU to support the implementation of the SET-Plan.

The analysis are based on a modelling environment that considers the full extent to which current and future energy technologies and policies interfere and how they affect the environment and society while considering technological learning of low-carbon and flexibility technologies. For this purpose, REFLEX brings together the comprehensive expertise and competences of known European experts from six different countries. Each partner focusses on one of the research fields techno-economic learning, fundamental energy system modelling or environmental and social life cycle assessment. To link and apply these three research fields in a compatible way, an innovative and comprehensive energy models system (EMS) is developed, which couples the models and tools from all REFLEX-Partners. It is based on a common database and scenario framework.

The results from the EMS will help to understand the complex links, interactions and interdependencies between different actors, available technologies and impact of the different interventions on all levels from the individual to the whole energy system. In this way, the knowledge base for decision-making concerning feasibility, effectiveness, costs and impacts of different policy measures will be strengthened, which will assist policy makers and support the implementation of the SET-Plan. Stakeholders will be actively involved during the entire project from definition of scenarios to dissemination and exploitation of results via workshops, publications and this project website.

The REFLEX project is embedded in the Horizon 2020 Work Programme „Secure, clean and efficient energy“ of the EU and addresses the topic LCE-21-2015 „Modeling and analysing the energy system, its transformation and impacts“. The project

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EVENTS

Expert Workshop and Call for Contributions
November 8th 2017 in Karlsruhe
Subject: "Technological Learning in the Energy Sector"

NEWSLETTER FOR STAKEHOLDERS

The newsletter provides information about REFLEX events, publications and major milestones to interested stakeholders.
Subscribe to info@reflex-project.eu the newsletter

REFLEX IS PART OF THE LCE21-2015 PROJECT FAMILY

SET-Nav
Energy Energy Roadmap

REEEM

MRPAPS

Figure 3: Screenshot of the REFLEX website

5.3 PUBLICATIONS

A key activity of this project is to publish the main results and findings. This is done in different ways. On the one hand, short policy briefs are prepared to publish scientific based findings, which are relevant for energy policy, in a non-scientific manner. They are released to stakeholders and public administrations once or twice a year via E-Mail and the project website. To provide detailed and highly sophisticated information on the different topics addressed in REFLEX, short reports are prepared. In each WP (except WP 1 and WP 2) the most interesting results will be identified and prepared for a short survey. All reports will be combined in a paper collection and published on the project website. In addition to the policy briefs and reports, scientific articles are prepared. In contrast to the other two ways of publication, this one aims to present more theoretical and methodology related topics. Research papers will be published in high level-journals in the scientific community (e.g. Energy Economics, Energy Policy, Transportation Research, Technological Forecasting and Social Change, International Journal of Life Cycle Assessment, Journal of Cleaner Production, etc.).

Table 1 lists all publications, disclosed and planned until the end of the project.

Table 1: List of published and planned publications

Journal/Magazine	Publication title	Target audience	Lead partner	Project month
Already published:				
Policy brief	Capacity remuneration mechanisms in Europe	General public	KIT	M8 (Dec 2016)

IAEE Energy Forum 2016	The Impact of Auctioning in the EU ETS: Are Utilities Still Profiting?	Scientific community (higher education and research)	TUD	2016
IEWT Conference Proceedings	Simulation von lastglättendem und preisbasiertem Einsatz der deutschen Pumpspeicherkraftwerke	Scientific community (higher education and research)	KIT	M11 (Feb. 2017)
Energies	Validation of the method for top-down approach for estimation of the DH potential in a case study at the city level. Mapping Urban Heat Demand with the Use of GIS-Based Tools http://dx.doi.org/10.3390/en10050720	Scientific community (higher education and research)	AGH	M13 (May 2017)
Policy brief	Flexibility options in the context of future energy systems – some scenario-based reflections	General public	KIT	M15 (Jul 2017)
IEEE Xplore	Comparison of the techno-economic characteristics of different flexibility options in the European energy system	Scientific community (higher education and research)	Fraunhofer ISI	M15 (Jul. 2017)
IEEE Xplore	The Role of Demand Side Management for the System Integration of Renewable Energies	Scientific community (higher education and research)	TUD	M15 (Jul. 2017)
IEEE Xplore	The Value of Energy Storages under Uncertain CO ₂ -Prices and Renewable Shares	Scientific community (higher education and research)	TUD	M15 (Jul. 2017)
Science Impact Ltd.	REFLEX, Analysis of the European energy system under the aspects of flexibility and technological progress, H2020 DOI: https://doi.org/10.21820/23987073.2017.7.44	scientific and societal audience	TUD	M17 (Sep. 2017)
Springer	Curtailing Renewable Feed-in Peaks and its Impact on Power Grid Extension - A Load Flow Model Using an Enhanced Benders Approach	Scientific community (higher education and research)	TUD	2017
UmweltWirtschafts Forum (uwf)	Szenarien für ein europäisches Energiesystem - Herausforderungen bei der Entwicklung konsistenter Szenarien für internationale Systeme im interdisziplinären Kontext	Scientific community (higher education and research)	TUD	2017

Planned publications:				
Energy Strategy Reviews	Bottom-up modeling of industrial energy transitions - the FORECAST model	Scientific community (higher education and research)	Fraunhofer ISI	Revised after review - 2018
Energy Policy/Energy Economics (or equivalent paper)	Market design	Policy makers and Scientific community (higher education and research)	KIT	2019
Energy Policy/Energy Economics (or equivalent paper)	Trade-off between different flexibility options	Policy makers and Scientific community (higher education and research)	TUD	M36 (Apr 2019)
International Journal of Life Cycle Assessment or Cleaner Production	Challenges of combining environmental Life Cycle Assessment and Energy System models – the power sector	LCA community	KIT	M36 (Apr 2019)
Cleaner Production/Energy (or equivalent paper)	Combining environmental Life Cycle Assessment to the European Energy System- the power heating and transport sector	Scientific community	KIT	M36 (Apr 2019)
Energy policy	Social assessment of future energy systems	Scientific community	KTH	M36 (Apr 2019)
International Journal of Life Cycle Assessment	Methodology for social assessment of future energy systems coupled to energy systems models	LCA community	KTH	M36 (Apr 2019)
Energy Policy/Energy Economics (or equivalent paper)	Overview of experience curves for energy technologies	Policy makers and Scientific community (higher education and research)	UU	M36 (Apr 2019)
Energy & Environmental Science / Energy Policy (or equivalent paper)	Application of experience curves for assessment of prospective environmental impact of energy technologies	Policy makers and Scientific community (higher education and research)	UU	M36 (Apr 2019)
Publisher tbd (book)	Technological Learning in the Energy Sector (tbd)	Policy makers, industry and scientific community	UU	M36 (Apr 2019)

5.4 CONFERENCES AND OTHER EVENTS

Participation in conferences, symposia and trade fairs will also be a significant part of the project's work. In this way, contact to the worldwide community and dissemination of scientific and technological results will be ensured.

Table 2 lists conferences and events where the REFLEX project presented ideas and results as well as planned events.

Table 2: Dissemination events with REFLEX contribution

Event	Activities	Target audience	Lead partner	Project month
Past events:				
IEWT	Paper presentation	Scientific and industry community (higher education and research)	KIT	M10 (Feb 2017)
New Energy World conference	Paper presentation	Policy makers and regulators, industry and scientific community	TUD	M12 (Apr 2017)
EMP-E 2017	Paper and Poster presentation	Policy makers and regulators, industry and scientific community	TRT	M13 (May 2017)
European Energy Market Conference	Paper presentation	Scientific community (higher education and research)	TUD	M14 (Jun 2017)
European Energy Market Conference	Paper presentation	Scientific community (higher education and research)	Fraunhofer ISI	M14 (Jun 2017)
IAEE European Conference	Paper and Poster presentation	Scientific community (higher education and research)	TUD	M17 (Sep. 2017)
Planned events:				
IAEE, EEM or YEEES 2018	Paper or Poster presentation	Scientific community (higher education and research)	TUD	tbd
6th International Conference on Social Life Cycle Assessment (S-LCA)	Paper or poster presentation	Industry or scientific community	KTH	M29 (Sept 2018)
EMP-E 2018	Paper or Poster presentation	Policy makers and regulators, industry and scientific community	tbd	tbd
IEWT 2019	Paper or Poster presentation	industry and scientific community	TUD	tbd
IEWT 2019	Paper or Poster presentation	industry and scientific community	Fraunhofer ISI	tbd

5.5 STAKEHOLDER AND EXPERT WORKSHOPS

Two types of workshops have been and will be organized to support communication and dissemination of results: stakeholder workshops and expert workshops.

The aim of the stakeholder workshops are mainly the communication with the European Commission and other stakeholders from policy and industry. The first stakeholder workshop took place in November 2016 (M7) in Brussels. It introduced the scenarios and main results of the project to representatives from policy, industry and science. At this event the project as well as the scenarios, which will be assessed in REFLEX, were presented and discussed with the European Commission and stakeholders. The REFLEX-presentations were complemented by key-notes from representatives from the European Commission and industry. More information about this event is provided in deliverable D7.2. Comments and amendments by the workshop participants were considered when updating the assumptions and scenarios. In addition, a closing event will be organized at the end of the project to present and discuss the main results of REFLEX with the European Commission and interested stakeholders. This workshop will take place in Brussels as well in order to reach a broad range of stakeholders from policy and industry.

The objective of the expert workshops is to strengthen discussions and exchange with the scientific community. During the project existing approaches will be applied and further developed. These advancements as well as first results of WP 3 to WP 6 will be discussed with internationally renowned experts in the respective research fields. Small 1-2-day workshops (max. 20 participants) have been and will be held for the topics experience curves (WP 3), model based analysis (WP4/5) and life cycle assessment (WP6) to foster the scientific exchange. The workshop about life cycle assessment (LCA) was combined with SETAC's annual meeting, an international conference, to facilitate the participation of a wide range of international researchers. Furthermore, in the proposal it was planned to organize two separate workshops about experience curves (WP 3) and model based analysis (WP4/5). However, based on the current work it was realized that synergies can be used by combining these two workshops. Therefore, one expert workshop is being organised in November 2017 where both, current work and first results from WP3 as well as from WP4 and WP5 will be discussed with the scientific community.

A list of already conducted and planned workshops is shown in Table 3.

Table 3: Planned REFLEX workshops

Workshop	Activities	Target audience	Lead partner	Project month
Past workshops:				
LCE-21 Workshop, Brussels, Belgium	Exchange with other projects funded under the LCE-call	Other projects	TUD	M2 (Jun 2016)
Public Workshop, Brussels, Belgium	Energy Decarbonisation and Flexibility Needs How can high shares of intermittent renewable energies efficiently be balanced?	European Commission, industry, Scientific community (higher education and research)	TUD	M7 (Nov 2016)

Expert Workshop, Brussels, Belgium	Workshop to discuss LCA-based framework, including social and environmental aspects In the frame of the SETAC annual conference	European Commission, policy makers, practitioners, scientific community (higher education and research)	KTH	M13 (May 2017)
Planned workshops:				
Expert Workshop, Karlsruhe, Germany	Technological Learning in the Energy Sector	Scientific community (higher education and research)	UU	M19 (Nov 2017)
LCE 21 - Energy system modelling clustering event	Exchange with other projects funded under the LCE-call	Other projects	TUD	M19 (Nov 2017)
Stakeholder workshop	Joint event with LCE21-projects at EU Sustainable Energy Week	European Commission, industry, Scientific community (higher education and research)	TUD	M26/27 (Jun or Jul 2018)
Final event				
Public Workshop, Brussels, Belgium	Presentation of main project results	European Commission, industry, Scientific community (higher education and research)	TUD	M36 (Apr. 2019)

5.6 POSTERS AND TALKS

Whenever possible, the REFLEX project will accept invitations to present posters or give a talk in addition to accepted research papers and at exhibition booths.

5.7 EXTERNAL ADVISORY BOARD

An External Advisory Board provides advice to REFLEX. Information of the results can be directly addressed to the Members of the REFLEX External Advisory Board (EAB). The members of the EAB are experts from industry, policy and research. A major advantage of the EAB is the active communication and direct feedback from the EAB-members. For instance, before the policy brief about the REFLEX scenario was published, it was sent to the EAB-members and improved based on their feedback. Furthermore, the EAB-members are informed continuously about project progress and first results via e-mail and in personal talks. For instance, project coordinator Dominik Möst already had two personal meetings with a representative from the State Chancellery of Saxony, where he presented project information and first results.

5.8 ENGAGEMENT WITH OTHER PROJECTS

REFLEX is part of the LCE21-2015 project family and has close interaction with the projects Set-Nav, REEEM and MEDEAS.

The cooperation includes joint activities and participation in events organised by the other projects. Exemplary engagements are:



- All three projects decided to organize a joint event in the framework of the EU Sustainable Energy Week 2018 in Brussels. All partners are in contact regularly, to facilitate a successful event.
- The REEEM-project organized the EMP-E workshop taking place in Brussels in May 2017. One representative of REFLEX participates in this workshop, gives a short presentation about REFLEX and presents the project poster.
- Dominik Möst (TUD) is a member of the External Advisory Board of the SET-NAV project.

6. DISSEMINATION OF RESEARCH DATA

Both, the most important collected input data as well as REFLEX results, will be made available, mostly as open access according to the guidelines of the EU. Publication of data and access to data will be implemented according to the Data Management Plan. Before publication of any data, the possibility for protection of generated results will be examined. Within REFLEX three different possibilities for data dissemination are considered (see Figure below). Before any dissemination activity will take place, respective legal aspects will be examined and clarified. This is particularly the case for data from the DSM-survey and purchased from commercial providers.

Indirect Dissemination	Parts of the generated data will be disseminated only indirectly as part of intermediate or final results of models and/or as qualitative outcome based on post-analysis of results.
Open Access Publication	Owners will be granting royalty-free access of a meaningful selection of generated results to other participants and to the public, possibly restricted by appropriate embargo periods and/or respecting restrictions from editors of scientific journals and organizers of conferences.
Commercial Exploitation	Preferred partner of commercial exploitation is the company ESA2 which was funded after completion of the EU funded innovation project ESA2 explicitly with the purpose to exploit research results (including research data) related to (coupled) energy systems modelling.

The access to all provided data will be offered via the project website (www.reflex-project.eu). The planned formats are:

- csv
- xlsx
- sql

For making data findable, a data catalogue will be prepared. The catalogue gives an overview of all provided datasets and affords the metadata of them. The scope and design of the metadata will be oriented on the metadata structure of the 'Open Power System Data' platform (www.data.open-power-system-data.org/).

The specification of which data will be made openly available and which will be made available commercially is still under discussion. It will be decided within the project consortium case by case. In the case of an *Open Access Publication*, the dataset can be easily downloaded from the website. The download links for different formats are given within the metadata.

In case of *Commercial Exploitation* of a dataset, a registration procedure for all those interested in such datasets will be implemented. This includes the opportunity, to differ the conditions for access depending on type of the inquirer or planned re-usage (e.g. dataset is free of charge for public scientific institutions for scientific work, but with a charge in case of commercial re-use by a company). After registration of the request of a dataset, a time-limited download link will be provided via e-mail to the registered contact together with the terms of usage and as the case may be with the invoice. The requisition will be implemented in the metadata, which are available free of charge in any case.

7. COMMUNICATION ACTIVITIES

Communication with the interested public is a high priority for REFLEX. Several measures to maximize the outreach of the project have been taken, including the creation of dissemination material (flyer, reports), a public website, a public mailing list and press releases. Table 4 lists specific communication activities targeted at the general public.

Table 4: Communication activities in the REFLEX project

Platform	Expected use	Target audience	Lead partner	Project month
Public project website	Provide up-to-date project information, attract attention for the project, provide contact information, distribute dissemination material	General public including potential users, research organisations, industry; Professionals	TUD	6
Public project mailing list	Provide information on upcoming events and published reports or policy briefs	Stakeholders including representatives from policy, regulation, industry, and science	TUD	1
Social media	Provide up-to-date project information, attract attention for the project, Provide information on upcoming events and published reports or policy briefs	General public including potential users, research organisations, industry; Professionals	TUD	2
Press release	Provide information about the project in general at the start of the project	General public including potential users, research organisations, industry; Professionals	TUD	1
General Project Brochure	Provide information about the project in general	General public including potential users, research organisations, industry; politicians, regulators	TUD	17
General Project Poster	Provide information about the project in general	General public including potential users, research organisations, industry; politicians, regulators	TUD	M13



As coordinator of REFLEX, TUD actively participates in the LinkedIn group “Energy Storage, Demand Response & Grid Technologies” to provide up-to-date project information, e.g. information on upcoming events and published reports or policy briefs.

A press release was issued by TUD at the occasion of the kick-off meeting in May 2016 and is available under the following link:

https://tu-dresden.de/tu-dresden/newsportal/news/Forschung-fuer-das-Energiesystem-von-morgen-EU-Projekt-untersucht-wie-die-Energiewende-in-Europa-gelingen-kann?set_language=en

A project brochure was prepared in cooperation with Impact SE and was published in the November edition of Impact. In addition, it is available as hard copy and online version to interested stakeholders. The online document is available under the following link: http://reflex-project.eu/wp-content/uploads/2017/09/REFLEX_Impact_Brochure.pdf