NACHHALTIGwirtschaften

Bundesministerium
für Verkehr,
Innovation und Technologie

Smart Grids Initiatives in Europe

Country Snapshots and Country Fact Sheets

Michael Hübner, Natalie Prüggler

Berichte aus Energie- und Umweltforschung

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April 2011

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ERA-Net Smart Grids


SmartGrids
ERA-Net

Introduction

This brochure contains two outcomes of the actual work we do to stimulate and support the coordination and cooperation of national Smart Grids R&D initiatives in Europe. These materials are provided here in the "Schriftenreihe Energie- und Umwelttechnologien" of the Austrian Ministry for Transport, Innovation and Technology (BMVIT) to disseminate them in particular in Austria and the countries of the "Smart Grids D-A-CH" cooperation but also to interested experts in other European countries and worldwide.

Smart Grids Country Snapshots

The European Electricity Grids Initiative (EEGI) as one of the industrial initiatives of the European SET Plan, was launched 2010. During the last years a number of European member states have already started programmes and initiatives to develop Smart Grids demonstration projects and a number of FP 7 projects were started. As the Austrian representative to the EEGI (Michael Hübner) and the workpackage leader of the ERA-Net Smart Grids (Michael Hübner and Natalie Prüggler) we took the opportunity to initiate and organise together with the Austrian Institute of Technology a workshop, helping to get an overview over local demonstration projects in committed member countries of the EEGI and bringing these national projects on a European level. In preparation of this workshop we developed, together with national key experts, '**Smart Grids Country Snapshots'**, giving an update and overview about the national R&D activities on three slides per country as an input to the workshop.

Smart Grids Country Fact Sheets

The SmartGrids ERA-Net aims at developing transnational research activities to speed up the development of a Smart European Electrical Infrastructure. It provides co-ordination of the related research activities within the national and regional public (co)funded RTD. SmartGrids ERA-Net creates a network of programme managers, closely connected to policy makers and industry that undertakes joint activities.

In the framework of ERA-Net Smart Grids we provided a "*Report about existing national structures and activities, energy targets, foresight studies and their impact on ERA-Net Smart Grids".* This report collects country-specific and Smart Grids related information (documents and websites) of 18 countries and regions in Europe. The goal was to identify potential hurdles but also strengths for collaboration in the SG ERA-Net and potential future joint activities. As a result a detailed "**Smart Grids Country Fact Sheet"** for each participating country/ region and in addition for Italy as well as Germany was designed and key results were summarised.

Michael Hübner and Natalie Prüggler

Vienna, April 2011

Content:

"European Walk to Smart Grids Excellence" – WORKSHOP SERIES

Country Snapshots

for national experts
EEGI/ERA-Net Smart Grids Workshop
March 14th, 2011
Brussels

FACHHOCHSCHULE TECHNIKUM WIEN

ERA-Net Smart Grids
WP 4 leader

bmvit

AUSTRIA

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AT: Demo projects' key facts

- Ongoing Demo Projects:
  - 5 Upcoming Pioneer Regions, of which 3 in demonstration phase (Showcase Region Salzburg, Pioneer Region Upper Austria, DG-Demo Net)
- Accompanying research and/or activities:
  - National stakeholder working groups (SG Technology Platform)
  - Accompanying Meta-Studies and accompanying coordinating management (starting 2010)
  - Smart Grids D-A-CH cooperation with Germany and Switzerland
- Funding-/ program mechanisms:
  - Grants; different funding rates according to national and EU funding guideline
  - Mission oriented research programs on energy systems

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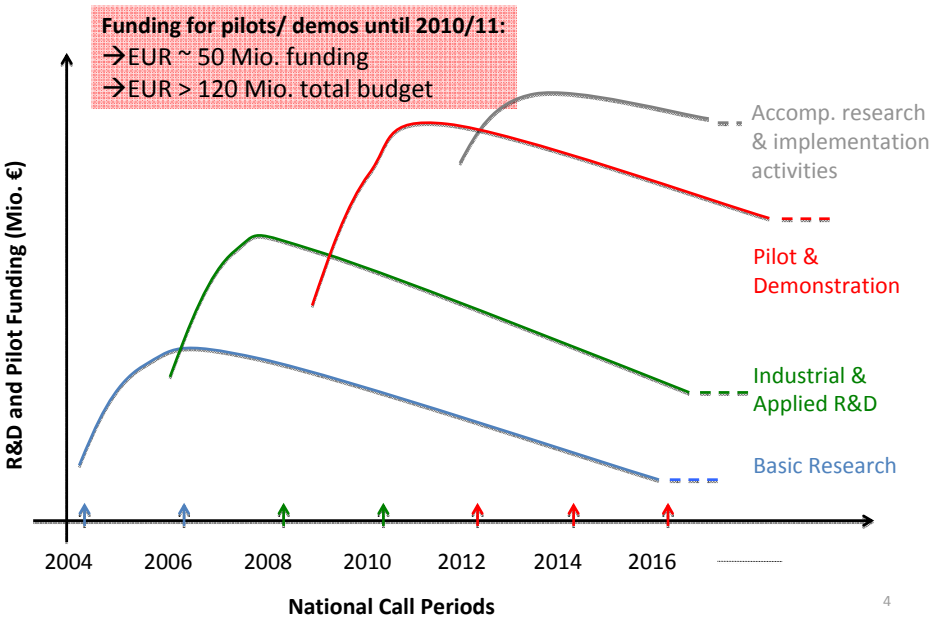
AT: Timeline of research



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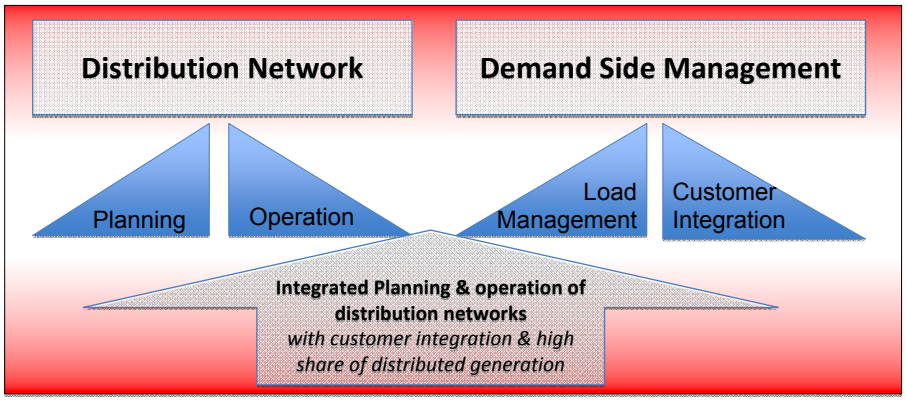
AT: National thematic focus



Availability of project information:

- Project synopses & abstracts in English
- Website

www.energiesystemederzukunft.at/highlights/smartgrids/index_en.htm

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Belgium

BE: Demo projects' key facts

- (Ongoing) Demo Projects:
  - 10 demo-projects ongoing
  - Accelerating rollout of smart meters
  - 5 reference cities for large-scale integrated pilots
- Accompanying research and/or activities
  - Regional Smart Grids Platform with all stakeholders (Smart Grids Flanders)
  - BelSET-platform for coordinating input to/from SET
  - B-EEGI platform joining Belgian Grid operators
- Funding-/ program mechanisms
  - Individual Grants & living labs
  - Contours of support programs appearing
  - Most mechanisms are regional and not applicable in the entire country
  - Relying partly on European support

BE: Timeline of research

Name	Category	Type	Institution	From	to	Total budget
Optimate	Transmission	R&D	Elia	2011	2012	
ADRESS	Distribution		Eandis	2011	2012	
Smart Metering POC	Distribution		ORES	2011	2012	30,000,000
Network design & management in a Smart City	Distribution		ORES	2011	2012	
Meer HEB door DSM	Distribution		Eandis	2011	2012	150,000
Twenties	Transmission	Demo	Elia	2011	2013	
CiPower	Transm./ Distribut.		Eandis	2011	2013	
EIT-Storage	Distribution		Eandis	2011	2013	
EIT- EVCity	Distribution		Eandis	2011	2013	300,000
EIT - KIC ASS	Distribution		Eandis	2011	2013	300,000
After	Transm./ Distribut.		Elia	2011	2014	
LINEAR	Distribution	Demo	Eandis, Infrax	2011	2014	40,000,000
Ecogrid	Distribution	Demo	Eandis, Elia, ORES	2011	2014	
Optisher	Distribution		ULG, ULB	2011	2014	
Transenergy	Distribution		Eandis	2011	2014	
Innovative renovation residential buildings	Distribution		Eandis	2011	2015	
Small & medium scale wind turbines	Distribution		Eandis	2011	2015	
Het Nanogrid van Morgen	Distribution		Eandis	2011	2015	
Adele	Transmission	Demo	Elia	2011	2015 (and longer)	
META-PV	Distribution	Demo	Infrax	2011	2015 (and longer)	30,000,000
Windvision	Transmission	Demo	Elia	2011		
ANM	Transm./ Distribut.		Elia, ORES	2011		

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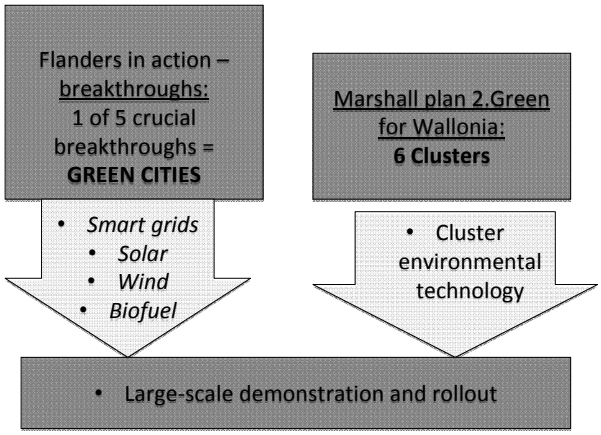
BE: National thematic focus

- Flanders in Action – breakthroughs: 5 crucial breakthroughs
- Marshall plan in Wallonia – 6 core clusters
- Smart grids Flanders



CZECH REPUBLIC

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CZ: Demo projects' key facts

- Smart region
  - RES and DG integration; E-mobility; advanced AMM functionality; multiutility – gas, water, heating
  - at least 3 regions
- Smart metering
  - communication infrastructure in 800 MV and LV substations
  - interaction with customers
- Funding mechanism – public funding is still under consideration
  - in accordance with national and EU funding guideline; key funding under national stakeholders andor Distrubution operator (at present)

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CZ: Timeline of research

- Smart regions
  - Scheduled 2010 – 2015
- Smart metering
  - Scheduled 2010 - 2013

- The according budget will be published approximately end of April.

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CZ: National thematic focus

- Smart grid demonstration project in real operational conditions;
- Know-how and exerienced in smart technologies;
- Advanced AMM functionality;
- Identification of possible implementation risks;
- Real data for costs and benefits evaluation and decision process;
- Possible security issues

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CROATIA

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HR: Demo projects' key facts

- (Ongoing) Demo Projects:
  - Information System for Continuous Monitoring of Power Quality in MV and LV networks
  - DC Autonomous Microgrids
  - Guarantees of Origin – RES Information Systems
- Funding-/ programme mechanism:
  - Grants (World Bank, EBRD, Croatian Bank for Reconstruction and Development); Croatian Science Foundation, HEP - Distribution System Operator d.o.o., Končar

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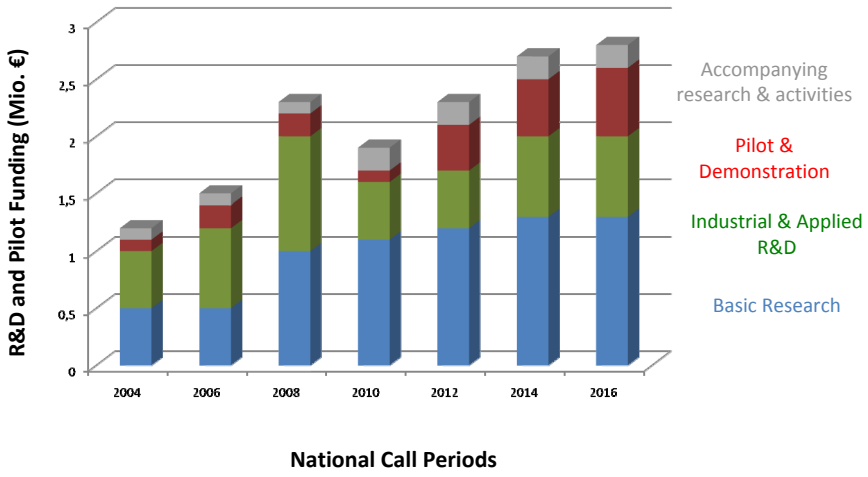
HR: Timeline of research



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HR: National thematic focus

- High level of distribution system automatization
- Smart metering for the customers above 30kW load demand
- Large scale integration of RES/CHP in MV and LV networks
- Large scale integration of wind energy in transmission system
- ICT support systems for market operation

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DENMARK

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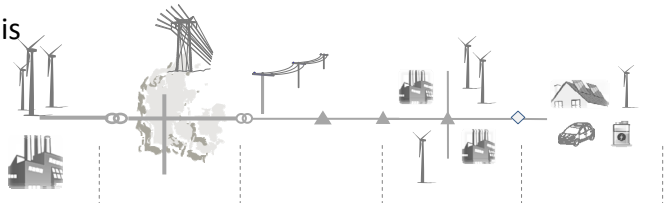
DK: Demo projects' key facts

Task Force – Future electricity system
- a corporation between the Danish DSOs and the TSO -

- Map of challenges
- Map of ongoing projects within the sector (108 projects)
- Gap analysis



	Production	Transmission	Distribution	DER	Prosumers
Networks & control					
Communication					
Markets					

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DK: Timeline of research: **Top 5 projects in Denmark**

Smart Grids Functionalities	Functional projects	YEAR 2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Cost (M€)
Active Demand Response and integration with Smart Homes	D1	EDISON											190
	D2		EcoGridEU										120
Smart Metering Infrastructure & Data Processing	D3												150
	D4	SM data											20
Integration of RES, storage and EV	D5		EcoGridEU										90
	D6	Cell Project											150
	D7												60
	D8	EDISON											100
Planning, monitoring and control	D9		EcoGridEU										100
	D10	MV Autom. Cell Project											90
	D11												80
Integrated communication Infrastructure	D12												50
												Total	1.200
Ancillary services provided by DSOs	TD3	TWENTIES											50

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DK: National thematic focus

Prioritized Activities

Smart Grids Functionalities	Functional projects	YEAR 2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Cost (M€)
Active Demand Response and integration with Smart Homes	D1			Mobilising customers, short term markets									190
	D2												120
Smart Metering Infrastructure & Data Processing	D3												150
	D4												20
Integration of RES, storage and EV	D5												90
	D6				Balancing price flexible demand								150
	D7												60
	D8			Managing LV network with EV, PHEV & Heat Pumps									100
Planning, monitoring and control	D9												100
	D10			State Estimation, Asset management Automation									90
	D11												80
Integrated communication Infrastructure	D12		Standard: Information models Data security, Protocols Infrastructure, System security & -arcitecture										50
												Total	1.200

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FINLAND

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FI: Demo projects' key facts

- (Ongoing) Demo Projects:
  - One large project starting 2011, several small demonstrations (> 10 pcs)
  - Financed by: Industry and TEKES (Gov.)
  - Funding EUR = 10 M€/a; Total budget EUR = 55 M€/5 a
- Accompanying research and/or activities:
  - 17 industrial participants and 8 universities/research institutes
- Funding-/ programme mechanismen:
  - Industrial funding over 60 %

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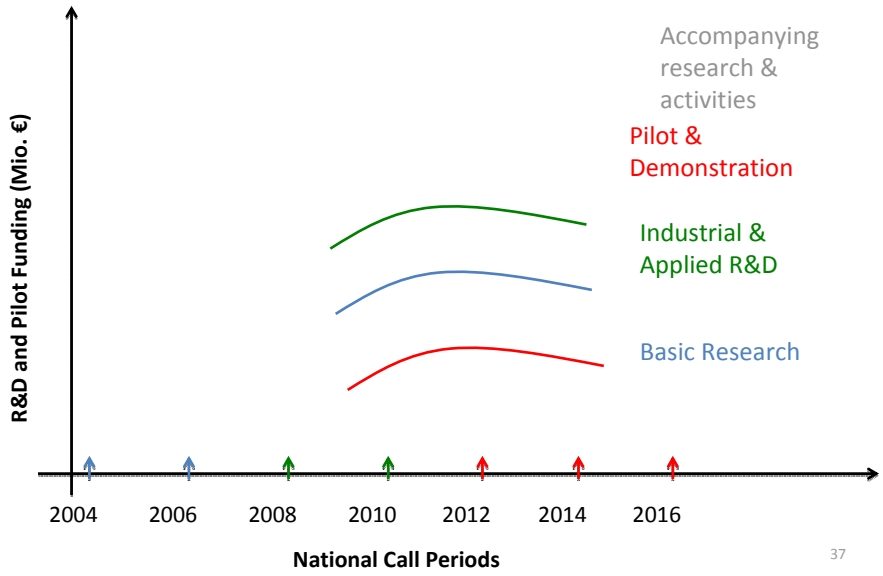
FI: Timeline of research



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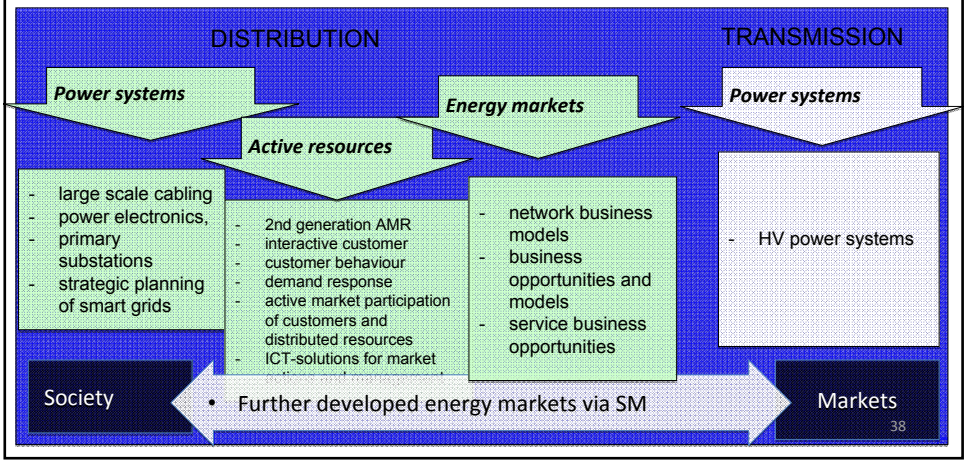
FI: National thematic focus

- Future infrastructure of power systems, active resources, active customer, management and operation of Smart Grids, development of energy markets and business potentials



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GERMANY

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DE: Demo projects' key facts

- Ongoing Demo Projects:
  - 6 model projects in the framework of E-Energy
  - 7 related projects on electric mobility
- Accompanying research and/or activities:
  - Ancillary research group to deal with cross cutting topics
  - Cooperation structures (standardization, branch associations)
  - Meta-Studies on Smart Grid scenarios and roadmaps
  - Smart Grids D-A-CH cooperation with Austria and Switzerland
- Funding-/ program mechanisms:
  - Program with contest; funding rates for enterprises and research institutions according to national and EU funding guideline
  - Orders to experts to produce studies on specific topics

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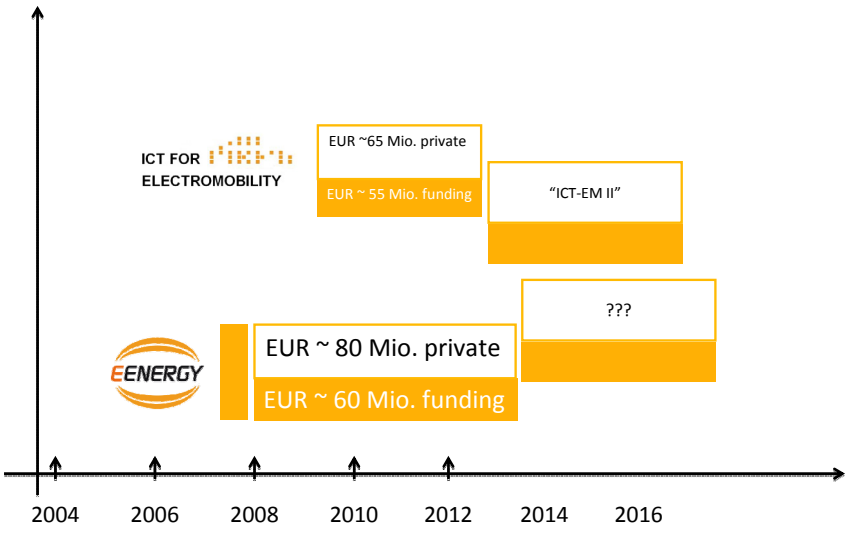
DE: Timeline of research



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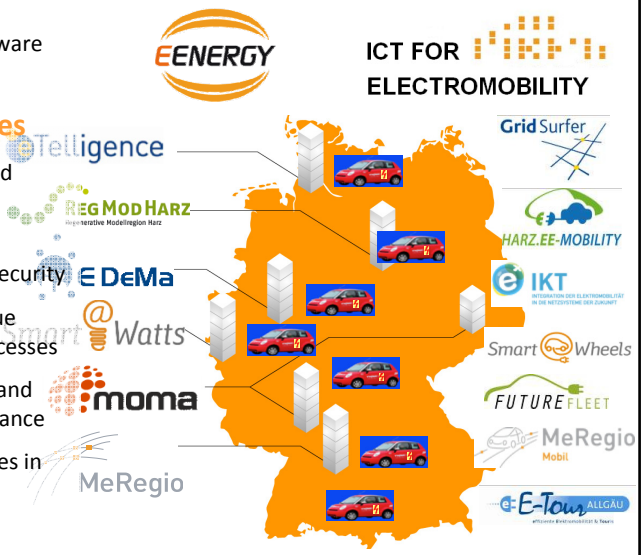
DE: Demo projects' topics

- Developing and testing hardware and software for an

Internet of Energies

- Integrating grid operation and electronic marketplace
- Gaining knowhow on interoperability, safety and security
- Testing models of added value generation and business processes
- Analyzing market potentials and improving consumers acceptance
- Highlighting needs for changes in the legal framework



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GREECE

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GR: Projects' key facts

- Demo and R&D Projects
  - New demo project "Green Island-Agios Efstratios"; 2011-2014; Total budget: EUR 8.9 million
- Accompanying research and/or activities
  - **'Smart Grids': Technical study** to maximize the penetration of renewables, to power quality, microgrids nad distributed generation.
  - Collaboration between NTUA , PPC and RAE for the islands: Lesbos, Lemnos, Andros, Santorini and Kythnos.
  - The study is financed by the EU "ELENA" programme (European Local Energy Assistance) financed through the Intelligent Energy by 800.000 €.

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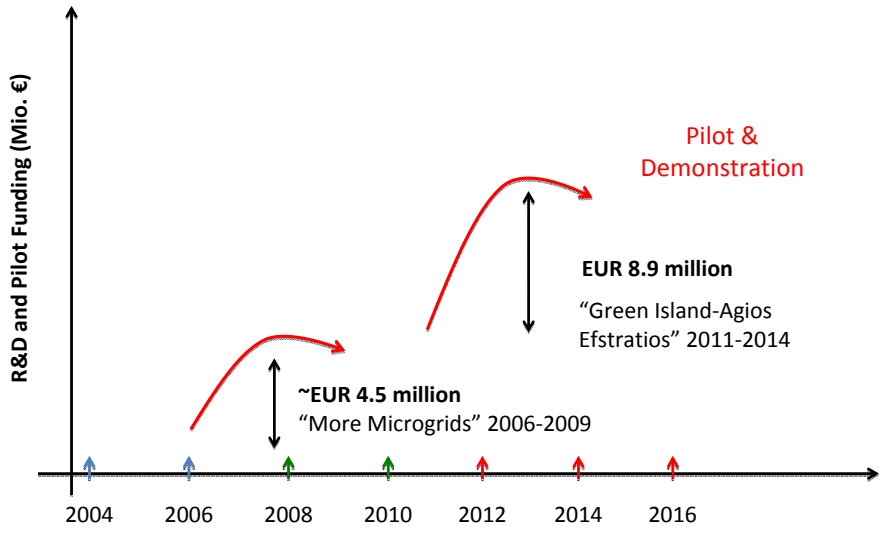
GR: Timeline of research



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GR: National thematic focus

- *Focus:*
  - *Islanding demonstration*
  - *Microgrids*
- *Thematic focus given by:*
  - *STUDY FOR THE DEVELOPMENT OF THE TRANSMISSION SYSTEM (2010-2014)*
  - *1ST REPORT ON LONG TERM ENERGY PLANNING IN GREECE (2008-2020)*
  - *NATIONAL RENEWABLE ENERGY ACTION PLAN IN THE SCOPE OF DIRECTIVE 2009/28/EC (June 2010)*

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ITALY

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IT: Demo projects' key facts

- (Ongoing) Demo Projects:
  - 10 demo projects ongoing, of which 9 can be brought on EU level: 2 single (**"POI ENERGIA 2010-2013"**); 8 have been clustered (**"DEMONSTRATE MV SMARTGRIDS TECHNOLOGIES"**);
  - Total overall demo budget: **EUR ~200 mio**.; 1 of the single demos = EUR 77 mio.; cluster of 8 projects = EUR 16.5 mio.
- Accompanying research and/or activities:
  - Fundamental research (SG part – EUR ~15 Mio./a) – public research; plus add. research in universities
  - **Italian Roundtable on Smart Grids**: Initiative of Ministry of Economic Development; starting soon (incl. all stakeholders of the electric system)
  - **ISGAN** "Int. SG Action Network": Italy is one of founding members; Permanent group of people working in the network
- Funding-/ programme mechanisms:
  - **"Poi Energia 2010-2013"**: funded by Ministry of Economic Development; on-going
  - **Cluster**: funded by regulator: Recognizes a higher Return on Investment rate to operators for these projects; starting mid 2011; 3 years

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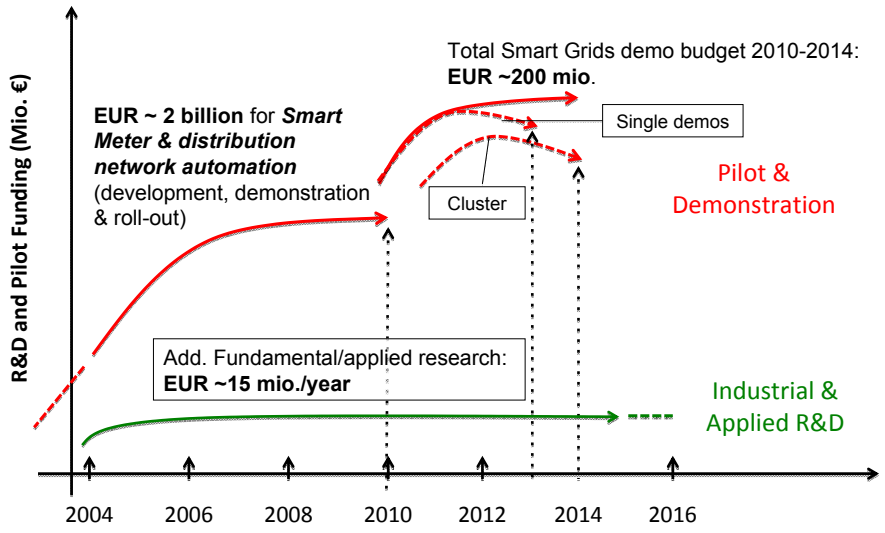
IT: Timeline of research



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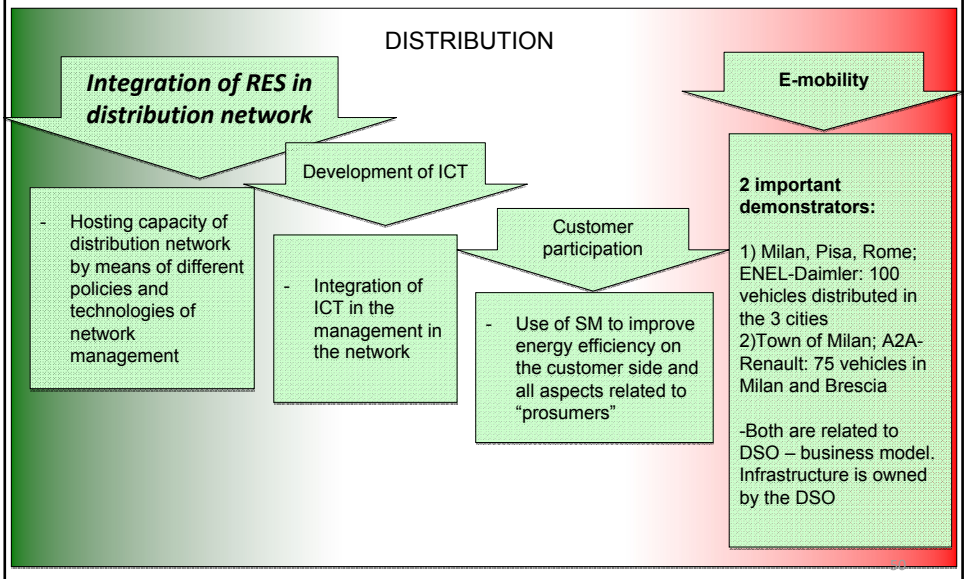
IT: National thematic focus



Latvia

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LV: Demo projects' key facts

- (Ongoing) Demo Projects:
  - Distribution automation pilot project (2010-2013).

    Project includes test phase and selection of appropriate fault indicators and telecommunications technology, installing MV reclosers with remote control and integration in existing SCADA and GIS DMS systems.
- New Demo Projects:
  - Meter data collection, management and energy efficiency pilot project (2011 second half of year – 2014).

    Project includes four subprojects: 1. Meter Data Management system implementation pilot project; 2. Energy efficiency pilot project; 3. Pilot project for testing of technologies for Smart homes and 4. Possibilities to use shared metering infrastructure for additional services.
- Accompanying research and/or activities:
  - Smart Grid Competence Centre
- Funding-/ programme mechanisms:
  - DSO investment programme and *Latvenergo* investment programme

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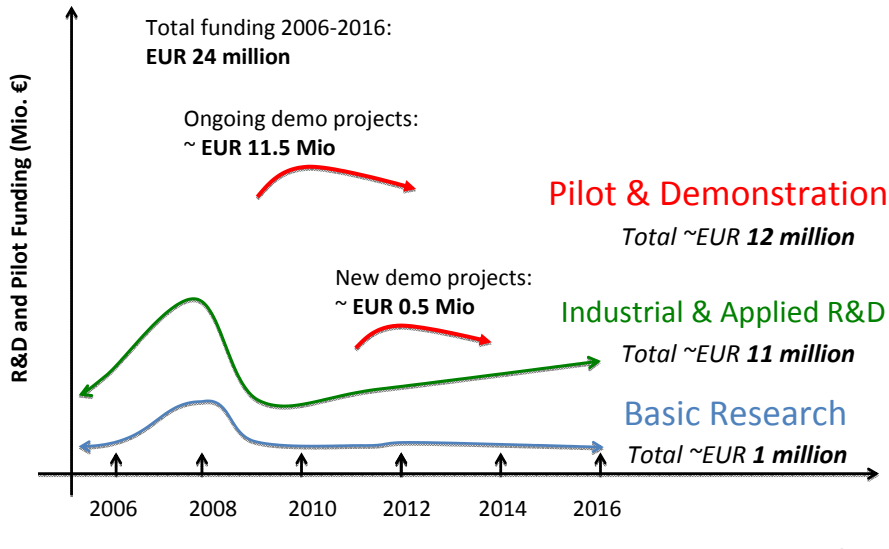
LV: Timeline of research



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LV: National thematic focus

Integration of Smart Metering	Smart Distribution Network	Integration of Smart Customers	Integration of DER and new users
Metering Infrastructure	Monitoring and control of MV networks	Active Demand Response	DSO integration of small DER
Smart metering data processing	Automation and control of MV networks	Energy Efficiency from integration with Smart Homes	Infrastructure to host EV/PHEV

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NORWAY

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NO: Demo projects' key facts

- (Ongoing) Demo Projects:
  - Total demo funding: **EUR ~16.5 Mio.**
  - E.g.: "SSMART" - Regional balancing, bottleneck management, risk management with SG roll-out
- Accompanying activities:
  - **"Energy21 initiative"**: Ministry of energy working group; developing roadmap for Norwegian energy system; first round is finished; currently hearing of proposal – results in 2011
- Funding-/ programme mechanismen:
  - Grants; RENEGI Programme

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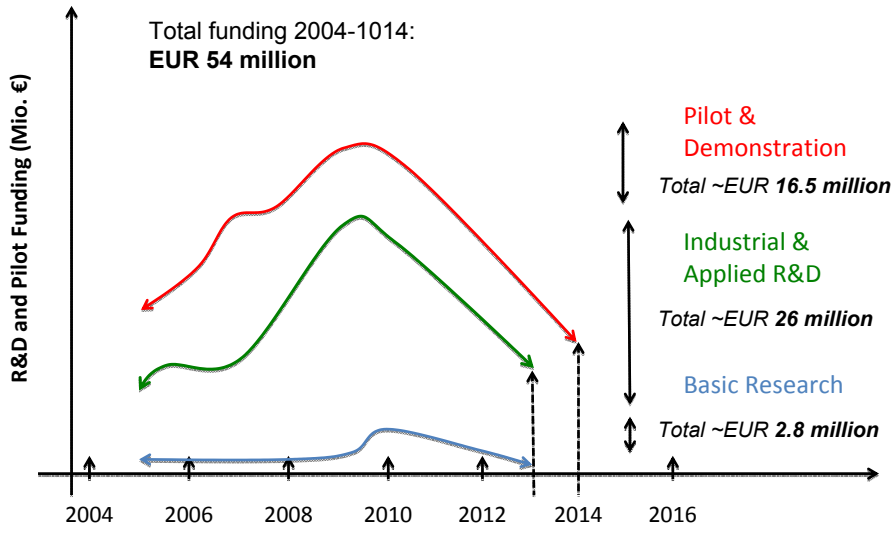
NO: Timeline of research



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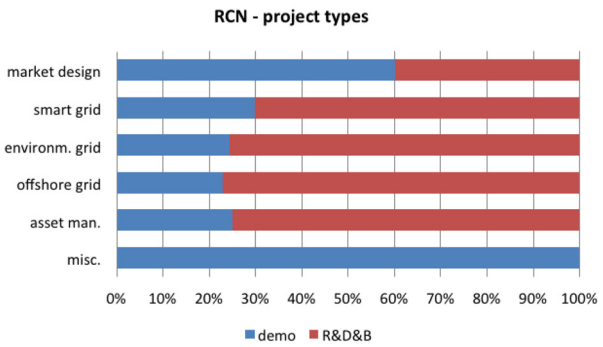
NO: National thematic focus



Thematic focus	Description
offshore grid	Develop the technology and the methods needed to plan, build, maintain and operate a subsea grid.
market design	Develop principle, metods and tools to realise efficient regulation and marketplace for the grid services needed to realise renewable input.
smart grid	Develop the technology and the methods needed to realise the smart grid.
asset man.	Develop the technology and the methods needed to plan, build, maintain and operate the future grid.
environm. grid	Develop principles, metods and tools to enable the future grid development at a low level of conflict.
misc.	Develop generation components needed to realise the smart grid

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POLAND

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PL: Demo projects' key facts

- (Ongoing) Demo Projects
  - Implementation of AMI system (Energa Operator S.A.; total budget approx. EUR 300 Mio)
  - upcoming at least 2 projects concerning massive Smart Metering deployment
- Accompanying research and/or activities
  - Consortium SmartPowerGrids Poland
  - National SG Technology Platform
- Funding-/ programme mechanism
  - Programme Smart Grids (NFEP&WM) – grants up to 30% of eligible costs; total budget approx. EUR 125 Mio

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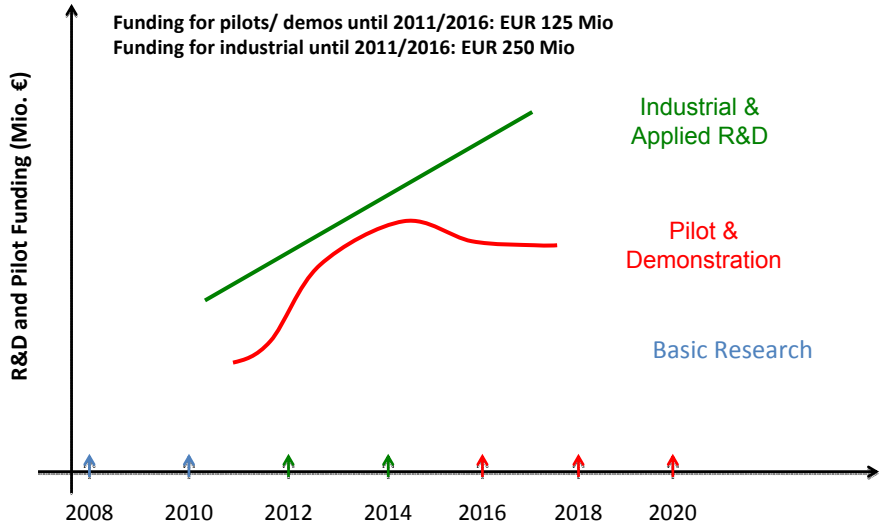
PL: Timeline of research



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PL: National thematic focus

- Energy Regulatory Ofice → requirements for creating System Smart Grid Ready → Smart Grid Law (?)
- Requirements and standards for AMI
- March 16th – meeting of Polish Parliment's Subcommittee for Energy

FURTHER INFORMATION:

http://www.ure.gov.pl/portal/en/
http://www.nfosigw.gov.pl/en/
http://www.energa-operator.pl/

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PORTUGAL

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PT: Demo projects' key facts

- (Ongoing) Demo Projects:
  - 4 Large Demonstration projects
  - Financed by: EU FP6, EU FP7, Portuguese Government QREN, Other Portuguese Funds
- Funding-/ programme mechanism:
  - Grants; different funding rates according to national and EU funding guideline
  - Mission oriented research programs on energy systems

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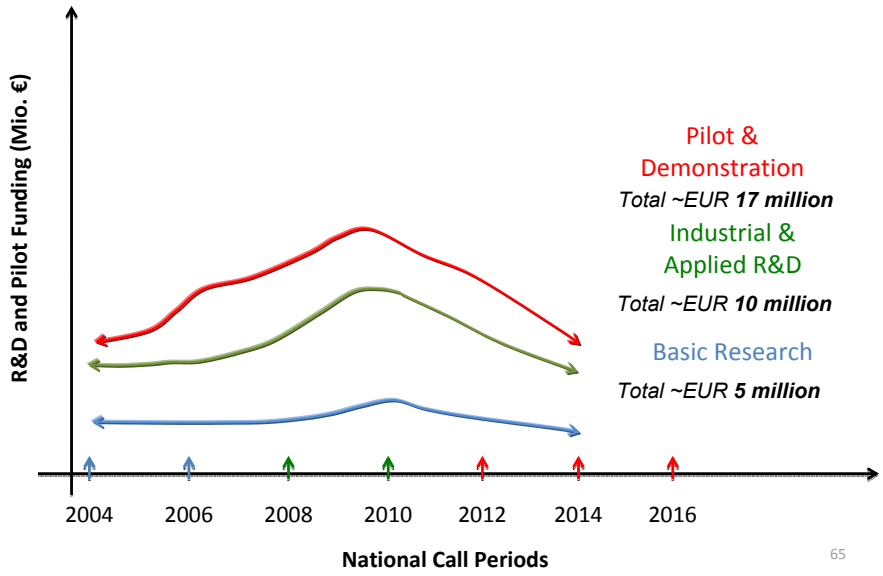
PT: Timeline of research



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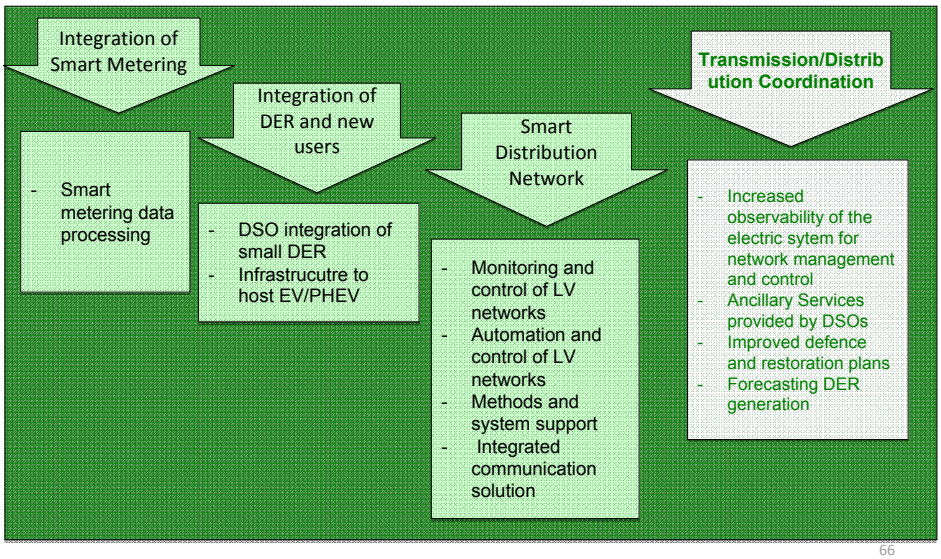
PT: National thematic focus



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SLOVENIA

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SI: Demo projects' key facts

- (Ongoing) Demo Projects:
  - Elektro Gorenjska – AMI (19.0 Mio. €)
  - ELES – SmartGrids projects (4.7 Mio. €)
  - Supermen (2.1 Mio. €), KiberNet (1.7 Mio. €), CC SURE (10.6 Mio. €)
- Accompanying research and/or activities
  - Smart Metering implementation plan (207 Mio. €)
  - National Technology Platform for Smart Grids (36 stakeholders)
  - National SmartGrids Roadmap (CC SURE)
- Funding-/ program mechanisms
  - 100% funded by distribution and transmission network operators
  - co-funded by Technology Agency, Ministry of Higher Education, Science and Technology , European Regional Development Fund

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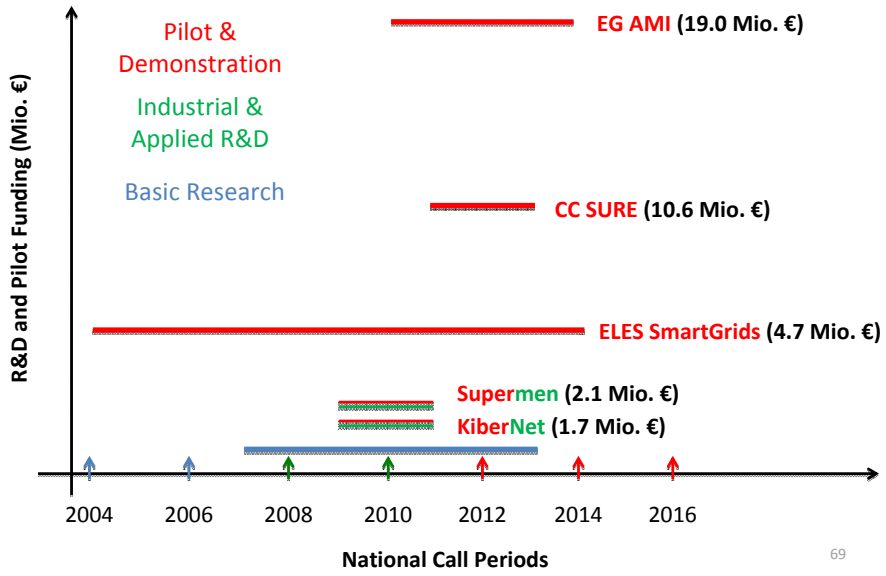
SI: Timeline of research



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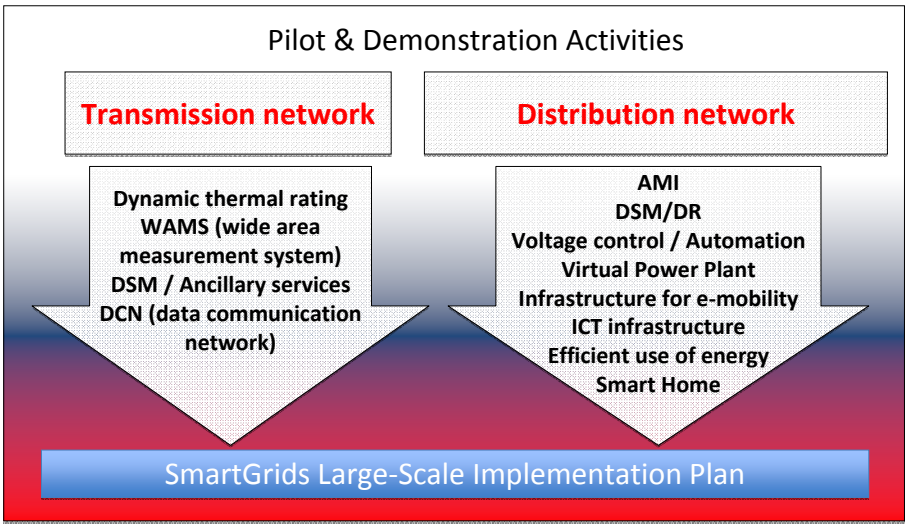
SI: National thematic focus



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SWEDEN

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SE: Demo projects' key facts

- (Ongoing) Demo Projects
  - Stockholm Royal Seaport - Feasibility Study, Large Scale Urban SG Demo, Total Budget ~3.75 MEUR (40% funding)
  - Smart Grid Gotland – Feasibility Study, Large Scale Rural SG Demo, Total Budget ~1.1 MEUR (40% funding)
- Accompanying research and/or activities
  - Research Programmes: EKC2, ELEKTRA
  - EIT KIC InnoEnergy Sweden – European Node for Innovation on Smart Grids and Electricity Storage
- Funding-/ programme mechanismen
  - Grants; Funding rates According to National and EU Funding Guideline
  - Contributing Funds from Participating Organizations

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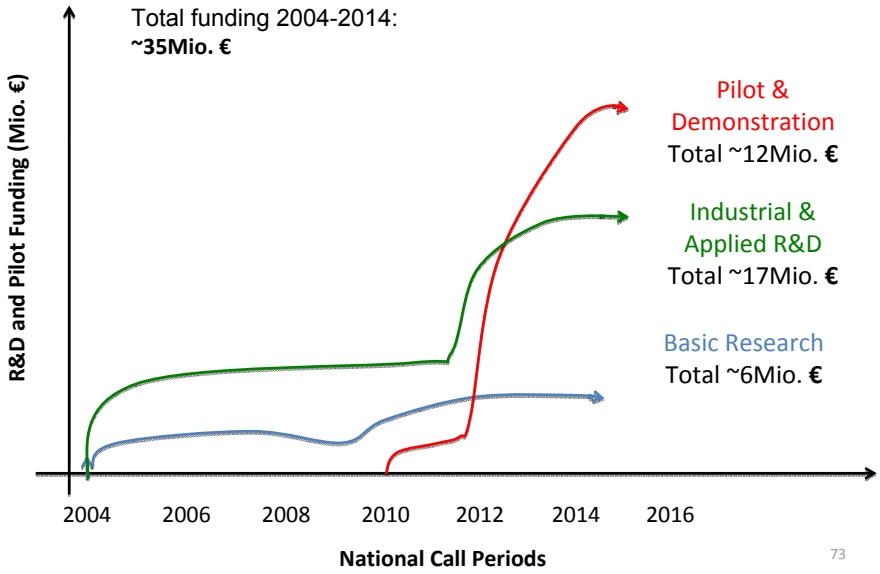
SE: Timeline of research



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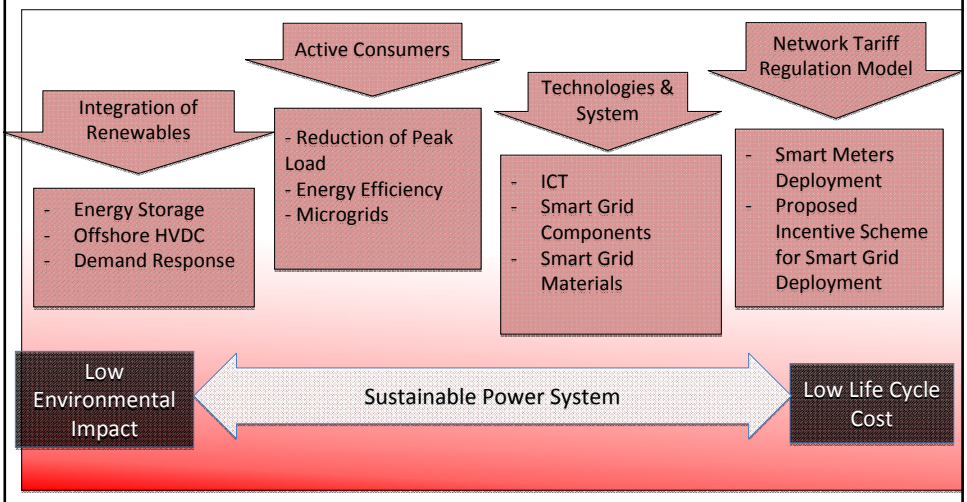
SE: National thematic focus



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SWITZERLAND

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CH: Demo projects' key facts

- (Ongoing) Demo Projects
  - Vein
  - Swiss2G
  - ewz Smart Metering Pilot
  - aWattgarde
- Accompanying research and/or activities
  - D-A-CH cooperation
- Funding-/ programme mechanism
  - Grants; different funding rates according to national funding guideline
  - Mission oriented research programs on energy systems

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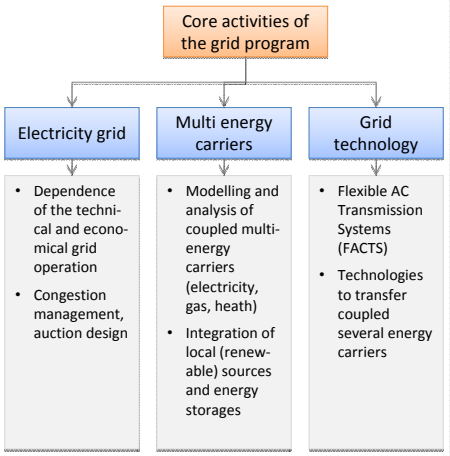
CH: National thematic focus

Goals of the programme “grid”



Position paper “Smart Grids”

Impact Assessment
- Estimation of the economic costs and the benefits of smart grids for Switzerland
- Working out the framework conditions for the use of smart metering
- To derive further necessary legal specifications

Smart Grids Roadmap
- Definition of the functional design of a Swiss Smart Grids
- Definition of the target state with the help of different scenarios
- Elaborating the necessary steps for an implementation and the accumulating costs
- Working out the framework to finance "smart grids"

Research
- Taking into consideration the main focus of the research programme of the Swiss Federal Office of Energy
- Main focus on "smart grids" and "smart cities" in pilot and demonstration projects
- Development of international relations
- Participation of the relevant industrial initiatives of the EU Set plan

Realization actions
- Energy Switzerland 2010 - 2020 and tenders
- Increasing of energy efficiency with the help of smart grids

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SPAIN

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ES: Demo projects' key facts

- (Ongoing) Demo Projects
  - the largest demo projects are mostly supported by private funding (utilities)
  - the main driver is smartmetering deployment by 2018
- Accompanying research and/or activities
  - Spanish R&D plan → CDTI and Ministry of Innovation
  - National stakeholder technology platform → FUTURED
- Funding-/ programme mechanismen
  - Period 2008 -2012:
    - 6 large National R&D projects → budget 135M€ (50% funded)
    - 4 large National demo projects → budget 125 M€
  - Public funding: from grants to loans

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Smartgrids mean ...

		① network automation & control	② smartmetering	③ end user systems
national projects				
DENISE	R&D	x		
GAD	R&D	x	x	x
CRISALIDA	R&D	x		
ENERGOS	R&D	x		
VERDE	R&D	x		x
REDES2025	R&D	x		
STORE	Demo	x		
SMARTCITY	Demo	x	x	x
STAR	Demo	x	x	
BIZKAIA	Demo	x	x	x
EU projects				
FENIX	R&D	x		
ADDRESS	R&D	x	x	x
OPENMETER	R&D	x	x	
TWENTIES	Demo	x		
GRID4EU	Demo	x	x	x

customers involved in demos

16.000

100.000

200.000

81

THE NETHERLANDS

83

NL: Demo projects' key facts

- (Ongoing) Demo Projects
  - Stimulating programme for **e-mobility**: 800,000 e-cars until 2020; several projects; total budget: **EUR ~65 million**
  - **Energy island in the North Sea**: 20 GWh electricity by wind,; 1.5 GW (planned, not yet started)
  - **Green Gas Field**: feed gas into existing distribution system (planned, not yet started)
  - Smart Meter for electricity & gas: total project: roll-out of 250,000 SM; first round **2011**: 175,000 SM; **EUR 20 Mio**.; Goal: 80% of all customers with smart meters until 2020
  - **Smart charging**: Technical issues/ service provided involving consumers (2011)
- Accompanying research and/or activities
  - Several working groups on specific Smart Grids topics
  - Smart Grid Initiative: "Smart Energy Collective": planned/ started R&D projects until 2015; 8,000 households involved
- Funding-/ programme mechanism
  - Public-private-funding: on average 30% public; 70% private

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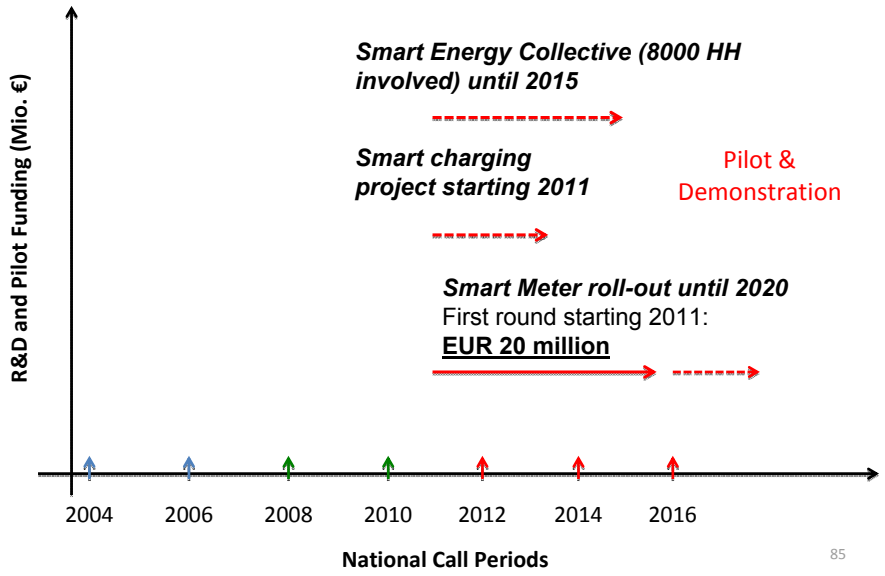
NL: Timeline of research



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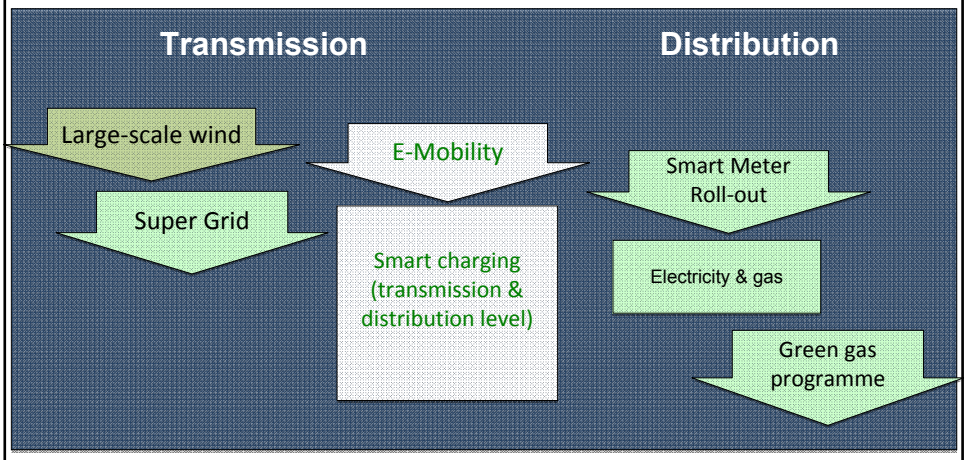
NL: National thematic focus



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TURKEY

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TR: Demo projects' key facts

- (Ongoing) Demo Projects
  - Implementation of Feeder Automation Project – TUDOSIS (TUBITAK UZAY for Bogazici DISCO; total budget approx. EUR 5 Mio)
  - Implementation of Wind Power Monitoring and Forecast Center Establishmet Project (EIE, TUBITAK, Turkish State Meteorological Service, Total Budget approx. EUR 10 Mio))
  - Upcoming for 21 DISCO in 5 years about; (Total Budget approx. EUR 50 Mio)
    - *Power Quality,*
    - *SCADA Systems,*
    - *Distribution Automation,*
    - *Smart Grid Systems,*
    - *Smart Metering Systems,*
- Funding-/ programme mechanism
  - Different funding rates according to different national (TUBITAK (KAMAG, ARDEB, TEYDEB), TTGV, DPT, Industry) and international programmes (FPs, Eureka, Eurostars, etc)

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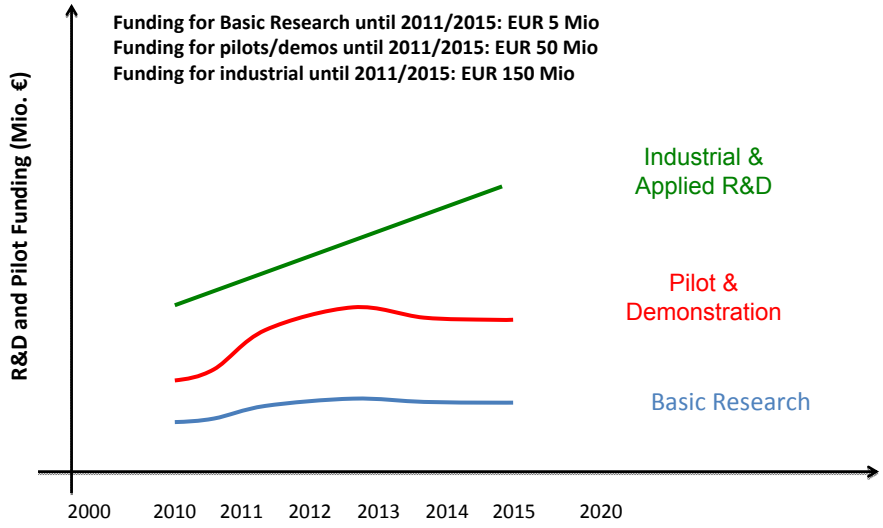
TR: Timeline of research



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TR: National thematic focus

- Turkey has 21 electricity distribution regions with established local electric distribution utilities.
- Execution process to privatize 21 distribution companies has already been started.

Amount of Investment 2011-2015	
Demonstration & Implementation Activities (€)	R&D Activities (€)
4.5 Billion	50 Million

Planned Projects:

- *Power Quality,*
- *SCADA Systems,*
- *Distribution Automation,*
- *Smart Grid Systems,*
- *Smart Metering Systems,*
- *New and Efficient Sub-stations,*
- *Developing Regions Infrastructure,*
- *Loss/Fraud Protection,*
- *Other Invetments ...*

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United Kingdom

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UK: Demo projects' key facts

- (Ongoing) Demo Projects
  - 13 current demonstration projects (2010-2015)
  - Total Funding: **~£ 100 million** (~£ 63 million by grid tariff, ~£ 37 million by government innovation fund)
  - Financed by Ofgem, DECC, Office of Low Emmission Vehicles
  - Further annual calls until 2015: **~£ 440 million**
- Accompanying research and/or activities
  - Energy technology institute: Currently developing research and technology plan
- Funding-/ programme mechanismen
  - Grants; by grid tariff and government innovation fund

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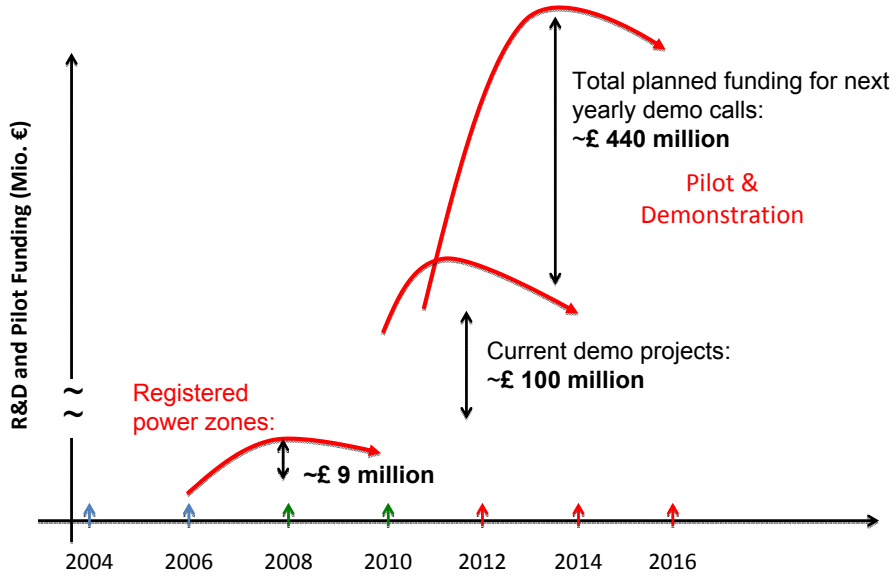
UK: Timeline of research



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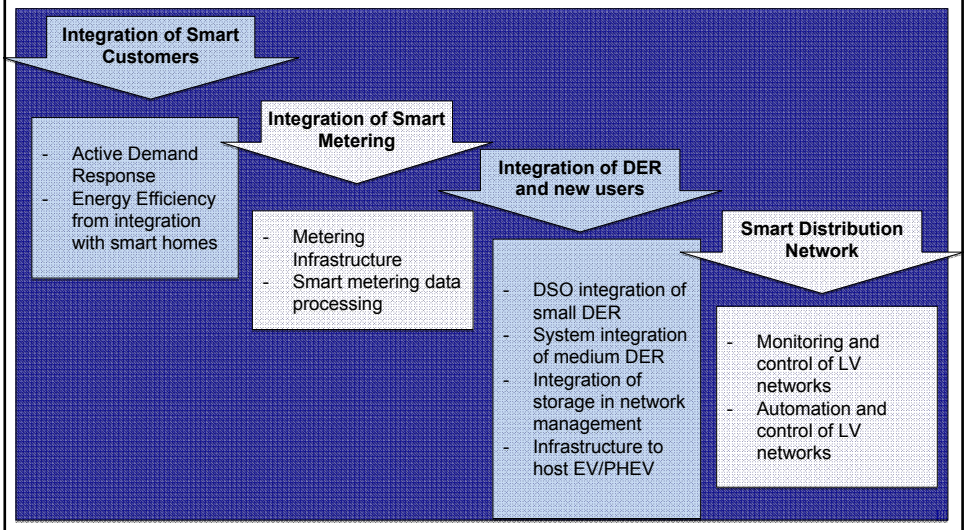
UK: National thematic focus



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"Report about existing national structures and activities, energy targets, foresight studies and their impact on ERA-Net Smart Grids":

SMART GRIDS COUNTRY FACT SHEETS

Deliverable 4.2.1

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The authors are thankful for all the contributions from:

Oihana Blanco Mendizabal, Marina Penić Levada, Jeannette Møller Jørgensen, Aare Ignat, Guy Vekemans, Stéphane Biscaglia, Ludwig Karg, Stathis Tselepis, Michele de Nigris, Gunta Shlihta, Olivier Onkiehong, Ruud de Bruijne, Lise Jørstad, Mats Andersson, Frank Nilsen, Erland Eggen, Ivan Šmon, Marian Ángeles Ferre González, Rainer Bacher, Willi Rohr, Michael Moser, Ilknur Yilmaz.

Outline

Summary

Within this Deliverable 4.2.1 "*Report about existing national structures and activities, energy targets, foresight studies and their impact on ERA-Net Smart Grids*" collected country-specific and Smart Grids related information (documents and websites) of 16 countries and regions participating in the Smart Grids (SG) ERA-Net and the equivalent information of two countries *not* participating in the SG ERA-Net, but which are very active in European Smart Grids development (Germany and Italy), was analysed. The goal was to identify potential hurdles but also strengths for collaboration in the SG ERA-Net and potential future joint activities. As a result a detailed "**Smart Grids Country Fact Sheet"** for each participating country/ region was designed and key results were summarised.

The Smart Grids related information requested involved the following broad information categories:

- **National Official Documents, Laws & Rules**
- **R&D Framework, Programmes & Policy**
- **Scenarios, Project Information & Platforms**

It turns out that most important information, which is of immediate usability to programme managers (and also researchers) is still not in English available in many countries. This is true especially for "**National Strategies**", "**Transition Paths**" and "**Energy targets**" as well as "**Project databases**".

However, a lot of valuable information **IS** indeed **AVAILABLE** in most of the participating countries/ regions. And even if it is not in English available, the detailed Smart Grids Country Fact Sheets presented in this Deliverable give some insights about the most important messages of the national/ regional Smart Grids related documents and websites. Summarising, this Deliverable provides a sound basis for consecutive Tasks and Deliverables in the Smart Grids ERA-Net project and hence, builds the starting point for "Durable Structures" and potential future collaboration such as "Joint Activities".

1. Scope of the Deliverable 4.2.1

The underlying motto throughout the whole work package (WP) 4 – 'Information flow and information gain for all participants' is illustrated in Figure 1.

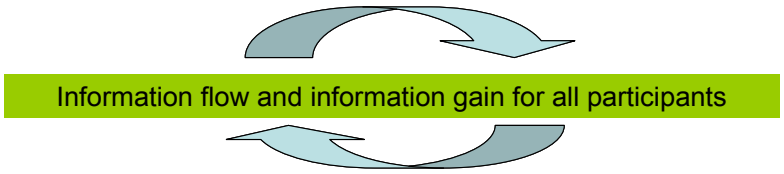

Figure 1 *Underlying 'motto' throughout work package 4*

So this means that for the success of the work package 'Implementation of Joint Activities' it is vital to:

- keep communication flow up
- re-distribute collected information after preparation and
- meet for discussions and workshops on a regular basis.

Figure 2 below illustrates schematically all tasks in WP 4 'Implementation of Joint Activities' in a way, such that the route defined as the 'EU – Walk to Smart Grids Excellence' can be followed. This interpretation of WP 4 was designed to highlight the underlying goal of Smart Grids ERA-Net, which is to foster and enable European research in the field of Smart Grids and so to strategically position the European Smart Grids know-how as optimally as possible within the world-wide competitive environment. This shall be reached by implementing joint activities.

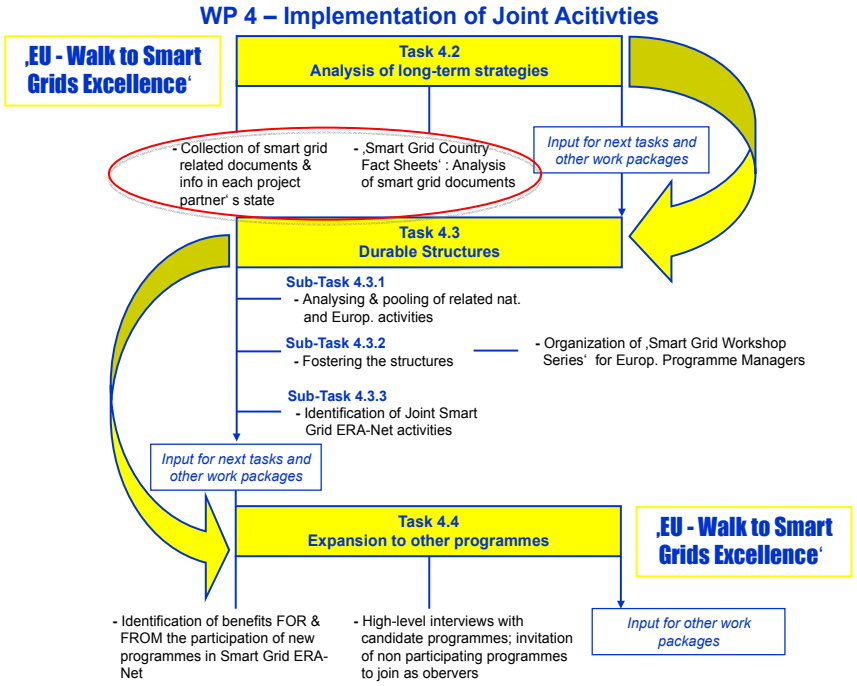

Figure 2 *Schematic depiction of 'WP4 – Implementation of Joint Activities': The EU – Walk to Smart Grids Excellence*

The first task to be accomplished for Deliverable 4.2.1 "*Report about existing national structures and activities, energy targets, foresight studies and their impact on ERA-Net Smart Grids*" (see ellipse in Figure 2) was to collect titles and websites of Smart Grids relevant documents and information in each project partner's national/ regional environment. The detailed categories of the questionnaire used to collect the necessary information are stated in the beginning of the subsequent section. All tables with document titles & according links are also publicly available online at the Smart Grids ERA-Net website: www.eranet-smartgrids.eu.

Within this Deliverable 4.2.1 the results of the collected documents and websites are summarised to **"Smart Grids Country Fact Sheets"**. On one hand the goal of this Deliverable is to get a fundamental overview about national/ regional official institutional and legal structure for R&D in the Smart Grids context. On the other hand relevant drivers in terms of national/ regional targets, strategies, innovation agendas and roadmaps as well as national/ regional activities in terms of networks, platforms were collected and summarised. Finally, the task of this deliverable is to analyse the impacts on ERA-Net Smart Grids and highlight potential hurdles and, of course, potential strengths for future collaboration between the partner countries and regions.

In the Annex to this Deliverable, a brochure summarising the results of the first workshop within the "Smart Grids ERA-Net Workshop Series" organised in WP 4 is provided. The goal of this first SG ERA-Net workshop was to get an overview about "**National Pictures & European Dynamics of Smart Grids**". It was organised by WP 4 leader BMVIT and UAS Technikum Wien and kindly hosted by Senternovem (Agency NL) on **March 30th, 2010, Regardz Meeting Center Amsterdam.**

In the following the framework of the used questionnaire is demonstrated and key results of the "Smart Grids Country Fact Sheets" are summarised and analysed.

2. Categories of collected information

In the following Table 1 the categories of the requested documents and information (document titles, websites) in the questionnaire are explained.

Table 1 *Summary of categories in the Country Fact Sheets*

Document/ Information Categories	Questions	Explanatory notes
National offcial documents, laws & rules	National strategies, energy targets & strategies and transition paths	(Binding) governmental documents
	Laws and Rules in the energy sector that have implication on Smart Grids	E.g. Framework for allocation of R&D cost to grid tariffs
R&D Framework, Programmes & Policy	R&D framework for research in smart grids? if no	Laws and rules that are the basis for R&D funding and/or that are the basis on wich the programmes build upon
	R&D-framework for energy research? if not:	
	R&D-framework in general?	
	R&D - programmes	Documents that describe the programme, the funding instruments of the programme, how the programme works, etc.
	R&D and Innovation policy, Innovation Agenda, Technology Roadmaps	Documents which are the basis for R&D programmes and fundings; Documents which signalise the commitment of the national industry and/or documents with suggestions by researchers, etc…
Scenarios, Project information & Platform	Project Data bases, Websites with Project information, Synopses books	Project data bases: can we have access? (indicate: access Yes/No); Websites: no single project websites- only websites with collected project information of your programm(es);
	Scenarios	Scenario Analysis, Scenario Project Reports, etc… that are about "Smart Grids" or treat related topics
	Documents or Websites about National & regional networks and platforms	

In the first category **"National official documents, laws and rules"** governmental documents that are preferably official binding documents in terms of national/ regional strategies, energy targets and related strategies/ transition paths related to Smart Grids. Furthermore, documents which describe the legal framework (laws and rules) in the energy sector and hence, have implications on Smart Grids development (like Grid Codes, Electricity laws, Regulatory Directives, etc.) were requested.

The second category "**R&D Framework, Programmes and Policy"** is divided into two rough subgroups: On one hand documents and information about the R&D framework (in general, energy/electricity- or Smart Grids-specific) was collected:

- Laws and rules that are the basis for R&D funding and/or that are the basis on which the programmes build upon;
- Documents that describe the programme, the funding instruments of the programme, how the programme works, etc;
- Laws and/or rules which form the basis for R&D programme funding.

On the other hand available information, websites and documents giving hints about the national/ regional innovation policy (like e.g. innovation agendas or roadmaps) influencing R&D in the field of Smart Grids were questioned.

The third category is "**Scenarios, project information and platforms"**. Here the focus was especially on project specific information in the Smart Grids context such as project databases and/or summarised project description on websites or in

documents (like synopses brochures/books). Furthermore, scenarios or similar analysis that could give insights in potential short-, middle- or long-term development and deployment of Smart Grids in the partner countries and regions were requested. And finally, information (especially website) of existing national/ regional platforms (e.g. Smart Grids technology platforms), networks or other co-operations was collected.

The subgroups of information categories are now visualised in Figure 3 and Figure 4 according to two selected properties, respectively. In Figure 3 the information subgroups are sorted according to *Immediate Usability of Information*. This means,

- the more programme managers or researchers can use the content of the available information to evaluate chances/barriers of collaboration in the Smart Grids area or
- the more the information helps programme managers to define potential joint activities of national/ regional programmes in the short-term

the higher is the immediate usability of this information (*high usability*). Hence, information about national/ regional targets or connected strategies and innovation agendas, roadmaps or detailed project databases and information about initiatives like technology platforms could be of much quicker and easier usability to identify potential contents for collaboration than fixed framework conditions for R&D or national laws (*low usability*).

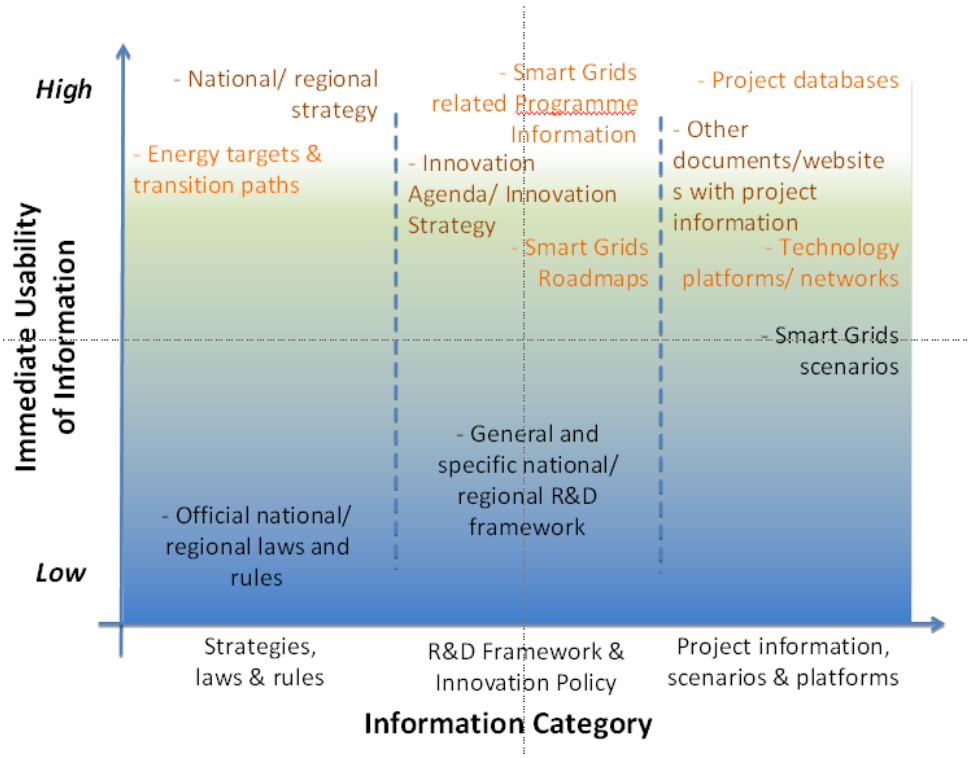

Figure 3 *Immediate usability of information for programme managers and researchers by information category*

On the other hand, as depicted in Figure 4, it is important to know which national/ regional framework conditions (laws, R&D framework, country-specific Smart Grid scenarios) are binding in each country and might cause hurdles for joint cooperation of national programmes and the development and deployment of Smart Grids in each country or region. But to define primary goals for potential joint activities like

joint calls, joint demonstration funding, etc. it is primarily important to look at the specific information giving insights to countries' and regions' Smart Grids implementation goals and status-quo of R&D in Smart Grids.

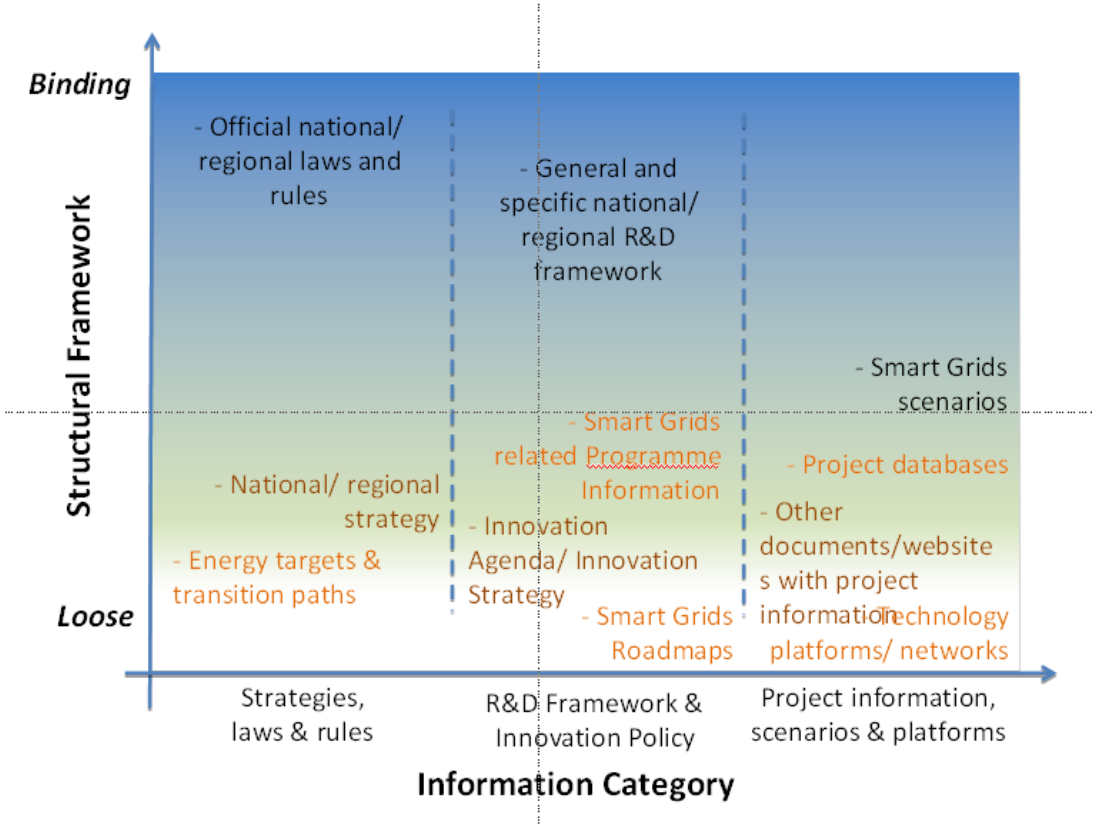

Figure 4 *Properties of structural framework for researchers and programme managers by information category*

In the following section the key results from the evaluation of the gained country- and region-specific information/documents/websites are presented and analysed.

3. Key results of the analysis

The following tables (Table 2 to Table 4) show the summarised key results of the inputs by country/ region from the questionnaires. The coloured fields identify available information to the corresponding information subcategory. The information groups that have high immediate usability are marked with light colour.

Table 2 *Key results of collected information for the category „National Official Documents, Laws & Rules“*

National Official Documents, Laws & Rules	Austria	Basque Country	Croatia	Denmark	Estonia	Flemish Region	France	Germany	Greece	Italy	Latvia	Nordic Region	Norway	Slovenia	Switzerland	The Netherlands	Turkey
National strategy/ transition paths and/or energy targets and related strategies influencing Smart Grids implementation										Position Paper							
of which in English																	
Laws and Rules that have implications on Smart Grids								not mentioned									

Table 3 *Key results of collected information for the category „R&D Framework, Programmes and Policy“*

R&D Framework, Programmes & Policy	Austria	Basque Country	Croatia	Denmark	Estonia	Flemish Region	France	Germany	Greece	Italy	Latvia	Nordic Region	Norway	Slovenia	Switzerland	The Netherlands	Turkey
General R&D framework																	
Specific Framework for R&D in Energy																	
Framework for R&D in Smart Grids																	
Smart Grids related R&D Programme Information in English											Soon						
Innovation Agenda/ Strategy																	
Smart Grids Roadmap				Report		Soon									Position Paper		

Table 2 demonstrates that in nearly all project partner countries/ regions information about national/ regional strategies/ transition paths and /or energy targets is generally available. However, only partly this information is also accessible in English language. Additionally, many countries have laws and rules that have implications on Smart Grids.

Nearly all countries/ regions have implemented general R&D framework conditions, but just few countries have energy specific-and just two countries/regions (the Flemish Region and Germany) have particular Smart Grids R&D framework conditions (Table 3). As can be seen, many countries/ regions have documents and/or websites with information to Smart Grids related R&D programmes in English, all countries have a particular Innovation Agenda or Innovation Strategy but very few have already designed Smart Grids Roadmaps.

Table 4 *Key results of collected information for the category „Scenarios, Project Information & Platforms“*

Scenarios, Project Information & Platforms	Austria	Basque Country	Croatia	Denmark	Estonia	Flemish Region	France	Germany	Greece	Italy	Latvia	Nordic Region	Norway	Slovenia	Switzerland	The Netherlands	Turkey
Project data base																	
of which with public access																	
of which public access & in English																	
Other documents/ websites with summarised Smart Grids related project information in English			Soon														
Smart Grids related scenarios																	
Technology platforms related to Smart Grids										in prepa-ration							
of which specific Smart Grids platforms																	
Other networks/ cooperations related to Smart Grids																	

As regards information about scenario, project information and platforms summarised in Table 4 the picture has more holes. In many countries/ regions a project database (mostly on programmes' websites) exist, but fewer are publicly accessible and only half of databases are in English. However, it has to be mentioned that some countries/ regions, which do not have a project database in English available, provide other equivalently valuable project information (project synopsis books, project summaries) in English. Approximately in half of the countries/ regions technology platforms or at least some kind of networks/ co-operations in the context of Smart Grids have been founded.

Finally, in Figure 5 another type of illustration of the key results is demonstrated. The figure contains all information subcategories of the questionnaire. The bigger the words, the more information is available in those information subgroups. So it clearly can be seen that most information among all participating countries/ regions in the Smart Grids ERA-Net are: "***Transition paths***", "***Energy Targets***", "***Innovation Agendas***" and "***National Strategies***". But also a significant amount of "project databases", "Laws and Rules", "SG R&D Programme Information in English" and "Scenarios" are available. However, in this illustration the fact, that some information in some countries was not available in English or publicly accessible, was ignored – unlike in Figure 6.

Figure 5 *Illustrated weight of information subgroups according to availability of information. All available information was counted. The bigger the words, the more information is available in those information subgroups.*

There, only the information was counted which is publicly AND in English available and which is Smart Grids- or at least energy specific. And it can be observed that the picture is a different one. The far biggest word is "***Innovation Agenda***" indicating that this is available information in English in most countries/ regions. Further "big" categories are "*Laws and Rules*" as well as "***Smart Grids R&D Programme in English***" and still "***Scenarios***". The rest of the information is only very rarely available.

And here we come to the impact on Smart Grids ERA-Net and potential Joint Activities among the programme managers. Most important information, which is – as evaluated above – of immediate usability to programme managers (and also researchers) is still not in English available in many countries. This is true especially for "**National Strategies**", "**Transition Paths**" and "**Energy targets**" as well as "**Project databases**".

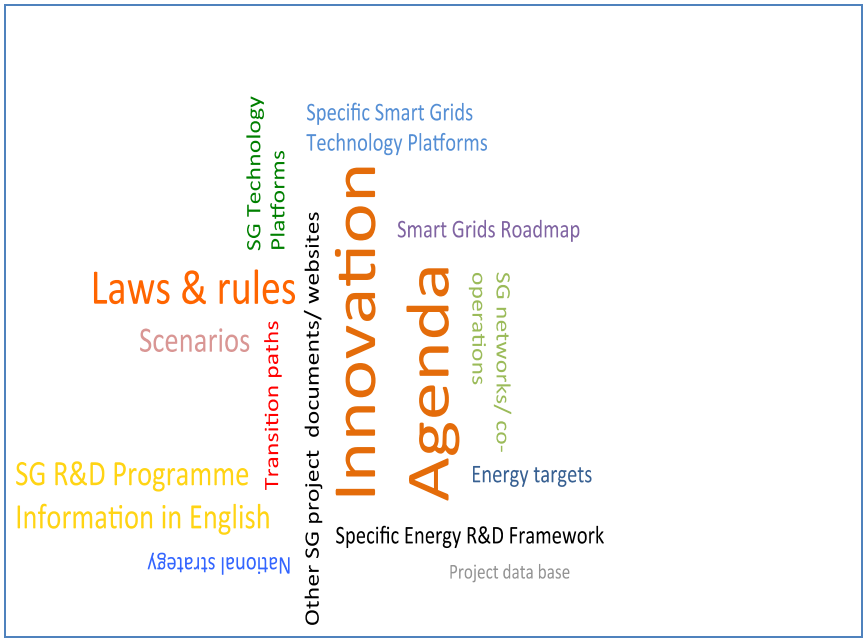

Figure 6 *Illustrated weight of information subgroups according to availability of information. Only the information was counted which is publicly AND in English available and which is Smart Grids- or at least energy specific.*

However, as can be seen by the above tables with summarised key results or by the detailed country snapshots below, a lot of valuable information **IS** indeed **AVAILABLE** in most of the participating countries/ regions. And even if it is not in English available, the detailed Smart Grids Country Fact Sheets below give some insights about the most important messages of the national/ regional Smart Grids related documents and websites.

A starting point for the identification of possible/ potential transnational Joint Activities will be the next **Smart Grids ERA-Net Workshop** in Brussels on March 14th, 2011. This workshop is jointly held together with the European Electricity Grid Initiative (EEGI). The major goal of this workshop is to draw a picture on which national project contributes to which of the functional projects defined in the EEGI process.

This workshop and the detailed **Smart Grids Country Fact Sheets** below will help to formulate possible transnational collaboration and to identify Joint Activities in the consecutive Tasks and Deliverables.

4. Smart Grids Country Fact Sheets

In the following the detailed Country Fact Sheets per country/ region are presented.

4.1. Austria

National official documents, laws and rules

There are several energy strategy documents available, on national and regional level (compare Table 5). The goal of the Austrian Energy Research Strategy (*EnergieFORSCHUNGSstrategie*) was to summarise the most important aspects of an all-embracing energy research strategy to create a basis for necessary discussions for energy research measures and at the same time to provide an input for the "Energiestrategie Österreich". The Energy Strategy process (*Energie Strategie Österreich*, www.energiestrategie.at) is a trans-ministerial initiative, where more than 150 experts from industry, energy-branch and research institutions have worked together for months to discuss about effective and necessary measures for 370 open questions towards a future Austrian energy system. The consolidated results build the basis for the political steps to come and are published in one big document (which is by now only available in German, but a summary is available in English – see links below). Within this document it is stated that Smart Grids (and research on as well as pilot projects of Smart Grids) are of utmost relevance, especially as regards the following points:

- Security of supply;
- Integration of distributed generation structures (also considering traditional buyers with supply- and storage capacities).

Furthermore, in 2010 the *Nationaler Einführungsplan Elektromobilität* (National Deplyment Plan for Electromobility) was published. It recommends the introduction of electromobility as a complete package of political and legal measures. Research funding as well as the initiation and support of contributive processes which are sketched in particular model-regions and –systems shall play a major role. Additionally, technological, structural and infrastructural as well as planned framework conditions and interfaces are demonstrated.

Table 5 *National Official Documents, Laws and Rules in Austria*

National Offcial Documents, Laws & Rules		Austria
National strategies, energy targets & strategies and transition paths	***Available***	- EnergieFORSCHUNGSstrategie (Energy Research Strategy); - Energiestrategie Österreich (Energy Strategy Austria); - Energiestrategie Steiermark 2025 (Energy Strategy Region Styria, German); - Climate Program Region of Lower Austria 2009-2012 (German) - Nationaler Einführungsplan Elektromobilität (National Deplyment Plan for Electromobility) (German)
Laws and Rules in the energy sector that have implication on Smart Grids	***Available***	- ElWOG - Electricity branche organization law; - TOR (Technical & Organizational Rules) - Grid Code

The most important legal documents having an impact on Smart Grids are the Electricity Branch Organization Law (*Elektrizitätswirtschafts- und Organisationsgesetz, ElWOG*) and the Technical and Organizational Rules (*Technische und Organisatorische Regeln*, TOR), which contain the Grid Code for the Austrian electricity grid. Both govern the electricity supply system in Austria and hence, the interaction, rules and obligations for all market participants in the electricity branch to guarantee security and high level of quality of supply. A possible Smart Grids system of the future must comply with this law in order to be integrated in the Austrian system.

R&D Framework, Programmes and Policy

In Austria the BMVIT (Federal Ministry for Transport, Innovation and Technology) ensures the implementation of an innovative technology policy and the efficient assignment of public funds. It is responsible for the development and realisation of a series of structural and impulse-programmes and closely works together with industry and research institutions to provide adequate framework conditions to foster innovation in Austria.

The general R&D (research & development) law and laws for universities, research institutions and the Austrian Research Promotion Agency's law (*Österreichische Forschungsförderungsgesellschaft (FFG)*: www.ffg.at) as well as R&D directives, compare Table 6 give the legal framework for research in Austria. But there is not yet any law shaping Austria's smart grid research environment explicitly.

Quite vast is the Smart Grids support in terms of research & development (R&D) and demonstration funding, reflecting the need for scientific work in the Smart Grids area. Hence, there are several programmes promoting research in the energy field in general and thereby supporting Smart Grids projects, e.g. the program *Energy systems of tomorrow* with the program track *Energy systems, grids and consumers* (www.edz.at) or the *A3plus* research program for e-mobility topics. In 2007 a major funding body for research support in the area of energy and especially Smart Grids related research is the Austrian was founded: The *Klima- und Energiefond*s (KLIEN; Climate and Energy fund – www.klimafond.gv.at). The KLIEN programmes supports R&D and demonstration projects within three focus areas:

- Research and development in the area of sustainable energy technologies and climate;
- Promotion of projects in the areas of local public transport and public regional transport, environmentally friendly freight transportation as well as mobility management projects and
- Promotion of projects for the support of market penetration of sustainable and climate-relevant energy technologies.

In December 2010, a particular Smart Grids demonstration call was initiated and opened by the BMVIT in collaboration with the KLIEN, namely the call *Smart Energy Demo/ Smart Cities* call (Fit4SET). Another important programme of the KLIEN are *"Technological Lighthouses of Electromobility"* (Technologische Leuchttürme der Elektromobilität), which is supported by EUR 12.9 million.

Table 6 *R&D Framework, Programmes & Policy documents in Austria*

R&D Framework, Programmes & Policy		Austria
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**	***Available***	- General R&D framework in the Austrian Law for Universities, - R&D Directive, - Research Agency's (FFG) Law
R&D - programmes	***Available***	Programmes for energy / electricity (www.edz.at and www.klimafonds.gv.at): - "Energy systems of tomorrow"; - "Energy systems, grids and consumers" (Neue Energien 2020); - "A3plus" (e-mobility); - Smart Energy Demo/ Smart Cities (Fit4Set) - Call - "Technological lighhouses of electromobility"
	Later	Constantly new calls are opened.
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps	***Available***	- PV Techniology Roadmap; - Smart Grids Roadmap Austria; - "Energie 2050" strategy finding process

As regards the R&D and innovation policy and an innovation agenda the Austrian Federal Ministry of Transport, Innovation and Technology has started the *Energie*

2050 strategy finding process (www.e2050.at) where also Smart Grids plays an important role in the solutions for a possible future energy system.

Additionally, in autumn 2009 the *Austrian Technology Platform for Photovoltaic* (www.tppv.at) and in 2008 *Smart Grids Austria*, the Smart Grids technology platform (www.smartgrids.at) were founded. Both platforms have published Roadmaps, which are consulting the political authorities to take the most promising and efficient steps towards the future energy system: On the one hand a roadmap to an increased photovoltaic penetration (where also Smart Grids is seen as the necessary framework) and on the other hand the roadmap towards Smart Grids implementation in Austria.

Scenarios, project information and platforms

Interesting information on research project level for smart grids can be found on the national research program website: www.edz.at. There, *project synopsis books* about several research projects conducted in energy-related fields for several years can be found (also in English language) and even a special Smart Grids project synopsis was recently published, as documented in Table 7.

Table 7 *Scenarios, Project Information & Platforms in Austria*

Scenarios, Project Information & Platforms		Austria
Project Data bases, Websites with Project information, Synopses books	***Available***	- Project synopses "Decentralised Generation and Smart Grids" 2003-2007 and 2007 - 2009 (English); - Smart Grids project synopsis 2003-2010 (English); - International Co-operation in the field of Smart Grids - projects; - Funding Map of the Climate and Energy Fund (Klima- und Energiefond)
Scenarios	***Available***	- Stromzukunft 2050 (Electricity Future 2050) TU Vienna (German); - Smart Grids Roadmap Austria (German); - Renewable Energy 2020 (Potential & Utilisation in Austria; German); - Energy Efficiency Potentials n Austria until 2020 (German); Energy Structures for 2020 (German); - Assessment of Austrian contribution to EU 2020 target sharing; - Evaluation of green electricity development and potentials (German)
Documents or Websites about National & regional networks and platforms	***Available***	- National Technology Platform Smart Grids Austria; - National technology Platform Photovoltaic; - E-Connect Plattform (E-Mobility)

On the website of the National Energy Strategy process (as highlighted above) several related documents about derived energy scenarios and potentials (renewables, energy efficiency, 2020 target fulfilment, etc.) are available, partly also in English language.

Finally, in Austria there exist three technology platforms, namely the already mentioned platforms for photovoltaic and Smart Grids as well as the e-mobility platform *E-Connected* (www.e-connected.at). This platform was initiated by the Austrian Federal Ministry of Life (*Lebensministerium*, www.lebensministerium.at) and the Climate and Energy Fund (*Klima- und Energiefonds*, www.klimafonds.gv.at). It has the goal to reduce CO2-emissions in the transport sector with quick introduction of e-mobility in the Austrian market and connects industry, researcher institutions and representatives of the energy branch by delivering information as well as supporting the research and discussion process with expert group events.

List of links to the Austrian Smart Grids documents

The following Table 8 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 8 *Links to Austrian Smart Grids related documents*

Austrian Documents	Links
BMVIT - Austrian Federal Ministry for Transport, Innovation and Technology	www.bmvit.gv.at
Austrian Climate and Energy Funds (Klima- und Energiefonds, KLIEN)	www.klimafonds.gv.at
Austrian Research Promotion Agency (FFG)	www.ffg.at
Energy Research Programme: Energy Systems of Tomorrow	www.energiesystemederzukunft.at/english.htm
EnergieFORSCHUNGSstrategie (German)	www.bmvit.gv.at/innovation/downloads/energieforschungsstrategie.pdf
Energie 2050 (Energy Strategy Finding Process)	www.e2050.at
Energiestrategie Österreich (Energy Strategy Austria, Website in German)	www.energiestrategie.at
Energy Strategy Austria (Summary in ppt) (English)	http://eea.eionet.europa.eu/Public/irc/eionet-circle/energy/library?l=/workshops/eionet_workshop_10-11/presentations/austrian-energy-strategy/_EN_1.0_&a=d
Nationaler Einführungsplan Elektromobilität (National Deployment Plan for Electromobility) (German)	www.bmvit.gv.at/innovation/downloads/einfuehrungsplan_elektromobilitaet.pdf
Energy Systems of Tomorrow: List and abstracts of Smart Grids projects in the programme	http://www.energiesystemederzukunft.at/highlights/smartgrids/index_en.htm
Energy Systems of Tomorrow:Project synopsis "Decentralised Generation and Smart Grids" (2003-2009) (English)	www.energiesystemederzukunft.at/publikationen/view.html/id684
Smart Grids projects in Austria (2003-2010)	www.energiesystemederzukunft.at/publikationen/view.html/id684
Intelligent Energy Systems of Tomorrow - "Smart Grid Pioneers in Austria"	www.energiesystemederzukunft.at/publikationen/view.html/id838
Energy Systems of Tomorrow: Smart Grids Publications	http://www.energiesystemederzukunft.at/highlights/smartgrids/publikationen.htm
International Co-operation in the field of Smart Grids	www.energiesystemederzukunft.at/highlights/smartgrids/kooperationen_en.htm
Energy Systems of Tomorrow: Programme Publications	www.energiesystemederzukunft.at/publikationen/index.en.htm
Energy Systems of Tomorrow: Programme Statistics	www.energiesystemederzukunft.at/statistik/ausschreibung1_eng.htm
Funding Map Climate and Energy Fund (Förderlandkarte, German, but with contact details of coordinating institution)	http://foerderlandkarte.gizmocraft.net/
Market Rules	www2.e-control.at/portal/page/portal/ECONTROL_HOME/STROM/MARKTREGELN
National Laws	www2.e-control.at/portal/page/portal/ECONTROL_HOME/STROM/RECHTSGRUNDLAGEN/BUNDESRECHT
Documents about energy scenarios	www.energiestrategie.at/daten-fakten
National Technology Platform Smart Grids Austria	www.smartgrids.at
Photovoltail Technology Platform Austria	www.tppv.at/
Austiran E-Mobility platform: E-Connected	www.e-connected.at

4.2. Basque Country

National official documents, laws and rules

The Basque legal energy documents and strategies are publicly available at the website of *EVE (Ente Vasco de la Energia)* which is the Basque Government's energy agency. Its mission is to:

- Propose energy strategies for the Basque Country, using criteria of supply security, cost competitiveness and sustainability.
- Take part in developing these strategies and contribute to meeting their targets.

To achieve this, EVE provides a service to the *Basque Government's Department of Industry, Innovation Trade and Tourism* in matters of energy and geological and mining resources, carries out a series of actions intended to help involve and encourage companies and institutions and publishes the criteria and values behind its strategies amongst the general public. All related publications are available on the EVE website as indicated by the links in Table 9.

Table 9 *National Official Documents, Laws and Rules in the Basque Country*

National Offcial Documents, Laws & Rules		Basque Country
National strategies, energy targets & strategies and transition paths	***Available***	- Energy Strategy of the Basque Country 2010
Laws and Rules in the energy sector that have implication on Smart Grids	***Available***	- Several documents published at the EVE - The Basque Energy Board's website

One strategic document related to the energy and so, also to the electricity branch is the *Basque Energy Strategy 2010.* It highlights needed improvements and expansions of the electricity grid infrastructure and identified needed developments in renewable energy, but Smart Grids is not mentioned explicitly.

R&D Framework, Programmes and Policy

The most important R&D areas in the Basque country are identified by the *Science, Technology and Innovation Plan 2010* (compare Table 10). Within this document Smart Grids are presented in the context of Distributed Generation and identified as one of several technological lines which have impact on the improvement of the competitiveness of the Basque Energy Sector.

Table 10 *R&D Framework, Programmes & Policy documents in the Basque Country*

R&D Framework, Programmes & Policy		Basque Country
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**	***Available***	- GAITEK and INNOTEK - not specially designed for smart grids
R&D - programmes	***Available***	- Science, Technology and Innovation Plan 2010
	Later	- Science, Technology and Innovation Plan 2015 (end of March 2011)
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps	***Available***	- Science, Technology and Innovation Plan 2010
	Later	- Science, Technology and Innovation Plan 2015 (end of March 2011)

The two programmes that support research and development (R&D) in the Basque Country, *GAITEK* and *INNOTEK* are not specifically designed for research in Smart Grids or Energy. Both programmes involve horizontal subjects.

Scenarios, project information and platforms

Energy in general but also electricity scenarios of the Basque country are also content of the above mentioned Energy Strategy 2010. There is neither a project data base with public access nor other documents/ websites available about national and regional networks and platforms related to Smart Grids.

Table 11 *Scenarios, Project Information & Platforms in the Basque Country*

Scenarios, Project Information & Platforms		Basque Country
Project Data bases, Websites with Project information, Synopses books		- non
Scenarios	***Available***	- Document of Capacities and Oportunities of the Basque Country (in Spanish); www.eve.es - Energy Strategy of the Basque Country 2010
Documents or Websites about National & regional networks and platforms		- non

List of links to the Basque Smart Grids documents

The following Table 12 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 12 *Links to Smart Grids related documents in the Basque Country*

Basque Documents	Links
Science, Technology and Innovation Plan 2010 (update 2015 available end of March 2011)	www.euskadi.net/r33-2288/es/contenidos/informacion/pcti2010/es_pcti2010/pcti2010.html
EVE - The Basque Energy Board	www.eve.es/web/Portada.aspx?lang=en-GB
EVE publications (also English publications available)	http://www.eve.es/web/Documentacion/publicaciones.aspx?Page=0
Basic electricity legislation	www.eve.es/web/Documentacion/Legislacion/Electricidad.aspx
Basic legislation on renewables	www.eve.es/web/Documentacion/Legislacion/Renovables.aspx
Basic legislation on energy efficiency	www.eve.es/web/Documentacion/Legislacion/Eficiencia.aspx
Energy Strategy of the Basque Country	www.eve.es/web/Eve/files/f5/f56d9cdd-a9cd-4b54-b7e4-ab290348872c.pdf
Basque Contact Points (Technology platform)	www.innobasque.com/home.aspx?tabid=593

4.3. Croatia

National official documents, laws and rules

The *Energy Development Strategy of the Republic of Croatia* has been developed under the umbrella of a much larger project of the Croatian Government entitled Croatia in the 21st Century. An expert team which consisted of authors form Energy Institutes, Croatian Utilities (Electricity, Oil and Gas and other (national and international) companies and consultancies from the energy branch worked on the strategy's development. This document derives energy goals and targets as well as identifies most important research areas necessary to reach these goals.

In the section Development Guidelines for Distribution Networks (Article 6.4.2, p.32) it is stated that technological development and harmonisation with advanced technology platforms from the area of distribution networks (e.g. smart grids) is one of the reforms to be undertaken in the distribution network.

Table 13 *National Official Documents, Laws and Rules in Croatia*

National Offcial Documents, Laws & Rules		Croatia
National strategies, energy targets & strategies and transition paths	***Available***	- Energy Development Strategy of the Republic of Croatia (Croatian)
Laws and Rules in the energy sector that have implication on Smart Grids	***Available***	- All Energy related laws, acts and regulations are available at the Croatian Energy Regulatory Agency (www.hera.hr)

The *Energy Market Act*, the *Electricity Market Act* as well as the *Act on Regulation of Energy Activities* give the legal as well as regulatory framework for the future every-day operation and the future development of the Croatian energy and electricity system. All related documents are available on the website of the *Croatian Energy Regulatory Agency* (www.hera.hr). The acts marginally have influence on Smart Grids development in Coratia. The Croatian government is currently preparing for the implementation of the Third Energy Package where legal influence for Smart Grids will be stated more clearly.

R&D Framework, Programmes and Policy

The general R&D framework in Croatia is determined by the *Ministry of Science, Education and Sport* (www.mzos.hr). The thematic research programme related to Smart Grids is the *Croatian Electric Power System Sustainable Development* (http://zprojekti.mzos.hr, in English also). An explicit R&D and innovation agenda or roadmaps are not yet available.

Table 14 *R&D Framework, Programmes & Policy documents in Croatia*

R&D Framework, Programmes & Policy		Croatia
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**	***Available***	- R&D Franework in general - Ministry of Science, Education and Sport
R&D - programmes	***Available***	- R&D Programme "Croatian Electric Power System Sustainable Development", Programme Code: 0361590
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps		- Not yet available/terms are not defined

Scenarios, project information and platforms

There are two websites available to gain information about ongoing or finished Croatian R&D projects. On one hand there is the website of the *Croatian Smart Grids Technology Platform* (www.smartgrids.hr) where summarised project information of especially Smart Grids projects will be available soon.

On the other hand, similar information (on programme or broad topic level) is available online at the national R&D programme and projects database of the *Ministry of Science, Education and Sport* (http://zprojekti.mzos.hr). This is the main data base of all the projects with national funding.

Table 15 *Scenarios, Project Information & Platforms in Croatia*

Scenarios, Project Information & Platforms		Croatia
Project Data bases, Websites with Project information, Synopses books	***Available***	- Project database of the national R&D Programme "Croatian Electric Power System Sustainable Development"
	Later	- Websites with collected project information at the Smart Grids platform website (available soon)
Scenarios		- Not yet available/terms are not defined
Documents or Websites about National & regional networks and platforms	***Available***	- National Smart Grids platform (www.smartgrids.hr) - HEP-ODS d.o.o. Smart Grids Working group (distribution system operator)

For the purpose of the development and implementation of a Smart Grids concept in the EU and its consequent application in Croatia in 2010 a *Working Group for Smart Grids* was established within the distribution system operator company *HEP-ODS d.o.o.* (which belongs to HEP Group, the national power company).

Working group activities are targeted to:

- Becoming familiar with its definition and factors - development drivers and concept implementation of the smart grids.
- Analyse the key documents and European Commission' s as well as ERGEG and Euroelectric activities concerning the development and concept for the implementation of the Smart Grids.
- Defining goals, activities and priorities of HEP-ODS, and later of a wider context, concerning the development and concept implementation of the Smart Grids particularly focusing on smart metering and automatisation.

List of links to Croatian documents

The following Table 16 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 16 *Links to Smart Grids related documents in Croatia*

Croatian Documents	Links
R&D Franework in general - Ministry of Science, Education and Sport	www.mzos.hr
Croatian Energy Regulatory Agency	www.hera.hr
Energy Development Strategy of the Republic of Croatia (Croatian)	www.hrote.hr/hrote/dokumenti/StrategijaEnergetskogRazvoja_nn_130_2009.pdf
R&D Programme "Croatian Electric Power System Sustainable Development", Programme Code: 0361590	http://zprojekti.mzos.hr
Website with collected project information, active but documents about National network/platform	www.smartgrids.hr/sg/smartgrids/projekti

4.4. Denmark

National official documents, laws and rules

The national document influencing the national political orientation towards Smart Girds is Denmark's *Energy Strategy 2050*, as stated in Table 17. The denomination Smart Grids as such is not evolving in this document. However, it points out the need for a well-organised expansion of the power grid and other measures to maintain the security of supply to cope with increased amounts of wind energy and other renewables. Additionally, it promotes the use of intelligent electricity consumption.

Table 17 *National Official Documents, Laws and Rules in Denmark*

National Offcial Documents, Laws & Rules		Denmark
National strategies, energy targets & strategies and transition paths	***Available***	- Energy Strategy 2050
	Later	- Results from a governmental Smart Grids working group expected October 2011
Laws and Rules in the energy sector that have implication on Smart Grids		- Non

R&D Framework, Programmes and Policy

The framework for energy research in general (compare Table 18 in general in the Danish R&D environment is given by the document *System Responsibility and Transmission Grid*, which is available in Danish only.

In Denmark there is no research programme directly related to Smart Grids: But several energy programmes can support RDD activities within the Smart Grids area. As a member of the ERA-Net Smart Grids the ForskEL research programme with the goal to support R&D of environmentally friendly power generation technologies (www.forskel.dk) has Smart Grid as one focus area. The actual *ForskEL Rules*, *ForskEL Guidelines for application* and *ForskEL Focus Areas* are provided on the websites as listed in Table 20. One out of three prioritised focus areas within the ForskEL programme is "Future energy systems with Smart Grids roll-out". Updated information regarding the ForskEL programme (cell: R&D - programmes) can be found at the link provided in Table 20.

Table 18 *R&D Framework, Programmes & Policy documents in Denmark*

R&D Framework, Programmes & Policy		Denmark
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**	***Available***	- For energy research in general: BEK nr 1463 2005 System responsibility and tranmission grid (Danish)
R&D - programmes	***Available***	- ForskEL Rules 2010, - ForskEL Guidelines for application 2011, - Description of a consortium, - Focus Areas to 2010
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps	***Available***	- The Danish Commission on Climate Change Policy, - Energy Report 8: "The intelligent energy system infrastructure for the future" (by Risø - The National Laboratory for Sustainable Energy at the Technical University of Denmark - DTU)

The Danish Commission on Climate Change Policy, appointed in March 2008 by the Danish government, consists of ten scientists, each possessing special knowledge in the fields of climate, agriculture, transportation and economics. It will be presenting suggestions as to how Denmark in the future can phase out fossil fuels, as is the vision of the Government of Denmark. *The National Laboratory for Sustainable*

Energy Risø at the Technical University of Denmark (DTU) annually publishes an Energy Report. A reprint of the recommendations and conclusions of the current *Energy Report 8: The intelligent energy system infrastructure for the future* can be downloaded via the link provided in Table 18. Therein it is highlighted, for example, that the power system is currently undergoing fundamental structural changes, including not only the rapidly increasing amount of fluctuating renewable energy that is being connected to the system, but also the use of new types of production and end-use technologies. The potential development of Smart Grids is pointed out and the recommendations given focus primarily on a more flexible and intelligent energy system infrastructure, facilitated by short-term policy actions to be combined with longer-term research on new energy supply technologies, end-use technologies, and the broader system interaction aspects.

Scenarios, project information and platforms

For the Danish research programmes administered by *Energinet.dk* a project database (including Smart Grids related projects) exists, but it is not publicly accessible. But there exists a project data base for all Danish energy R&D projects conducted since 1981 (see according link in Table 20). Additionally, there is a very detailed website called *Energymap* with projects and information of Smart Grids related projects (see link below). Furthermore, there are several scenarios referring to Smart Grids system concepts (e.g. including scenarios for 50% electricity generation by wind – see alos the platform "Windpower to combat climate change" further below; a scenario about heat pumps and electric vehicles) available. Within the European project *EcoGrid (EcoGrid.dk)* the building of the first Smart Grids prototype on Bornholm is planned.

Table 19 *Scenarios, Project Information & Platforms in Denmark*

Scenarios, Project Information & Platforms		Denmark
Project Data bases, Websites with Project information, Synopses books	***Available***	- Data base of Danish all energy R&D projects since 1981 - Energymap: Project Information related to Smart Grids (English)
Scenarios	***Available***	- Heat pumps and Electric vehicles. - EcoGrid.dk - project scenarios - now first SG prototype on Bornholm planned
Documents or Websites about National & regional networks and platforms	***Available***	- Windpower to combat climate changes - Danish Energy Agency - Danish Energy Association - Danish Agency for Science, Techonoly and Innovation - NORDEN - Nordic Energy Research

Windpower to combat climate change is an initiative (the *interactive magazine* is available online at www.e-pages.dk/energinet/126/) by the Ministry of Energy and Climate and Energinet.dk. It encourages and demonstrates vivid with this publication how the goal – 50% wind power by 2025 – can be reached, by explaining related issues, problems and facts of the transmission grid, smart home/ cars, etc.

Besides ForskEL there are important agencies and associations dealing with Smart Grids topics such as EUDP (Danish Energy Agency), BenMI (Danish Agency for Science, Technology and Innovation), NER (Nordic Energy Research) and ELFORSK (Danish Energy Association).

List of links to Danish documents

The following Table 20 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 20 *Links to Smart Grids related documents in Denmark*

Danish Documents	Links
ForskEL research programme	www.energinet.dk/EN/FORSKNING/ForskEL-programme/Sider/The-ForskEL-programme.aspx
ForskEL Rules 2010	www.forskel.dk/forskeldocuments/Documents/Rules2011.pdf
ForskEL Guidelines for applicaton 2011	www.forskel.dk/forskeldocuments/Documents/Guidelinesforapplication2011.pdf
ForskEL Focus Areas 2010	http://energinet.dk/SiteCollectionDocuments/Engelske%20dokumenter/Forskning/Call%202011_ForskEL%20Focus%20areas.pdf
Energy Report 8	http://130.226.56.153/rispubl/reports/ris-r-1695_uk_summ.pdf
Energy Policy Statement 2008	http://193.88.185.141/Graphics/Publikationer/Energipolitik_UK/energipolitisk_redegorelse_2008_eng/pdf/energipolitisk_redegorelse_2008_eng.pdf
Energymap: Project Information related to Smart Grids	www.energymap.dk/Technology-Areas/Intelligent-Energy/Smart-Grids/Related-Projects
EcoGrid Scenario	www.EcoGrid.dk
Windpower to combat climate change	www.e-pages.dk/energinet/126/

4.5. Estonia

National official documents, laws and rules

There exist a number of national strategic documents (mostly available in Estonian only) influencing the energy branch as listed in Table 21. For instance the *Estonian Electricity Sector Development Plan until 2018* (published by the Ministry of Economic Affairs and Communication) identifies high priority activities and measures in the electricity sector to ensure continuous electricity supply, more sustainable power supply and consumption and a justified price of electricity. One of these is the measure "Implementation of innovative power network solutions", pointing out that solutions should be found to better integrate distributed electricity production and unstable electricity producers into the network.

Summarising, Smart Grids are not a main topic in these documents. But as Estonia has to implement green energy requirements, the open energy market, etc. more documents related to these issues will come up.

Table 21 *National Official Documents, Laws and Rules in Estonia*

National Offcial Documents, Laws & Rules		Estonia
National strategies, energy targets & strategies and transition paths	***Available***	- Long Term Public Fuel and Energy Sector Development Plan (Estonian); - Estonian Electricity Sector Development Plan until 2018 (English); - Energy Savings Target Programme 2007-2013 (Estonian); - Physical and Social Environment Development Action Plan (Estonian)
	Later	- Energy Sector State Development Plan up to year 2020 (Estonian)
Laws and Rules in the energy sector that have implication on Smart Grids	***Available***	- Electricity Market Act; - The Grid Code
	Later	- Enegy Market Law; - Nuclear Energy Law

The Electricity Market Act and the Estonian *Grid Code* give the legal framework for grid issues. In the near future the passing of the *Energy Market Law* and the *Nuclear Energy Law* is expected.

R&D Framework, Programmes and Policy

The Organisation of Research and Development Act determines the Estonian research environment (as presented in Table 22). The most relevant R&D funding programme in the context of Smart Grids is the *Energy Technology Programme*. The Estonian Energy Technology Programme (ETP) is a part of Estonia's R&D and innovation (R&D & I) Strategy, *„Knowledge-based Estonia 2007-2013"* Implementation Plan. It is its official energy related R&D programme, inclusive Smart Grids issues. The ETP is an inter-ministerial cooperation programme. The Ministry of Economic Affairs and Communications manages the programme.

Table 22 *R&D Framework, Programmes & Policy documents in Estonia*

R&D Framework, Programmes & Policy		Estonia
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**	***Available***	- Organisation of Research and Development Act
R&D - programmes	***Available***	- Energy Technology Programme
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps	***Available***	- Estonian Research and Development and Innovation Strategy 2007-2013: "Knowledge-Based Estonia" (Ministery of Education and Research)

The Estonian Research and Development and Innovation Strategy 2007-2013: "Knowledge-based Estonia" is published by the Ministry of Education and Research (www.hm.ee). It identifies general R&D challenges, vision and objectives for e.g. greater competitiveness of Estonia within the global research environment. Concrete research topics or areas are not content of this publication.

Scenarios, project information and platforms

Information on research programs, projects and funding can be found at the websites of several Estonian Ministries (see Table 23 and Table 24) as well as on the website of their institutions, e.g. *Enterprise Estonia (www.eas.ee), Archimedes Foundation (www.archimedes.ee)* and the *Estonian Science Foundation (www.etf.ee)*. Enterprise Estonia is a large institution within the national support system for entrepreneurship, providing financial assistance, advisory, cooperation opportunities and training for entrepreneurs, research establishments, public and third sector. Archimedes Foundation coordinated and implements different international and national programmes and projects in the field of training, education, research, technological development and innovation. The Estonian Science Foundation (ETF) is an organization funding experts' research. Its main objective is to support the most promising research initiatives in all fields of basic and applied research.

The three Ministries mentioned in Table 23 are funding energy projects in their area, but corresponding to the subjects of the ETP (see above).

Table 23 *Scenarios, Project Information & Platforms in Estonia*

Scenarios, Project Information & Platforms		Estonia
Project Data bases, Websites with Project information, Synopses books	***Available***	Project, Programme and Funding information: - *Ministry of Economic Affairs and Communication* (www.mkm.ee): Enterprise Estonia: Business and regional development promition; - *Ministry of Education and Research* (www.hm.ee): Archimedes Foundation, Estonian Science Foundation; - *Ministry of Finance* (www.fin.ee) Project data base: - Estonian research portal (www.etis.ee/portaal/projektiInfo.aspx?lang=en)
Scenarios	***Available***	- Information exchange in the context of opening the electricity market
Documents or Websites about National & regional networks and platforms		- Non

A detailed overview about projects (searchable also for terms like 'energy' or 'smart grids') is provided by the *Estonian research portal* (ETIS). Furthermore, in Estonia the *information exchange process in the context of opening the electricity market* has resulted in different *scenarios* about the future development of the electricity supply infrastructure. No documents or website about national or regional networks/ platforms in the smart grids context exist or are currently planned.

List of links to Estonian documents

The following Table 24 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 24 *Links to Smart Grids related documents in Estonia*

Estonian Documents	Links
Energy Technology Programme (Estonian)	www.eas.ee/index.php/ettevotjale/innovatsioon/energiatehnoloogia-programm/uldist
The Estonian Research and Development Council	www.valitsus.ee/en/government-office/research-and-development/research-and-development-council
Estonian Research and Development and Innovation Strategy 2007-2013 (English)	www.valitsus.ee/en/government-office/research-and-development
Long Term Public Fuel and Energy Sector Development Plan (Estonian)	www.mkm.ee/doc.php?10022
Energy Savings Target Programme 2007-2013 (Estonian)	www.mkm.ee/221420/
Physical and Social Environment Development Action Plan (Estonian)	www.struktuurifondid.ee/public/OP2_21juuni2007_EST.pdf
Energy Sector State Development Plan up to year 2020 (Estonian)	www.mkm.ee/326447/
Estonian Electricity Sector Development Plan until 2018	www.mkm.ee/public/ELMAK_EN.pdf
Electricity Market Act	www.konkurentsiamet.ee/?id=11925
Estonian Competition Authority	www.konkurentsiamet.ee
Enterprise Estonia	www.eas.ee
Estonian Science Foundation	www.etf.ee
Estonian Ministry of Economic Affairs and Communication	www.mkm.ee
Estonian Ministry of Education and Research	www.hm.ee
Ministry of Finance of the Republic of Estonia	www.fin.ee
Estonian Research Portal - projects data base	www.etis.ee/portaal/projektiInfo.aspx?lang=en

4.6. Flemish Region

National official documents, laws and rules

One core document regarding the energy strategy and transition path of the Flemish region: The *Flemish climate policy plan* (2006-2012; available in Flemish only) was designed by the Environment, Nature and Energy Department (www.lne.be/en).

Table 25 *National Official Documents, Laws and Rules in the Flemish Region*

National Offcial Documents, Laws & Rules		Flanders/ Belgium
National strategies, energy targets & strategies and transition paths	***Available***	- Flemish climate policy plan 2006-2012 (Flemish)
Laws and Rules in the energy sector that have implication on Smart Grids	***Available***	- No specific legislation giving link between energy sector measures and R&D; - RUE obligations for DNOs are in force

Like in most other countries, there is no specific legislation in place for Smart Grids or giving a link between energy sector measures and R&D. However, the *RUE obligations for DNOs* state that DNOs need to prove that they undertake activities with respect to energy savings. These might be subsidies for energy efficiency measures (heating, hot tap water, insulation, energy audits,...), or similar.

R&D Framework, Programmes and Policy

The Flemish region has ambitious goals towards playing a more and more important role within Europe. This is clearly stated in the following two documents as highlighted in Table 26: The central document which states the path for the R&D framework and most important R&D topic areas is *"Flanders in action – breaktroughs 2020"*. Within this document twenty objectives for turning Flanders into a top region and five crucial break- throughs to ensure and assure Flanders' future are formulated. In total 3% of Flandern's GDP will be spent on R&D by 2014 and Smart Grids in addition to logistics, ICT and health care is mentioned to get higher representation. One of the identified *6 R&D clusters* is *"Ecotech: Energy and Environment" enabled by the Flemish Smart Grids Platform*. Smart Grids are described to be capable of generating and distributing electricity and other energy in an efficient, cheap, reliable and environmentally friendly way, covering the whole energy value chain. The task of the Flemish Smart Grids Platform is to pave the way for the development and the market for the required technologies, products and services in a multidisciplinary and sustainable way.

Table 26 *R&D Framework, Programmes & Policy documents in the Flemish Region*

R&D Framework, Programmes & Policy		Flanders/ Belgium
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**	***Available***	- Vlaanderen in actie - doorbraken 2020 (Flanders in action - breaktroughs 2020); Green and dynamic urban region (action plan); - 6 R&D clusters and 5 focus points to 2020
R&D - programmes	***Available***	- General documents and funding strategic basic research programme; - IBBT ICON - Project documents; - MIP Programme - Procedure submisssion knowledge and development projectss (Flemish)
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps	***Available***	- Comission Energy: Challenges to 2030 - Flemish strategy and vision for smart grids (2009) (by the Flemish SG Platform)
	Later	- Technology Roadmaps are currently prepared by the Flemish SG Platform and in the LINEAR Smart Grids demonstration project

The general documents and websites of the R&D programmes (*IBBT ICON, MIP*) as regards submission requirements and procedure as well as development of projects are also listed in Table 28 below.

As strategic document which has influenced the Smart Grids development in Belgium the Commission Energy 2030 has accomplished a summary of *Belgium's Energy Challenges until 2030* in 2007. It states the prerequisites of a sound energy policy in Belgium highlighting that regulators were advised to also accept the costs for smart-grid adaptation on the distribution side.

A Flemish strategy and vision for Smart Grids (SG) was developed by the above mentioned Flemish SG Platform in 2009. Information can be found at www.vsgp.be (see Table 28 below), but in Flemish only. Additionally the Platform is currently preparing a Smart Grids Roadmap.

One big demonstration project in collaboration of industry and research institute in the Flemish Region is the *Linear* project (www.linear-smartgrid.be). Linear, standing for *"Local Intelligent Networks and Energy Active Regions"* attempts to develop a green and dynamic urban region in Flanders. It is financed by the Flemish government as well as the industry. As one of the outcomes of the project another SG roadmap is planned.

Scenarios, project information and platforms

The above-mentioned R&D programmes and the IWT SBO programme as well as the SME support programme also offer *project description and feedback analysis* of R&D projects. The IBBT ICON and SME information is available in English (compare Table 27).

Smart Grids scenarios can be found within the *Smart Grids deployment plan for Flanders* published by the SG Platform.

Table 27 *Scenarios, Project Information & Platforms in the Flemish Region*

Scenarios, Project Information & Platforms		Flanders/ Belgium
Project Data bases, Websites with Project information, Synopses books	***Available***	- IWT SBO general feedback analysis (Flemish); - IBBT ICON project descriptions; - MIP short project description (Flemish); - SME support programme: example projects accessible on website
Scenarios	***Available***	- Smart grids deployment plan for Flanders (2009 by SG plattform)
Documents or Websites about National & regional networks and platforms	***Available***	- ODE Vlaanderen: Promotion of renewable energy (Flemish only); - "Generaties" (industrial innovation platform for renewable energy technologies): Strategies for renewable energy; - Transitieplatform Vlaanderen: Transition to energy in buildings (Flemish only) Documents of the Flemish SG Platform - VSGP (partly English): - Flemish strategy and vision for smart grids (2009); - Flemish SG platform (feasibility study); - Reports of working groups; - Brochure of the Flemish SG Platform

Furthermore, several Smart Grids relevant networks and platforms exist in the Flemish Region: Firstly, *ODE Vlaanderen* (www.ode.be) is promoting renewable energy (website is in Flemish). Secondly, *Generaties* (www.generaties.net) is an industrial innovation platform for renewable energy technologies and accordingly, designs strategies for renewable energy deployment. It clusters Flemish companies which continually set standards in renewables through innovation in solar cell development and performance levels, world renowned developments in wind turbine key components and offshore applications, as well as advanced groundbreaking research in biofuels and their applications.

The *Transitieplatform Vlaanderen* is working on transition to energy in buildings (information on the website in Flemish). Finally, there is the already mentioned *Flemish Smart Grids Platform* (VSGP) which has published several documents (strategy and vision, SG feasibility study, working group reports, etc.). The documents are in part also available in English.

List of links to Flemish documents

The following Table 28 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 28 *Links to Smart Grids related documents in the Flemish Region*

Flemish Documents	Links
Flanders in action - breaktroughs 2020	www.flandersinaction.be/nlapps/data/docattachments/Brochure%20ViA%20(EN%20-%20April%202009).pdf
6 clusters & their focus points	www.vrwi.be/pdf/clusterbrochure-en.pdf
IWT - Project funding information & documents (Strategic basic research SBO)	www.iwt.be/english/funding
IBBT ICON Programme - Project documents	www.ibbt.be/en/projects/start-a-project/icon
MIP - Program website	www.mipvlaanderen.be/nl/webpage/1/homepage.aspx
Commission Energy 2030: Belgium energy challenges towards 2030	www.ce2030.be/public/documents_publ/CE2030%20Report_FINAL.pdf
LINEAR demonstraiton project	www.linear-smartgrid.be/?q=en
Flemish climate policy plan 2006-2012 (Flemish)	www.lne.be/themas/klimaatverandering/vlaams-klimaatbeleidsplan-2006-2012/vkp_2006-2012_def.pdf
RUE obligations for DNOs	http://codex.vandenbroele.be/ALLESNL/wet/detailframe.vwp?WETID=-1&SID=1
IWT SBO general feedback analysis (Flemish)	www.iwt.be/downloads/algemeen/steun/sbo/SBO_effectmeting_eindverslag_2007.pdf
IBBT ICON project description on website	www.ibbt.be/en/projects/overview-projects
MIP short project description available projects on website (Flemish)	www.vito.be/VITO/NL/HomepageAdmin/Home/kmo/kmosucces/
SME support programme: Partners/ position of examplar projects shown on the map	www.mipvlaanderen.be/maps/index.html
ODE Vlaanderen: Promotion of renewable energy (Flemish)	www.ode.be/
"Generaties" platform: Strategy documents for renewable energy	www.generaties.net/Default.aspx?tabid=241
Transitieplatform Vlaanderen (Transition to energy in buildings)	www.duwobo.be/
Flemish SG Platform - VDGP (Feasability study 2009)	www.vsgp.be/index.php?lang=enAnd
Documents of the Flemish SG Platform - VDGP (partly English)	www.vsgp.be/index.php?option=com_remository&Itemid=17&lang=en

4.7. France

National official documents, laws and rules

Official national documents and the legal framework that influences Smart Grids development in France is given by the documents listed in Table 29.

Table 29 *National Official Documents, Laws and Rules in France*

National Offcial Documents, Laws & Rules		France
National strategies, energy targets & strategies and transition paths	***Available***	- Report of expert group N°1 of the "Grenelle de l'Environnement": Climate change and energy management (French) - PROJET DE LOI ADOPTÉ PAR L'ASSEMBLÉE NATIONALE EN PREMIÈRE LECTURE, de programme relatif à la mise en œuvre du Grenelle de l'environnement
Laws and Rules in the energy sector that have implication on Smart Grids	***Available***	- LOI n° 2005-781 du 13 juillet 2005 de programme fixant les orientations de la politique énergétique (French) - PROJET DE LOI ADOPTÉ PAR L'ASSEMBLÉE NATIONALE EN PREMIÈRE LECTURE, de programme relatif à la mise en œuvre du Grenelle de l'environnement.

R&D Framework, Programmes and Policy

The current R&D framework in France is on one hand determined by *ADEME's rules for the attribution of subsidies for R&D and innovation projects* and on the other hand by *ADEME's strategic orientation for Research and Development* (2007-2010), see Table 30 and Table 32.

Currently, one very Smart Grids specific call for R&D exists, namely the call for *"Energy networks and demand side management"*. The equivalent document containing R&D implementation guidelines of the innovation policy which is available on the link provided in Table 32 is "Smart Grids, demand-side management and decentralised electricity production: Mounting a national R&D programme". The goals of this report were:

- **Analyse the role of actors in French research**, in terms of new knowledge to be acquired regarding electricity networks;
- **Propose a new conceptual framework for national R&D on electricity networks**, complementing work currently pursued by researchers in France, in order to explore in greater detail other possible futures for electricity networks;
- **Set up organisational and financial modes for this additional research**, based on a list of projects that clearly distinguishes between European and national public funding;
- **Link these proposed directions for research, organisation and funding to an industrial vision** ensuring that national manufacturers and parts makers will continue to rank among the top global competitors.

Table 30 *R&D Framework, Programmes & Policy documents in France*

R&D Framework, Programmes & Policy		France
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**	***Available***	- ADEME's rules for the attribution of subsidies for R&D and innovation projects; - ADEME's strategic orientation for Research and Development 2007-2010
R&D - programmes	***Available***	- Call for R&D projects "Energy networks and demand side management"
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps	***Available***	- Smart grids, demand-side management and decentralised electricity production: Mounting a national R&D programme; - Roadmap for smartgrids and electicity systems that integrate renewable energies

Additionally, there is a French roadmap for Smart Grids: *"Roadmap for smart grids and electricity systems integrating renewable energy sources"*. For this document, a group of experts identified 5 broad challenges that provide a framework for visions, bottlenecks and needs for research demonstrators in the field of Smart Grids. Furthermore, these challenges have been set into an economic framework in which the cost/ benefit analysis for the various actors in the system is a determining factor for the arbitration of the technological, economic, institutional and regulatory choices to come. The roadmap is available on ADEME's website (see according link in Table 32).

Scenarios, project information and platforms

There are no project data bases or specific websites with project information available. But there is one document available drawing scenarios which are not directly related to Smart Grids, but important in the Smart Grids System context: *„Energy Efficiency in the European Union: Overview of policies and good practices"* by ADEME (see also the link in Table 32). This report identifies eighteen energy efficiency measures according to criteria such as energy impact, implementation coherence, financing schemes or valid past evaluation.

Three platforms/ networks can be mentioned: *DERBI the competitiveness cluster*, *TENERRDIS* and *CEPENERGIES*. The first cluster DERBI (www.pole-derbi.com) is dealing with network management and storage, Energy-producing buidlings in a mediterranean climate and energy production outside buidlings and brings together business, laboratories, universities, training centres, professional associations, financial and regional collectives involved in the network of renewable energy throughout the Languedoc-Roussillon region (south of France).

The second cluster TENERRDIS (www.tenerrdis.fr) is a competitive cluster covering all sectors of new energy technologies. Besides energy production it also covers the transport and construction sector. Tenerrdis encourages project partnerships between companies, research institutions, training and institutional stakeholders.

Table 31 *Scenarios, Project Information & Platforms in France*

Scenarios, Project Information & Platforms		France
Project Data bases, Websites with Project information, Synopses books	***Available***	- not available
Scenarios	***Available***	- Energy efficiency in the European Union: overview of policies and good practices
Documents or Websites about National & regional networks and platforms	***Available***	- DERBI competitiveness cluster - TENERRDIS, a competitiveness cluster covering all the « New Energy Technologies » sectors - CAPENERGIES Energy generation with no greenhouse gases

Finally, CEPENERGIES promotes energy generation without greenhouse gas emission and its international goal is to develop R&D and to form industrial partnerships with foreign companies and groups in the field of climate change.

List of links to French documents

The following Table 32 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 32 *Links to Smart Grids related documents in France*

French Documents	Links
Smart grids, demand-side management and decentralised electricity production: Mounting a national R&D programm	www.google.at/url?sa=t&source=web&cd=1&ved=0CBsQFjAA&url=http%3A%2F%2Fwww2.ademe.fr%2Fservlet%2FgetBin%3Fname%3D91375DBF7A06A5CCF071CFAF3A6C0F7A1242119409511.pdf&ei=q8xSTd3cEM238QOQu4XrDQ&usg=AFQjCNE_P_E8BibdiANavtzQU7a_yDzY8Q
Roadmap for Smart Grids and electricity systems integrating renewable energy sources	www2.ademe.fr/servlet/getBin?name=EA7316C69FBD6C4A1AF9FD685A474A941260278372367.pdf
Energy efficiency in the European Union: overview of policies and good practices	www.marches.ademe.fr/servlet/getDoc?sort=-1&cid=96&m=3&id=58128&ref=17618&nocache=yes&p1=111
DERBI competitiveness cluster	www.pole-derbi.com/home_UK.asp
TENERRDIS cluster: New energy technologies sector	www.tenerrdis.fr/en
CAPENERGIES Cluster: Energy generation without greenhouse gases	www.capenergies.fr www.capenergies.fr/fichiers/anglais/gbv5.pdf

4.8. Germany

National official documents, laws and rules

The *Energy Concept of the Federal Government* defines the national strategy in the framework of Smart Grids, as stated in Table 33. The according link is provided in Table 36 below. Particular Laws and Rules that have implications on Smart Grids development in Germany were not mentioned in the questionnaire.

Table 33 *National Official Documents, Laws and Rules in Germany*

National Offcial Documents, Laws & Rules		Germany
National strategies, energy targets & strategies and transition paths	***Available***	- Energy concept of the Federal Government
Laws and Rules in the energy sector that have implication on Smart Grids		- not mentioned

R&D Framework, Programmes and Policy

As regards the R&D framework, Germany is one of the few countries examined having a particular framework for R&D in Smart Grids, named *eEnergy: Potential of ICT for the optimisation of energy supply and the energy consumption*. The related R&D programme is the E-Energy Programme with the focus on the ICT-based energy system of the future. Six model consortia have been awarded funds in the framework of a technology competition held by the Federal Ministry of Economics and Technology in close cooperation with the Ministry for the Environment, Nature Conservation and Nuclear Safety. Furthermore, focus areas of this programme are *innovation policies, information society and telecommunications.* The overall goal of the E-Energy Programme is „Paving the way towards an Internet of Energy“ with technical solutions for grid operation, new business models and electronic market places.

Table 34 *R&D Framework, Programmes & Policy documents in Germany*

R&D Framework, Programmes & Policy		Germany
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**	***Available***	- Potential of the Information and Communication Technology (ICT) for the optimisation of energy supply and the energy consumption (eEnergy)
R&D - programmes	***Available***	- E-Energy - Federal Ministry of Economics and Technology (BMWi), - Innovation policy, information society, telecommunications. E-Energy: Paving the way towards an Internet of Energy
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps	***Available***	- The German Roadmap E-Energy / Smart Grid, - Analysis and evaluation of standards and norms in the framework of the funding programme E-Energy (Federal Ministry for Economics and Technology)

Finally, a German Roadmap E-Energy / Smart Grids has been published (compare link in Table 36). Additionally, recently the within the E-Energy framework a report with analysis and evaluation of standard and norms in the Smart Grids context was elaborated.

Scenarios, project information and platforms

In Table 35 the German project data base and scenarios are highlighted. So a data base with knowledge from and for the E-Energy Projects exist, but it is not publicly accessible.

There are several scenarios available in the context of the Smart Grids development in Germany. First, there is the scenario *"Internet of the Energy"*, upon which the E-Energy Programme is built. Second, the *dena-Netzstudie* (Grid Study published by the German Energy Agency) focuses on scenarios of implications of the integration of renewables, especially wind power, on the German electricity grids. The goal of this study was to analyse system solutions for the German electricity grid until 2020 with outlook to 2025 to integrate a share of 39% renewable energy into the electricity supply system in the German transmission grid and in parallel, guarantee security of supply.

And finally, there is an estimation of the enhancement needs for the German distribution grids due to photovoltaic and wind integration until 2020.

Table 35 *Scenarios, Project Information & Platforms in Germany*

Scenarios, Project Information & Platforms		Germany
Project Data bases, Websites with Project information, Synopses books	***Available***	- Internal workspace of the E-Energy Programme (accessible only for project partners)
Scenarios	***Available***	- "Internet der Energie" (Internet of Energy) - ICT for energy markets of the future. The energy economy on the way to the internet era, - dena-Netzstudie II (Grid Study): Integration of renewable energies in the German electricity supply system 2015 - 2020 with outlook for 2025, - Estimation of the enhancement needs iof German distribution grids due to photovoltaic and wind integration until 2020
Documents or Websites about National & regional networks and platforms	***Available***	- Website of the E-Energy Programme (available in German and English)

The website for the E-Energy Programme/ Platform is: www.e-energy.de.

List of links to German documents

The following Table 36 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 36 *Links to Smart Grids related documents in Germany*

German Documents	Links
Potential of the Information and Communication Technology (ICT) for the optimisation of energy supply and the energy consumption (eEnergy)	www.e-energy.de/documents/Studie_Potenziale_Langfassung.pdf
E-Energy	www.e-energy.de/documents/RICHTL_ENERGY.pdf
Innovation policy, information society, telecommunications. E-Energy: Paving the way towards an Internet of Energy	www.e-energy.de/documents/BMWI_Brosch_E_EnergyV4_e_26_6.pdf
The German Roadmap E-Energy / Smart Grid	www.e-energy.de/documents/DKE_Roadmap_SmartGrid_230410_Engllish.pdf
Analysis and evaluation of standards and norms in the framework of the funding programme E-Energy (Federal Ministry for Economics and Technology)	www.e-energy.de/documents/2009-02-23_Untersuchung_des_Normungs-_und_Standardisierungsumfeldes_E-Energy(1).pdf
Energy concept of the Federal Government	www.bmu.de/files/english/pdf/application/pdf/energiekonzept_bundesregierung_en.pdf
"Internet der Energie" (Internet of Energy) - ICT for energy markets of the future.	www.e-energy.de/documents/BDI_InternetDerEnergie.pdf
dena-Netzstudie II (Grid Study)	www.dena.de/fileadmin/user_upload/Download/Dokumente/Studien___Umfragen/Endbericht_dena-Netzstudie_II.PDF
Estimation of the enhancement needs iof German distribution grids due to photovoltaic and wind integration until 2020	www.e-energy.de/documents/BDEW_Gutachten_Verteilnetze_Ausbaubedarf.pdf
E-Energy Platform	www.e-energy.de

4.9. Greece

National official documents, laws and rules

Several documents about national strategies, energy targets and transition paths are available of which one is the *Study for the development of the transmission system 2008-2012*, compare Table 37. The according link for the expansion of the study to the time frame 2010-2014 is provided in Table 39, but it is only in Greek available. Additionally, there is the *1st report for long-term energy planning in Greece 2008-2020.*

Table 37 *National Official Documents, Laws and Rules in Greece*

National Offcial Documents, Laws & Rules		Greece
National strategies, energy targets & strategies and transition paths	***Available***	- Study for the development of the transmission system 2008-2012 - Study for the development of the transmission system 2010-2014 (Greek) - 1st report for long term energy planning in Greece 2008-2020 - National Renewable Energy Action Plan in the scope of directive 2009/28/EC (June 2010)
Laws and Rules in the energy sector that have implication on Smart Grids		- Non

Another important document influencing Smart Grids development in Greece the *National Renewable Energy Action Plan in the scope of directive 2009/28/EC*. It was compiled under the supervision of the National Committee for Meeting 20-20-20 Targets and Other Requirements (20-20-20 Committee). It analyses measures and policies to achieve the 20-20-20 targets. As one particular measure the further development of the distribution grid based on the smart grids principles is highlighted. Furthermore, in the context of distribution networks intelligent networks are mentioned, enabled by smart meter technology which is of critical importance for integrating renewable energy into the network, as they are a necessary tool for demand side management.

No scenarios, project information or platforms are available in Greece.

R&D Framework, Programmes and Policy

In Greece there is neither any particular R&D framework nor R&D and innovation policy or innovation agenda/ roadmap for Smart Grids available.

However, Greece has lot of experience in R&D and demonstration projects about micro grids or islanded Smart Grids. One of the most recent projects is the R&D and demonstration project *"Green Island-Agios Efstratios"*. It was the political decision of the Greek government to fund initially a study (March-May 2009) for the electrification of a small (250 inhabitants) island 100% by renewable energy sources, applying also energy efficiency measures to houses and introducing e-mobility, biofuels, recycling practices, biological treatment of sewage, hydroponic agriculture, etc. The realization of the project "Green Island-Agios Efstratios" started in June 2009 and lasts for 3 years. The maximum budget available is 10 million Euro.

Table 38 *R&D Framework, Programmes & Policy documents in Greece*

R&D Framework, Programmes & Policy		Greece
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**		- Non
R&D - programmes	***Available***	- Demonstration and R&D project called "Green Island-Agios Efstratios" - Programme: Integrated autonmous energy systems (green islands) - call May 2009
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps		- Non

Furthermore, one research programme with the topic "*integrated autonomous energy systems (green islands)*" is applied. The first call started in May 2009.

List of links to Greek documents

The following Table 39 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 39 *Links to Smart Grids related documents in Greece*

Greek Documents	Links
National Renewable Energy Action Plan in the scope of directive 2009/28/EC (June 2010)	www.ypeka.gr/LinkClick.aspx?fileticket=CEYdUkQ719k%3d&tabid=37
Study for the development of the transmission system 2010-2014 (Greek)	www.desmie.gr/up/files/ΜΑΣΜ2010-2014.pdf

4.10. Italy

National official documents, laws and rules

There are not any laws on Smart Grids directly, but there exist many laws and decrees which have an indirect influence on their development, e.g. Laws and Directives for the penetration of renewables, Laws and Directives for the evolution of the transmission network and Laws and Directives for energy efficiency. They have important consequences for the development of smart grids in Italy.

Table 40 *National Official Documents, Laws and Rules in Italy*

National Offcial Documents, Laws & Rules		Italy
National strategies, energy targets & strategies and transition paths	***Available***	- Position Paper on Smart Grids
Laws and Rules in the energy sector that have implication on Smart Grids	***Available***	- Laws and directives for the penetration of renewables, - Laws and directives for the evolution of the transmission network, - Laws and directives for energy efficiency

R&D Framework, Programmes and Policy

In Italy R&D for smart grids is carried out under several frameworks: On one hand university researchis carried out under the supervision of MIUR (Ministero dell'Istruzione Università e Ricerca), while the MiSE (Ministero dello Sviluppo Economico) coordinates the public R&D activity called *Ricerca di Sistema* (RdS). The first legislative decree founding the RdS scheme is the *Decree 16 march 1999 n. 7*6, followed by the *Decree of the Ministry of Industry 26 January 2000* ("Individuazione degli oneri generali afferenti al sistema elettrico") and by the *Deliberation of the Italian regulator n. 53/00* ("diposizioni in materia di cassa conguaglio per il settore elettrico").

The funding scheme is based on a *fee on the electricity bill of each customer*, dedicated to national strategic research activities in the field of the electricity system (generation, transmission, distribution end use). Presently, the activities are regulated according to the *Decree of the Ministry of Industry, Trade and Handicraft dated 8 March 2006.* The activities in the framework of the RdS scheme are carried out following two main paths:

- specific agreements with public research centres: the major actor of this scheme is RSE as smart grids are the topical subject of this research company. ENEA and CNR have a minor role in the field of smart grids. In this funding scheme 100% of research costs are covered;
- applied research projects, with 53 M€ in 3 years of co-financing

In the specific case of the 4 Southern regions of Puglia, Campania, Calabria and Sicilia the *Programma Operativo Interregionale (POI Energia 2007-2013)* dedicated to the increase of the penetration of renewables and energy efficiency, funds operators to test and demonstrate technologies inclusive Smart Grids. *Calls for proposals* are published on the related website: http://www.poienergia.it/.

Finally, the Italian regulator (Autorità per l'Energia elettrica e il gas - AEEG) has awarded 8 pilot projects on Smart Grids to demonstrate the integration of renewables

at medium voltage level. The deliberation calling for proposals and the results of the call are available at the links in Table 43.

Table 41 *R&D Framework, Programmes & Policy documents in Italy*

R&D Framework, Programmes & Policy		Italy
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**	***Available***	- Decree 16 march 1999 n. 76, - Decree of the Ministry of Industry 26 January 2000 (Individuazione degli oneri generali afferenti al sistema elettrico) - Deliberation of the Italian regulator n. 53/00 (diposizioni in materia di cassa conguaglio per il settore elettrico)
R&D - programmes	***Available***	- Programma Operativo Interregionale (POI Energia 2007-2013), - Regulation of research funding: Decree of the Ministry of Industry, trade and handicraft date 8 March 2006, - Call for proposals of the Italian regulator (Autorità per l'Energia elettrica e il gas - AEEG) for 8 pilot projects on smart grids
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps	***Available***	- Priorities (2009-2011) for the 'Ricerca di Sistema' (System Research) scheme

The priorities (2009-2011) for the RdS scheme cover all the major aspects of smart grids technologies, with particular reference to:

- Renewable energy sources and their integration in the electrical system
- Asset management and system optimisation
- Communication techniques and power electronics
- Power quality
- Innovative materials and components
- Planning of electrical active networks
- Operation of power systems in presence of large shares of non-dispatchable renewables
- Scenario analysis and business cases evaluation
- Electricity storage and technologies
- Electrical vehicles
- Demonstration and verification of active system technologies by means of trial testing into an experimental testing facility
- Interrelation between the electrical system and the environment

Scenarios, project information and platforms

The results of the RdS for 2000-2005 and from 2006-present as well as activities carried out by ENEA in this scheme are available also at the links provided in Table 43.

Table 42 *Scenarios, Project Information & Platforms in Italy*

Scenarios, Project Information & Platforms		Italy
Project Data bases, Websites with Project information, Synopses books	***Available***	- Information about 'Ricerca di Sistema' projects (2000-present), - Activities carried out by ENEA
Scenarios	***Available***	- Scenario analysis are carried out in the framework of the Ricerca di Sistema scheme
Documents or Websites about National & regional networks and platforms	***Later***	- Permanent Italian Smart Grids platform is under construction. (Planning 2011)

Additionally there are scenarios available in the context of the RdS. Finally a permanent SG Platform is in preparation and foreseen to come into force in 2011.

List of links to Italian documents

The following Table 43 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 43 *Links to Smart Grids related documents in Italy*

Italian Documents	Links
Decree 16 march 1999 n. 76	www.ricercadisistema.it/testi/19990316.pdf
Decree of the Ministry of Industry 26 January 2000 (Individuazione degli oneri generali afferenti al sistema elettrico)	www.ricercadisistema.it/testi/20000126.pdf
Deliberation of the Italian regulator n. 53/00 (diposizioni in materia di cassa conguaglio per il settore elettrico)	www.ricercadisistema.it/Testi/20000309.pdf)
Regulation of research funding: Decree of the Ministry of Industry, trade and handicraft date 8 March 2006	www.ricercadisistema.it/testi/20060308.pdf)
Programma Operativo Interregionale (POI Energia 2007-2013)	www.poienergia.it
Call for proposals of the Italian regulator (Autorità per l'Energia elettrica e il gas - AEEG) for 8 pilot projects on smart grids	www.autorita.energia.it/it/docs/10/039-10arg.htm
Results of the Smart Grids call of the Italian regulator	www.autorita.energia.it/it/docs/11/012-11arg.htm
Priorities (2009-2011) for the 'Ricerca di Sistema' (System Research) scheme	www.autorita.energia.it/it/docs/10/007-10rds.htm
Information about 'Ricerca di Sistema' projects (2000-2005)	www.ricercadisistema.it
Information about 'Ricerca di Sistema' projects (2006-present)	www.rse-web.it
Activities carried out by ENEA	www.enea.it/attivita_ricerca/energia/ricerca_sistema_elettrico.html

4.11. Latvia

National official documents, laws and rules

As can be seen by Table 44, there exist a row of strategic documents influencing Smart Grids deployment in Latvia. On one hand the *Energy Development Conception 2007-2016* (in Latvian) lays foundations for the development of energy transmission lines and reviews alternatives for further base load power plants that could balance renewable energy production.

On the other hand the *Latvian Renewable Energy Strategy 2006-2013* (also in Latvian) aims to promote renewable energy sources. At least 1 pilot project should be carried out on national level for each technology of renewable energy sources. Public and EU funding should be attracted to carry out the research of renewable energy technologies. The share of electricity that is produced from renewable energy sources should be increased.

The *First Action Plan for Energy Efficiency in Latvia (2008-2010)* is not directly linked to Smart Grids, but refers to the broader context of reaching energy and efficiency target.

Table 44 *National Official Documents, Laws and Rules in Latvia*

National Offcial Documents, Laws & Rules		Latvia
National strategies, energy targets & strategies and transition paths	***Available***	- Energy Development Conception for 2007-2013; - Latvian Renewable Energy Strategy 2006-2013; - First Action Plan for Energy Efficiency in Latvia 2008-2010; - Regulation on Electricity Generation from Renewable Energy Sources and the Price Regulation, and the Methodology for Price Determination
Laws and Rules in the energy sector that have implication on Smart Grids	***Available***	- Electricity Market Law

Furthermore, the *Regulation on Electricity Generation from Renewable Energy Sources and Price Regulation*, and the *Methodology for Price Determination* are also in English available (compare Table 47). The goal of the regulations is to promote renewable energy sources using feed-in tariffs. It addresses important aspects in the concept of smart grids: Active participation of decentralised energy sources in the energy system. This feed-in tariff system is currently in effect, but the *Law on Renewable Energy Sources* could bring significant changes in the conditions of mandatory procurement.

Finally, the *Electricity Market Law* contains the most important guidelines for the electricity supply system.

R&D Framework, Programmes and Policy

Latvias R&D framework in general is organised by the *Law on Scientific Activity* (compare Table 45). The *Law on Energy* provided the legal framework for research in the energy field. Whereas *the Regulation of the Cabinet of Ministers no.443 "On submission, expertise and funding of National Research Programme"* determines the framework of the financing of the national research programme. Later in 2011 more information about the content of the programmes will be available.

One of these programmes is about research and elaboration of modern methods and high developed technologies in the field of energy *"Environmentally friendly energy, security of energy supply and energy efficiency" (2006-2009).* Focus points of a

second Smart Grids related programme are:

- Innovative Technologies of Acquisition and Use of Power Resources,
- Provision of Low Carbon Emissions through Renewable Energy Resources,
- Supporting Measures for Restriction of Environmental and Climate Degradation.

Table 45 *R&D Framework, Programmes & Policy documents in Latvia*

R&D Framework, Programmes & Policy		Latvia
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**	***Available***	- Law on Scientific Activity (R&D framework in general); - Law on Energy (R&D framework for energy research);
R&D - programmes	***Available***	- The Regulation of the Cabinet of Ministers no.443 "On submission, expertise and funding of National Research Programme"
	Later	- English information about the programmes (later 2011)
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps	***Available***	- Order of the Cabinet of Ministers no.594 "On the priority fields of research for the funding of fundamental and applied research from 2010-2013"; - Order of the Cabinet of Ministers no.668 "On the Action Programme "Enterpreneurship and Innovation""

The *Order of the Cabinet of Ministers no. 594* is not available in English. It defines that five areas of research will receive priority for funding, including the priority no.1 *"Energy and Environment"*. This priority includes research of smart grids-related technologies that promote the use of renewable energy sources.

The *Order of the Cabinet of Ministers no. 668* is also only in Latvian available. It defines the operational programme "*Entrepreneurship and Innovations"* funded by the European Regional Development Fund. This programme includes the funding priority area *"Science and Innovations"* where research projects are carried out that include smart grids-related topics. In total Latvia has got three operational programmes of EU funding.

Scenarios, project information and platforms

The most relevant website as regards the R&D project data base is the *Latvian Council of Science database* containing detailed information about fundamental and applied research projects and State Research Programmes (www.lzp.lv).

Within the project *"Information systems of electrical transmission and power generation systems for supervision of sustainability in Latvia"* regional grid development scenarios for 2010-2050 are drawn. The project was carried out by the Institute of Physical Energetics.

Table 46 *Scenarios, Project Information & Platforms in Latvia*

Scenarios, Project Information & Platforms		Latvia
Project Data bases, Websites with Project information, Synopses books	***Available***	- Latvian Council of Science database
Scenarios	***Available***	- Project "Information systems of electrical transmission and power generation systems for supervision of sustainability in Latvia" (regional grid development scenarios 2010-2050)
Documents or Websites about National & regional networks and platforms	***Available***	- Latvian Academy of Sciences (www.lza.lv) - Latvian Council of Science (www.lzp.lv)

The two national programme websites of the *Latvian Academy of Sciences* and the Latvian Council of Sciences lead to more detailed information in the Latvian research environment.

List of links to Latvian documents

The following Table 47 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 47 *Links to Smart Grids related documents in Latvia*

Latvian Documents	Links
Latvian research programmes in energy (Latvian and English)	www.innovation.lv/fei/national1.html www.innovation.lv/fei/projects/VPP_energetika_2010.pdf
Summary of the Latvian research programme in energy	http://izm.izm.gov.lv/upload_file/en/NATIONAL_RESEARCH_PROGRAMMES_eng.pdf
Order of the Cabinet of Ministers no.594 "On the priority fields of research for the funding of fundamental and applied research from 2010-2013 (Latvian)	www.likumi.lv/doc.php?id=196878
Order of the Cabinet of Ministers no.668 "On the Action Programme "Enterpreneurship and Innovation"	http://www.likumi.lv/doc.php?id=165552
Law on Scientific Actiivity	http://izm.izm.gov.lv/laws-regulations/2291.html
Energy Law (with amendments 2001) of Latvia & Electricity Market Law	www.lexadin.nl/wlg/legis/nofr/oeur/lxwelat.htm
Energy Development Conception for 2007-2013 and amendments (Latvian)	www.likumi.lv/doc.php?id=141070 www.likumi.lv/doc.php?id=175257
Latvian Renewable Energy Strategy 2006-2013 (Latvian)	www.likumi.lv/doc.php?id=146902
First Energy Efficiency Action Plan 2008-2010	www.buildup.eu/publications/1501
Regulation on Electricity Generation from Renewable Energy Sources and the Price Regulation, and the Methodology for Price Determination (English)	www.vvc.gov.lv/export/sites/default/docs/LRTA/MK_Noteikumi/Cab._Reg._No._262_-_Production_of_Electricity_Using_Renewable_Energy_Resources_and_Determination_of_the_Price.doc
Latvian Council of Science database (Latvian)	www.lzp.gov.lv/index.php?option=com_content&task=blogcategory&id=19&Itemid=53
Latvian Academy of Sciences	www.lza.lv
National review on the implementation of sustainable development	http://ec.europa.eu/sustainable/docs/report_2007_lv.pdf
Energy Development Conception for 2007-2013	http://polsis.mk.gov.lv/view.do?id=2017
Regional grid development scenarios 2010-2050	www.innovation.lv/fei/national1.html

4.12. Nordic Region

R&D Framework, Programmes and Policy

Currently there are no national official documents, laws and rules related to Smart Grids in the Nordic Region.

The R&D support environment of the Nordic Region, represented by the research funding agency *Nordic Energy Research* (www.nordicenergy.net), is defined by both periodic Plan: The *Nordic Energy Research Strategy Plan* and the *Action Plan* as listed in Table 48. The actual versions are covering the period 2011-2014. The Stratgy Plan is also in English available. The main points related to SmartGrids within these documents can be found in the thematic area *"Grids & markets"*. But also the other two thematic areas "Renewable Energy" and "Low Carbon Transport" are indirectly related to Smart Grids issues. In the following the in the field of "Grids & Markets" identified challenges, strengths and added value in a Nordic perspective are summarised:

- MAIN CHALLENGES: Increased amounts of energy from fluctuating renewable energy sources, decentralised production and expectations of electrification of the transport sector require intelligent grids and improved market solutions. The Nordic countries face common challenges within grids and energy markets. Strengthening existing Nordic energy policy cooperation is essential.
- NORDIC STRENGTHS: The Nordic countries are joined together in the most integrated electricity market in the world - having built a truly liberalised and harmonised market with several cross border interconnectors. The Nordic countries have great potential regarding renewable energy resources, and therefore a unique opportunity to for example, provide large amounts of wind power to the European market and to test new concepts for sustainable transport. The development and implementation of new solutions in markets and grids are very costly, time consuming and politically sensitive, thus they require a high degree of policy coordination.
- NORDIC ADDED VALUE: Nordic knowledge on market and grid issues should be further exploited in order to stay in the forefront in this area. A continued Nordic focus will facilitate the harvesting of economic and societal benefits from the integrated energy markets, contribute to increasing the security of supply and further economic development.

Table 48 *R&D Framework, Programmes & Policy documents in the Nordic Region*

R&D Framework, Programmes & Policy		The Nordic Countries
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**	***Available***	- Nordic Energy Research: Strategy & Action Plan 2007-2010 - Strategy Plan for 2011-2014 (english) - Action Plan for 2011-2014 (norwegian)
R&D - programmes	***Available***	
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps	***Available***	

In the latest R&D call all of the three focus areas are reflected, and it is preferred to have interplay between them. The aim with the "Market & Grids"-aspect is to optimise the energy market and to create a more intelligent and improved grid structure.

Scenarios, project information and platforms

Detailed *programme and project information* of the Nordic Energy Research Programme can be found on the *Nordic Energy Research website*, as noted in Table 50.

Scenarios where Smart Grids play a role are derived in the final report of the *Congestion Management in the Nordic market*. It was compiled by the Nordic Council of Ministers in 2008.

One official co-operation in the area of Energy in the Nordic Region is *Norden* (www.norden.org).

Table 49 *Scenarios, Project Information & Platforms in the Nordic Region*

Scenarios, Project Information & Platforms		The Nordic Countries
Project Data bases, Websites with Project information, Synopses books	***Available***	- Project information within research areas of Nordic Energy Research
Scenarios	***Available***	- Congestion Management in the Nordic market - evaluation of different models (Final report for the Nordic Council of Mininsters 2008)
Documents or Websites about National & regional networks and platforms	***Available***	- Norden - Official co-operation in the Nordic region: Energy

List of links to Nordic documents

The following Table 50 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 50 *Links to Smart Grids related documents in the Nordic Region*

Nordic Region Documents	Links
Nordic Energy Research: Programme and project information	www.nordicenergy.net
Nordic Energy Research: Strategy and Action Plan 2007-2010	www.nordicenergy.net/section.cfm?id=3-0&path=11,14
Nordic Energy Research: Application criteria and guidelines	www.nordicenergy.net/section.cfm?id=3-0&path=9,40
Project information within the research areas	www.nordicenergy.org/index.cfm?id=3-0
Congestion Management in the Nordic market	www.ea-energianalyse.dk/projects-english/730_congestion_management_in_the_nordic_electricity_market.html
Norden - Official co-operation in the Nordic region: Energy	www.norden.org/en/about-nordic-co-operation/areas-of-co-operation/energy/energy/

4.13. Norway

National official documents, laws and rules

The Norwegian information about national official documents, laws and rules are listed in Table 51. On one hand it is again referred to the official strategic document *Energi21*.

Table 51 *National Official Documents, Laws and Rules in Norway*

National Offcial Documents, Laws & Rules		Norway
National strategies, energy targets & strategies and transition paths	***Available***	- Energi21 (www.energi21.no): A collective R&D strategy for the energy sector in Norway
Laws and Rules in the energy sector that have implication on Smart Grids	***Available***	- Fact 2008 - Energy and water resources in Norway

On the other hand there is an additional document which discusses in detail Norwegian energy and water resources and summarises facts about the Norwegian energy system: *Fact 2008*. The corresponding link can also be found in Table 54.

R&D Framework, Programmes and Policy

The *RENERGI programme* is the primary R&D programme for Energy in Norway and is a so called "Large-scale programme" within the Research Council of Norway (RCN). Detailed project and framework descriptio is given at the link provided in Table 54. The Smart Grids topic is included in RENERGI. The Smart Grid related part of it is approximately 25%, that was for instance equivalent to approximately Kr. 75 million in 2009.

Table 52 *R&D Framework, Programmes & Policy documents in Norway*

R&D Framework, Programmes & Policy		Norway
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**	***Available***	- The RENERGI programme is a so called "Large scale programme" within the RCN
R&D - programmes	***Available***	- RENERGI: 25% rated for smart grids
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps	***Available***	- Strategic document Energi21: Smart Grids related topics, e.g. Electricity network of the future

The strategic document for research within the energy sector, *Energi21 (www.energi21.no)*, was completed in 2008. It is the collective R&D strategy in the energy sector. In this document Smart Grids are described within related topics like Electricity network of the future, Hydropower or Market, etc.

Scenarios, project information and platforms

In Norway there is a web-based project archive of the RENERGI programme available. It contains all the projects from start of the programme in 2004. The descriptions are partly in English, partly in Norwegian, but and "Smart Grids" is a searchable term.

Table 53 *Scenarios, Project Information & Platforms in Norway*

Scenarios, Project Information & Platforms		Norway
Project Data bases, Websites with Project information, Synopses books	***Available***	- Web-based project archive (RENERGI) (Norwegian) - Research programme organised by EBL (utilities' branch) (single English publications)
Scenarios	***Available***	- Foresight energy 2020+ (connected to RENERGI)
Documents or Websites about National & regional networks and platforms	***Available***	- The Norwegian Hydrogen Platform

Additionally, there exists another research programme organised by the branch organisation of the utilities, *EBL* (www.ebl.no). It is partly overlapping with the above archive of the RENERGI programme, but it is mostly in Norwegian.

The in Table 53 mentioned *Energy 2020+* document is a report from a foresight project by RCN. The goal of RCN for this project was to encourage a broad-based, open dialogue about the ranking of priorities in research and innovation policy. Therefore, and as a step towards introducing more dialogue-based working methods in the planning of major research initiatives, RCN launched 'Foresight' as a way of working in 2004. The five selected central fields for the launch of Foresight projects were aquaculture, biotechnology, materials technology, ICT and energy.

One technology platform, at least indirectly linked to Smart Grids issues is the *Norwegian Hydrogen Platform*.

List of links to Norwegian documents

The following Table 54 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 54 *Links to Smart Grids related documents in Norway*

Norwegian Documents	Links
The RENERGI programme of the Research Council of Norway (RCN): Project description	www.forskningsradet.no/servlet/Satellite?c=Page&cid=1226993846927&pagename=renergi%2FHovedsidemal
RENERGI Work Programme 2010-2013	www.forskningsradet.no/servlet/Satellite?blobcol=urldata&blobheader=application%2Fpdf&blobheadername1=Content-Disposition%3A&blobheadervalue1=+attachment%3B+filename%3DRENERGIProgramplanengelsk-preliminaryversion.pdf&blobkey=id&blobtable=MungoBlobs&blobwhere=1274462592981&ssbinary=true
The strategic document: Energi21	www.energi21.no
Energi21 Final Report 2008	www.forskningsradet.no/servlet/Satellite?blobcol=urldata&blobheader=application%2Fpdf&blobheadername1=Content-Disposition%3A&blobheadervalue1=+attachment%3B+filename%3Denergi21engweb1.pdf&blobkey=id&blobtable=MungoBlobs&blobwhere=1274462228453&ssbinary=true
Fact 2008 - Energy and water resources in Norway	www.regjeringen.no/en/dep/oed/Documents-and-publications/Reports/2008/fact-2008---energy-and-water-resources-i.html?id=536186
Web-based project archive of the RENERGI programme (Norwegian)	www.forskningsradet.no/servlet/Satellite?c=Page&cid=1226993846917&pagename=renergi%2FHovedsidemal
Research programme organised by EBL (utilities' branch) (single English publications)	www.energinorge.no/english/
Foresight energy 2020+	www.forskningsradet.no/servlet/Satellite?c=Page&cid=1226993846859&pagename=renergi%2FHovedsidemal
The Norwegian Hydrogen Platform	www.forskningsradet.no/servlet/Satellite?c=Page&cid=1232959058032&p=1232959058032&pagename=hydrogen%2FHovedsidemal
Hydrogen Initiative Action Plan 2007-2010	www.forskningsradet.no/servlet/Satellite?c=Page&cid=1236265866636&pagename=hydrogen%2FHovedsidemal

4.14. Slovenia

National official documents, laws and rules

The national research strategies and targets are reflected in the *National Energy Programme* (update 2010). The *Resolution on the National Research and Development Programme 2006-2010* (and the updated in 2011-2015) identifies most promising research areas including those enabling a sustainable economy. As an *example "[…] technologies in the domains of energy and environmental protection: technologies for the efficient use of energy, use of new and renewable energy sources* […]" are stated to be priority R&D fields. Smart Grids or grid issues are not explicitly stated.

Table 55 *National Official Documents, Laws and Rules in Slovenia*

		Slovenia
National strategies, energy targets & strategies and transition paths	***Available***	- The National Energy Program (update in 2010); - Resolution on the National Research and Development Programme 2006-2010 and the update for the period 2010-2015
Laws and Rules in the energy sector that have implication on Smart Grids	***Available***	- Energy Act

The energy Act additionally provides the framework for the energy supply in Slovenia.

R&D Framework, Programmes and Policy

The major documents building the environment for R&D in general in Slovenia are the *Research and Development Act*, the *Public Administration Act* as well as the *Republic of Slovenia Budget for 2008 and 2009 Implementation Act* as listed in Table 56.

As regards the particular R&D programmes related to the area of Smart Grids in Slovenia three documents have to be noted: First, the *Resolution on the National Research and Development Programme 2006-2010* identifies major fields of R&D. Furthermore, the *Decree on criteria and standard for allocating resources for the implementation of the National R&D Programme* and the *Rules on the procedures of implementing the budget of the Republic of Slovenia* regulate the distribution of the R&D budget to the programmes. Those documents are only available in Slovenian.

Slovenia has a wide range of innovation agendas and actions plans. The *National energy efficiency action plan for the period 2008-2016* is only available in Slovenian. Furthermore, there is the document *Operational programme of environmental and transport infrastructure development for the period 2007-2013* (also only in Slovenian). According to the national representative in the SG ERA-Net those documents have implications on the Smart Grids development in Slovenia. Finally, in this context the *Council of Competitiveness* has to be mentioned.

Table 56 *R&D Framework, Programmes & Policy documents in Slovenia*

R&D Framework, Programmes & Policy		Slovenia
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**	***Available***	- Research and Development Act; - Public Administration Act; - Republic of Slovenia Budget for 2008 and 2009 Implementation Act
R&D - programmes	***Available***	- Resolution on the National Research and Development Programme 2006-2010; - Decree on criteria and standards for allocating resources for the implementation of the National Research and Development Programme; - Rules on the procedures of implementing the budget of the Republic of Slovenia
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps	***Available***	- National efficiency energy action plan for the period 2008-2016 (Slovenian); - Operational programme of environmental and transport infrastructure development for the period 2007-2013 (Slovenian); - Council on Competitiveness - Recommendations of development teams

Scenarios, project information and platforms

Information about Slovenian R&D projects can be found in the *Slovenian Current Research Information System* (SICRIS). Additionally there are links to English description of Smart Grids projects on the website of the National Technology Platform for the Electricity Networks. Links can be found in Table 58.

Scenarios are derived by the *Council of Competitiveness*, as also mentioned above.

Table 57 *Scenarios, Project Information & Platforms in Slovenia*

		Slovenia
Project Data bases, Websites with Project information, Synopses books	***Available***	- Slovenian Current Research Information System - SICRIS - Links to English project descriptions on the website of the National Technology Platform for the Electricity Networks
Scenarios	***Available***	- Council on Competitiveness - Recommendations of development teams
Documents or Websites about National & regional networks and platforms	***Available***	- National Technology Platform for the Electricity Networks (Vision, Strategic Development Program, Projects)

The *National Technology Platform for the Electricity Networks* of Slovenia (www.smartgrids.si) is deriving vision, a strategic development program and projects in the field of Smart Grids.

List of links to Slovenian documents

The following Table 58 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 58 *Links to Smart Grids related documents in Slovenia*

Slovenian Documents	Links
National Reserch and Development Programme 2006-2010	www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/znanost/ang_verzija/NRDP.pdf
National efficiency energy action plan 2008-2016 (Slovenian)	www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/dokumenti/akcijski_nacrt_energetska_ucinkovitost.pdf
Operational programme of environmental and transport infrastructure development 2007-2013 (Slovenian)	www.euskladi.si/publikacije/OP/2007-2013/download/OP-ROPI.pdf
Rural Development Programme 2007-2013 (English)	www.arsktrp.gov.si/fileadmin/arsktrp.gov.si/pageuploads/Aktualno/Aktualno/2010/RDP2007-2013__en.pdf
Operational Programme for Strengthening Regional Development Potentials 2007-2013 (English)	www.svlr.gov.si/fileadmin/svlsrp.gov.si/pageuploads/KOHEZIJA/Programski_dokumenti/OP_Strength_regional_dev_potentials_FINAL.pdf
Slovenlan Current Research Information System - SICRIS	http://sicris.izum.si/default.aspx?lang=eng
National Technology Platform for the Electricity Networks	www.smartgrids.si/index.php?lang=en

4.15. Spain

National official documents, laws and rules

In Spain there are two official national strategic documents: On the one hand the *"2008-2012 action plan for the Savings and Energy Efficiency in Spain"* and on the other hand the *"Renewable Energy National Action Plan (PANER) 2011-2020"*, as listed in Table 59. Unfortunately, both documents are only in Spanish available.

As regards national laws and rule in the energy sector, there has to be mentioned the one *Order of December 28th, 2010 about electricity tariffs* in Spain. Furthermore there is the *Royal Decree regulating the activity of the electricity production scheme* and one website with information about the *Liberalization of the electricity market in Spain* (compare also the according links Table 62). All of them are only in Spanish available.

Table 59 *National Official Documents, Laws and Rules in Spain*

National Offcial Documents, Laws & Rules		Spain
National strategies, energy targets & strategies and transition paths	***Available***	- 2008-2012 action plan for the Savings strategy and Energy Efficiency in Spain (E4) - Renewable Energy National Action Plan (PANER) 2010-2020
Laws and Rules in the energy sector that have implication on Smart Grids	***Available***	- ITC/3860/2007 Order of December 28th, revising the electricity tariffs from January1, 2008 - Royal Decree 661/2007 of May 25th, regulating the activity of the electricity production scheme - Liberalization of the electricity market in Spain
	Later	- Royal Decree Proposal to regulate small power plant connection - Ministerial order to regulate the technical and quality requirements for a photovoltaic installation - Royal Decree Proposal to regulate the activity of a load manager

A series of laws and rules having implications on the development of Smart Grids are foreseen to be passed and published soon, such as the *Royal Decree Proposal to regulate small power plant connection*, the *Ministerial Order to regulate the technical and quality requirements for a photovoltaic installation* and finally the *Royal Decree Proposal to regulator the activity of a load manager.*

R&D Framework, Programmes and Policy

The roadmap of innovation in Spain is described in the *Spanish Innovation Plan for 2010* and the *State Innovation Strategy* (see Table 60). Soon another document will be published, namely the *Spanish Innovation Plan 2011-2013*. Its approval is currently pending. According to the Spanish representative in the ERA-Net Smart Grids both documents have implications on Smart Grids development in Spain.

The Spanish R&D and I (Innovation) programmes is manifested in the *INNPACTO national plan for 2011*. The major funding body for Smart Grids related R&D is the *Centro Para el Desarrollo Technológico Industrial (CDTI)*. The according links can be found in Table 62 as well.

Furthermore the R&D goals and topics (*R&D&I State Policies*) are described in the Working Programme "*Programa de Trabajo 2011*" of the Spanish Ministry of Science and Innovation", unfortunately only in Spanish available. Smart Grids as such are not mentioned directly in the document.

Table 60 *R&D Framework, Programmes & Policy documents in Spain*

R&D Framework, Programmes & Policy		Spain
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**	***Available***	- Spanish Innovation Plan for 2010 - State Innovation Strategy
	Later	- Future Spanish Innovation Plan for 2011 to 2013: Approval pending
R&D - programmes	***Available***	- INNPACTO national plan for 2011 - Research and development projects funded by CDTI - CENIT projects
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps	***Available***	- R&D&I state policies

Scenarios, project information and platforms

Two links with project information – one regarding the *R&D programme of CDTI* and the other one regarding *funded projects of the INNFLUYE* (list of funded projects with project titles) – can be found below.

There are no Scenarios influencing Smart Grids development in Spain available.

Finally there are several Spanish associations and technology platforms in Spain, as listed in the table below.

Table 61 *Scenarios, Project Information & Platforms in Spain*

Scenarios, Project Information & Platforms		Spain
Project Data bases, Websites with Project information, Synopses books	***Available***	- Projects funded by CDTI (Centre for the Industrial Technology Development) - Projects funded under the INNFLUYE
Scenarios	***Available***	- non
Documents or Websites about National & regional networks and platforms	***Available***	- FutuRed: Spanish platform for electrical grids - Spanish Wind Energy Association - Photovoltaic spanish platform - Technology Wind Platform - Desertec Platform - Renewable Energy producers association

List of links to Spanish documents

The following Table 62 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 62 *Links to Smart Grids related documents in Spain*

Spanish Documents	Links
Spanish Innovation Plan	http://www.boe.es/boe/dias/2010/05/22/pdfs/BOE-A-2010-8224.pdf
State Innovation Strategy	http://www.micinn.es/stfls/MICINN/investigacion/FICHEROS/Encyt.pdf
INNPACTO national plan for 2011	http://boe.es/boe/dias/2011/03/31/pdfs/BOE-A-2011-5824.pdf
Research and development projects funded by CDTI	http://www.cdti.es/index.asp?MP=7&MS=17&MN=2&TR=C&IDR=593
CENIT projects	http://www.boe.es/boe/dias/2010/05/04/pdfs/BOE-A-2010-7127.pdf
R&D&I state policies	http://www.micinn.es/stfls/MICINN/Investigacion/FICHEROS/PROGRAMA_TRABAJO_011_12-01-11.pdf
2008-2012 action plan for the Savings strategy and Energy Efficiency in Spain (E4)	http://www.boe.es/aeboe/consultas/bases_datos/doc.php?coleccion=indilex&id=2009/05992&txtlen=1029
Renewable Energy National Action Plan (PANER) 2010-2020	http://www.idae.es/index.php/mod.pags/mem.detalle/idpag.520/relcategoria.1021/relmenu.169
	http://www.idae.es/index.php/mod.documentos/mem.descarga?file=/documentos_20100630_PANER_Espana_version_final_[1]_cdb842de.pdf
ITC/3860/2007 Order of December 28th, revising the electricity tariffs from January 1, 2008	http://www.mityc.es/energia/electricidad/Legislacion/basica/2007/80.pdf
Royal Decree Proposal to regulate small power plant connection	http://www.mityc.es/energia/electricidad/Legislacion/basica/2007/110.pdf
Ministerial order to regulate the technical and quality requirements for a photovoltaic installation	http://www.mityc.es/energia/Tur/Queestur/Paginas/LiberacionSistemaRegulado.aspx
Royal Decree Proposal to regulate activity of a load manager	http://www.mityc.es/energia/electricidad/Legislacion/Documents/Propuesta_RD_Conexion_instalaciones_pequeña_potencia.pdf
Projects funded by CDTI (Centre for the Industrial Technology Development)	http://www.mityc.es/energia/electricidad/Legislacion/Documents/Propuesta_OM_Calidad_fotovoltaicas.pdf
Projects funded under the INNFLUYE	http://www.mityc.es/energia/electricidad/Legislacion/Documents/Propuesta_RD_gestor_de_cargas.pdf
FutuRed: Spanish platform for electricity grids	www.futured.es
Spanish Wind Energy Association	www.suelosolar.es/plf/
Photovoltaic Spanish Platform	www.reoltec.net
Desertec Platform	www.desertec.org
Renewable Energy producers association	www.appa.es

4.16. Switzerland

National official documents, laws and rules

As regards national strategies, energy targets and transition paths Switzerland is working on four major edges, namely Impact Assessment of Smart Grids, Smart Grids Roadmap, Research and Realisation action. The sub-contents of these areas that have been defined in the *Position Paper for Smart Grids* (see below) are listed in the following.

Impact Assessment:

- Estimation of the economic costs and the benefits of smart grids for Switzerland;
- Working out the framework conditions for the use of smart metering;
- To derive further necessary legal specifications.

Smart Grids Roadmap:

- Definition of the functional design of a Swiss Smart Grids;
- Definition of the target state with the help of different scenarios;
- Elaborating the necessary steps for an implementation and the accumulating costs;
- Working out the framework to finance "smart grids".

Research:

- Taking into consideration the main focus of the research programme of the Swiss Federal Office of Energy;
- Main focus on "smart grids" and "smart cities" in pilot and demonstration projects;
- Development of international relations;
- Participation of the relevant industrial initivatives of the EU Set plan.

Realisation actions:

- Energy Switzerland 2010 - 2020 and tenders;
- Increasing of energy efficiency with the help of smart grids.

Table 63 *National Official Documents, Laws and Rules in Switzerland*

National Offcial Documents, Laws & Rules		Switzerland
National strategies, energy targets & strategies and transition paths	***Available***	Position Paper Smart Grids: - Impact Assessment - Smart Grids Roadmap - Research strategies - Realization actions
Laws and Rules in the energy sector that have implication on Smart Grids	***Available***	- Electricity Supply Act (StromVG) and Energy Act (EnG)

The *Electricity Supply Act* and the *Energy Act* define the general framework conditions for the energy supply system in Switzerland and hence, influence the deployment of Smart Grids.

R&D Framework, Programmes and Policy

In Switzerland the primary R&D framework is given by a periodic *Four-year Strategy Report* compiled by the Swiss Federal Energy Research Commission (CORE). The current *Federal Energy Research Concept* is valid for the period 2008-2011

(available in French and German). Within the concept the core focus points of the energy research between 2008 and 2011 are defined. The electricity grid is one major point within the key research area “Efficient Energy Use”.

The research in Switzerland is coordinated by the *Swiss Federal Office of Energy* (SFOE).

Table 64 *R&D Framework, Programmes & Policy documents in Switzerland*

R&D Framework, Programmes & Policy		Switzerland
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**	***Available***	- Four-year strategy report (by CORE, Swiss Federal Energy Research Commission): Federal energy research concept 2008-2011 (in French or German); - Research coordiantion by Swiss Federal Office of Energy (SFOE)
R&D - programmes	***Available***	- Federal energy research programme: energy economic fundamentals 2008-2011 (in German); - Energy policy fundamental research programme (English); - Expert group for each programm (related to smart grids)
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps	***Available***	- Four-year strategy report (by CORE, Swiss Federal Energy Research Commission): Federal energy research concept 2008-2011 (in French or German);

Energy economic fundamentals for 2008-2011 are defined in the *Federal Energy Research Programme*. One expert group has been installed to each programme, and one of these is related to Smart Grids. Between 2008-2011 projects are foreseen in the area of “integration of distributed generation in the grid, grid models and the future of grid-bound energy supply”.

The *Energy Policy fundamentals research programme* focuses on economic, social and environmental issues relating to the extraction, distribution and use of energy. At the same time it focuses on a broad range of objectives such as supply security, fair pricing and protection of the environment.

Scenarios, project information and platforms

Detailed information about single projects can be found in the *Energy research data base* of the SFOE (Swiss Federal Office of Energy). The data base is in English, but most project descriptions are not in English language.

Finally, a *Position Paper of Smart Grids* is available (compare also link in Table 66). In the position paper it is highlighted that Smart Grids is seen as a central instrument to reach security of energy supply, efficient energy use, increased share of renewable energy sources and to decrease CO2 emissions. Therefore, the task of the SFOE is to proide according framework conditions - by consideration and integration of different stakeholder - to bring forward and coordinate the necessary activities. The defined key areas of actions which are elaborated in the position paper are listed above.

Table 65 *Scenarios, Project Information & Platforms in Switzerland*

Scenarios, Project Information & Platforms		Switzerland
Project Data bases, Websites with Project information, Synopses books	***Available***	- Energy research data base (SFOE) (Project descriptions partly in English)
Scenarios		- Not available
Documents or Websites about National & regional networks and platforms	***Available***	- Position paper smart grids

List of links to Swiss documents

The following Table 66 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 66 *Links to Smart Grids related documents in Switzerland*

Swiss Documents	Links
Eidgeno ssische Energieforschungskommission: Jahresbericht 2009	www.news.admin.ch/NSBSubscriber/message/attachments/18742.pdf
Electricity Supply Act (2007)	www.admin.ch/ch/d/sr/7/734.7.de.pdf
Energy Act (1998)	www.admin.ch/ch/d/sr/c730_0.html
Energy efficiency action plan and best practices (2008, German)	www.bfe.admin.ch/themen/00526/02577/index.html?lang=en&dossier_id=02578
Renewable energy action plan (2008, German)	www.bfe.admin.ch/themen/00526/02577/index.html?lang=en&dossier_id=02579
Energy policy fundamental research programme	www.bfe.admin.ch/forschungewg/index.html?lang=en
Other energy research databases	www.bfe.admin.ch/forschungewg/02546/index.html?lang=en
Federal energy research concept 2008-2011 (in German or French)	www.bfe.admin.ch/forschungewg/02354/index.html?dossier_id=01157&lang=en
Federal energy research programme: Energy economic fundamentals 2008-2011 (in German);	www.bfe.admin.ch/forschungewg/02354/02550/index.html?lang=en&dossier_id=02885
Energy research database (English)	www.bfe.admin.ch/dokumentation/energieforschung/index.html?lang=en
Position Paper Smart Grids (German)	www.bfe.admin.ch/dokumentation/publikationen/index.html?lang=en&start=0&marker_suche=1&ps_text=positionspapier%20smart%20grids&ps_nr=&ps_date_day=Tag&ps_date_month=Monat&ps_date_year=Jahr&ps_autor=&ps_date2_day=Tag&ps_date2_month=Monat&ps_date2_yea

4.17. The Netherlands

National official documents, laws and rules

The *Energierapport 2008 "Schoon en zuinig"* identifies ambitions in the area of energy conservation, sustainable energy supply and CCS (Carbon Capture and Storage). The Ministry of Economic Affairs issues an energy report at least every four years. The latest version recommended the formation of a national *Taskforce in the area of Smart Grids*, which has already been stated above. This formation resulted in the document "on the road to smart grids" (*Energie Transitie*) where public private partnerships and seven energy platforms were founded since 2002 and coordinated by co-operation between six ministries.

Table 67 *National Official Documents, Laws and Rules in the Netherlands*

National Offcial Documents, Laws & Rules		The Netherlands
National strategies, energy targets & strategies and transition paths	***Available***	- Energierapport 2008 (Dutch), - "EnergieTransitie", PPP and seven energy platforms since 2002 coordinated under co-operation between six ministries (Dutch) - Strategy from National Task Force
Laws and Rules in the energy sector that have implication on Smart Grids	***Available***	- Elektriciteitswet 1998

The primary legislation guiding the energy supply system in the Netherlands is given by the *Elektriciteitswet* (1998).

R&D Framework, Programmes and Policy

From 2004-2010 the *EOS programme* was the main framework for Dutch energy R&D, including Smart Grids. Currently (2011), EOS is in a process of re-evaluation. The *Long-Term Energy Research Strategy The Netherlands* (2006) gives the R&D framework for energy research. Chapter 5 of the strategy describes the electrical infrastructure and Smart Grids. The link to the strategy is listed in Table 70.

In July 2010, the *National Smart Grids Task Force* has issued its vision and strategy *"Op weg naar intelligente netten"* (on the road to Smart Grids), recommending Smart Grid experimental gardens on a larger scale. Decisions will follows in 2011.

Table 68 *R&D Framework, Programmes & Policy documents in the Netherlands*

R&D Framework, Programmes & Policy		The Netherlands
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**	***Available***	- "Besluit van 23 september 2004, houdende regels inzake de verstrekking van subsidies in het kader van energieonderzoek op lange termijn (Besluit EOS: lange termijn)", laws and rules (Dutch); - Vision and strategy "Op weg naar intelligente netten" on the road to smart grids (by National Smart Grids Task Force) - EOS Programme (2004-2010); - Long-Term Energy Research Strategy The Netherlands, november 2006;
R&D - programmes	***Available***	- Within the R&D framework as mentioned above.
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps	***Available***	- Innovatieagenda Energie, dated July 2008. (Energy Innovation Agenda); - The built environment of the Netherlands - Energy Innovation Agenda

In 2008 the *Innovatieagenda Energie* (Energy Innovation Agenda) was published. It indicates the various themes that the Dutch cabinet will focus on over the next few years. Smart Grids is mentioned as an intervention for sustainable electricity supply in the "Infrastructure: Learning and experimental"-category. Additionally, "A smart-

grid electricity network for plug-in hybrids and fully electric cars" is a major objective for 2020.

Furthermore, the document *The built environment of the Netherlands – Energy Innovation Agenda* gives "An outlook on energy-neutral new construction and sustainable existing buildings". An issue stated in many places in the document is sustainable electricity supply therefore the document can be seen as at least indirectly influencing Smart Grids deployment in the Netherlands.

Scenarios, project information and platforms

Access to the collected information of projects funded by the Ministry of Economic Affairs Agriculture and Innovation is possible on the Energie Onderzoek Subsidie's (EOS) website. But project descriptions mainly are in Dutch.

Scenarios are available in chapter 1.2 "Beelden van de elektriciteits-voorziening in 2050" of the *Energierapport* noted above.

As regards Smart Grids related platforms or networks in the Netherlands, there is one named "Vision2030" (since 2008), issued by Dutch TSO TenneT.

Another platform is *Dutch Power* (since 2005). It clusters utilities, equipment suppliers, manufacturers and authorities working together and exchanging information in the area of energy infrastructure.

Table 69 *Scenarios, Project Information & Platforms in the Netherlands*

Scenarios, Project Information & Platforms		The Netherlands
Project Data bases, Websites with Project information, Synopses books	***Available***	- Project data base (access, but project descriptions in Dutch)
Scenarios	***Available***	- "Beelden van de elektriciteitsvoorziening in 2050", scenarios in chapter 1.2 of the Energierapport 2008;
Documents or Websites about National & regional networks and platforms	***Available***	- Netbeheer Nederland: Cooperation of the Dutch TSO and DSOs; "Actieplan Decentrale Infrastructuur" 2008; "Smart Grids" publication; - "Vision2030", TenneT 2008; - "Dutch Power" since 2005; - National SmartGrids Taskforce (founded in 2009)

On a large symposium In January 2011 the *National Smart Grids Taskforce* tested its vision and strategy by asking a wide range of stakeholders (enterprises, energy companies, municipalities, building and construction, end-users) for feedback. The symposium is part of the process to decide later in 2011 about the experimental gardens, as mentioned above. *Results* of this test are available on the Agency NL's website (see links below).

List of links to Dutch documents

The following Table 70 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 70 *Links to Smart Grids related documents in the Netherlands*

Dutch Documents	Links
Op weg naar Intelligente Netten in Nederland, National Smart Grids Task Force (Danish)	http://www.rijksoverheid.nl/documenten-en-publicaties/rapporten/2010/09/02/op-weg-naar-intelligente-netten-in-nederland.html
Long-Term Energy Research Strategy The Netherlands	www.biofuelstp.eu/mgdownloads/NL_Biofuels_in_The_Netherlands.pdf
Besluit EOS: lange termijn van 23 september 2004	http://lexius.nl/besluit-eos-lange-termijn
The built environment of the Netherlands - Energy Innovation Agenda	http://www.senternovem.nl/mmfiles/Energy%20Innovation%20Agenda%20-%20The%20built%20environment%20of%20the%20Netherlands_tcm24-306299.pdf
Energy Innovation Agenda	http://www.nwo.nl/files.nsf/pages/NWOA_7QWC3X/$file/Energy%20Innovation%20Agenda%2009-09-2008_tcm24-281800.pdf
Energierapport 2008 (Dutch); Beelden van de elektriciteitsvoorziening in 2050	http://www.rijksoverheid.nl/documenten-en-publicaties/rapporten/2008/06/18/energierapport-2008.html
EnergieTransitie, public private partnerships and seven energy platforms since 2002 (Dutch)	www.energietransitie.nl
Elektriciteitswet 1998	wetten.overheid.nl/BWBR0009755/
Website of Agentschap NL on the area of smart grids (intelligente netten)	http://regelingen.agentschapnl.nl/content/intelligente-netten
Project data base (access, but project description in Dutch)	http://www.senternovem.nl/projecten/eos/index.asp?page=pa
Netbeheer Nederland & Press releases in English; Smart Grids publication	www.energiened.nl/Content/Cms/FreePage.aspx?FreePageID=50; www.energiened.nl/Content/News/PressReleasesUK.aspx?MenuItemID=62&SubmenuItemID=103; http://www.energiened.nl/_upload/bestellingen/publicaties/327_313162%20-%20Smart%20Grids.pdf
Actieplan Decentrale Infrastructuur 2008: co-operation between EnergieTransitie and Netbeheer Nederland.	www.senternovem.nl/mmfiles/Actieplan%20Decentrale%20Infrastructuur%20-%20PNG-PDEV-2008_tcm24-282906.pdf
Vision2030 (TenneT), English	www.tennet.org/english/images/Vision2030_tcm43-16413.pdf
Dutch Power since 2005, utilities, equipment suppliers, manufacturers and authorities working together and exchanging information on the area of energy infrastructure	www.dutchpower.net/

4.18. Turkey

National official documents, laws and rules

One important strategic document is the *Republic of Turkey Ministry of Energy and Natural Resources Strategic Plan* (2010-2014). On formulated aim within this strategy e.g. is "Increasing the share of the renewable energy resources within the energy supply". But it is not stated in detail, which role Smart Grids has or could have to reach this goal.

Table 71 *National Official Documents, Laws and Rules in Turkey*

National Offcial Documents, Laws & Rules		Turkey
National strategies, energy targets & strategies and transition paths	***Available***	- The Republic of Turkey Ministry of Energy and Natural Resources Strategic Plan (2010-2014)
Laws and Rules in the energy sector that have implication on Smart Grids	***Available***	- Electricity Market Grid Regulation; - Transmission System Supply Reliablity And Quality Regulation; - Electricity Market Balancing and Settlement Regulation; - Communiqué Regarding the Principles and Procedures of Financial Settlement in the Electricity Market; - Communiqué Regarding the Meters to be used in the Electricity Market; - Electricity Market Import and Export Regulation; - Communiqué Regarding Regulation of Market Management Revenue

In Table 71 a series of legal documents (regulations, communiqué) relevant in the smart grids context are listed. The links (if available) to these documents are provided in the table below.

R&D Framework, Programmes and Policy

The R&D framework is defined within the Turkish legislation and by the Supreme Council for Science and Technology. Details about the framework and policies are also summarised in the *IEA Report of Turkey* (2005).

The *9th Development Plan 2007-2013* (see link in Table 74 below) was prepared with the vision of *"Turkey, a country of information society, growing in stability, sharing more equitably, globally competitive and fully completed her coherence with the European Union"* as well as within the framework of the Long Term Strategy (2001-2023). For example one chapter is "Improving the Energy and Transportation Infrastructure". Within this chapter, the importance of a sound electricity infrastructure, security of supply as well as energy efficiency is highlighted. A formulated goal is to bring Turkey *"into the position of a transit country between energy producing and consuming countries by making efficient use of its existing geo-strategic location […]"*.

In the beginning of 2011 the *Renewable Energy Act* will be passed.

Table 72 *R&D Framework, Programmes & Policy documents in Turkey*

R&D Framework, Programmes & Policy		Turkey
R&D framework for research in smart grids? if not: **R&D-framework for energy research?** if not: **R&D-framework in general?**	***Available***	- R&D Framework in legislations; Supreme Council for Science and Technology; - IEA Report Turkey 2005; - 9th Development Plan
	Later	- Renewable Energy Act (beginning 2011)
R&D - programmes	***Available***	- Support programmes for Research/Education Communities; - Technology and Inovation Funding Programmes; - Industrial Thesis Supporting Programme SAN-TEZ (Turkish); - Supports of Technology Development Foundation (TTGV)
R&D and Innovation policy, Innovation Agenda, Technology Roadmaps	***Available***	- Vision 2023 Program

R&D support programmes related to Smart Grids are the *Research/Education Communities Programmes* and the *Technology and Innovation Funding Programmes*. Furthermore there is the *Industrial Thesis Supporting Programme SAN-TEZ*. Information (see links below) is only available in Turkish. Finally, the *Technology Development Foundation (TTGV)* is supporting R&D as well.

Scenarios, project information and platforms

TUBITAK has a *National Research Infrastructure Information System* with detailed project information. But no public access to the database is foreseen. The institution mainly dealing with Smart Grids issues is the *Turkish Electricity Transmission System Operator TEIAS*.

Table 73 *Scenarios, Project Information & Platforms in Turkey*

Scenarios, Project Information & Platforms		Turkey
Project Data bases, Websites with Project information, Synopses books	***Available***	- TUBITAK National Research Infrastructure Information Sytem; no access
Scenarios	***Available***	- Not available
Documents or Websites about National & regional networks and platforms	***Available***	- TEIAS - Turkish Electricty Transmission System Operator

List of links to Turkish documents

The following Table 74 lists all links to above mentioned Smart Grids related documents (if available online) and other websites.

Table 74 *Links to Smart Grids related documents in Turkey*

Turkish Documents	Links
General R&D Framework in legislations of The Scientific and Technological Research Council of Turkey	http://tubitak.gov.tr/sid/1003/pid/547/index.htm
Supreme Council for Science and Technology (for sub-programs in Turkish)	http://tubitak.gov.tr/home.do?sid=470&pid=468
The Report of Internationl Energy Agency Turkey 2005	www.iea.org/publications/free_new_Desc.asp?PUBS_ID=1480
9th Development Plan by T.R. Prime Ministry State Planning Organisation	http://ekutup.dpt.gov.tr/plan/ix/9developmentplan.pdf
Support programmes for Research/Education Communities	www.tubitak.gov.tr/sid/991/pid/547/index.htm
Technology and Inovation Funding Programmes	www.tubitak.gov.tr/sid/997/pid/547/index.htm
Industrial Thesis Supporting Programme SAN-TEZ Programme (Information in English is not available.)	www.sanayi.gov.tr/Pages.aspx?pageID=541&lng=tr
Supports of Technology Development Foundation of Turkey (TTGV)	www.ttgv.org.tr/en/r-d-project-supports
Vision 2023 Program	http://tubitak.gov.tr/sid/1005/pid/547/index.htm
The Republic of Turkey Ministry of Energy and Natural Resources Strategic Plan (2010-2014)	www.enerji.gov.tr/yayinlar_raporlar_EN/ETKB_2010_2014_Stratejik_Plani_EN.pdf
Electricity Market Grid Regulation	www.teias.gov.tr/yonetmelikler/grid.doc
Transmission System Supply Reliablity And Quality Regulation	www.teias.gov.tr/yonetmelikler/supply.doc
Electricity Market Balancing and Settlement Regulation	www.teias.gov.tr/yonetmelikler/balancing.doc
Communiqué Regarding the Principles and Procedures of Financial Settlement in the Electricity Market	www.teias.gov.tr/yonetmelikler/settlement.doc
Communiqué Regarding the Meters to be used in the Electricity Market	www.teias.gov.tr/yonetmelikler/meters.doc
Electricity Market Import and Export Regulation	www.teias.gov.tr/yonetmelikler/import.doc
Communiqué Regarding Regulation of Market Management Revenue	www.teias.gov.tr/yonetmelikler/MarketManagementComm.doc

TEIAS - Turkish Electricty Transmission System Operator	www.teias.gov.tr