JASPERS Networking Platform

Supporting investments in Smart Grids in 2014-2020

EIB's Financing for Smart Meters

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EIB's Financing for Smart Meters

- Background information on the EIB and eligibility
- Methodology used for EIB appraisals
  - Main costs and benefits to identify
  - Examples of projects

EIB's Financing for Smart Meters – Background (I)

- There are a number of key EU legislative instruments promoting smart metering
  - The Directive on the internal markets, 2009/72/EC

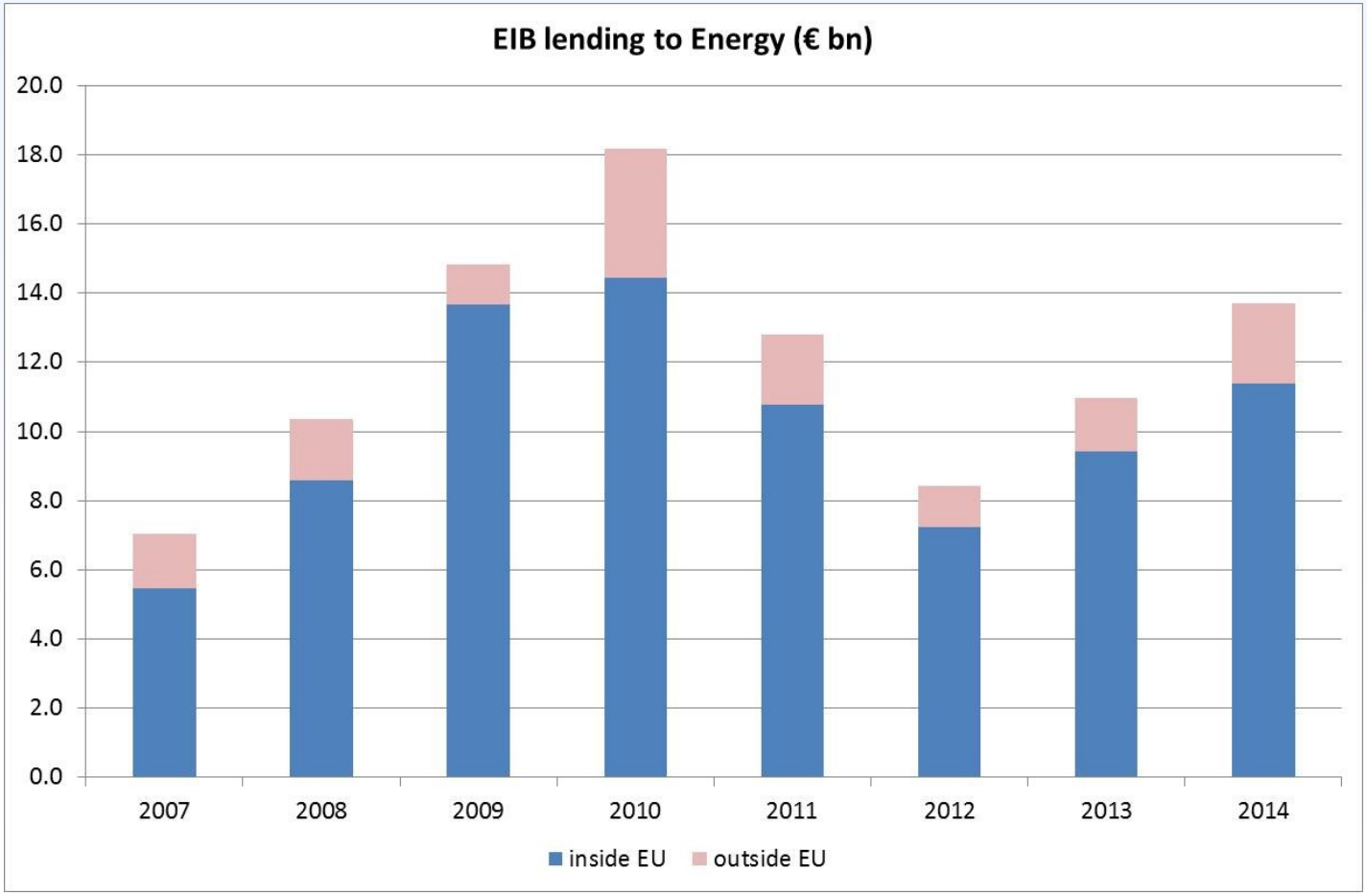
  Where roll-out of smart meters is assessed positively, at least 80% of consumers shall be equipped with intelligent metering systems by 2020;
  - Gas - Directive 2009/73/EC (Annex 1)

  Requires Member States to prepare a timetable for the roll-out of smart meters;

- Smart meters are eligible for EIB's financing, i.e. via corporate loans or project finance. The Bank's energy lending criteria (July 2013) clearly states that distribution investment programmes, **including roll-outs of smart meters** and, more comprehensively, **smart grid demonstration projects**, is one of the priorities.

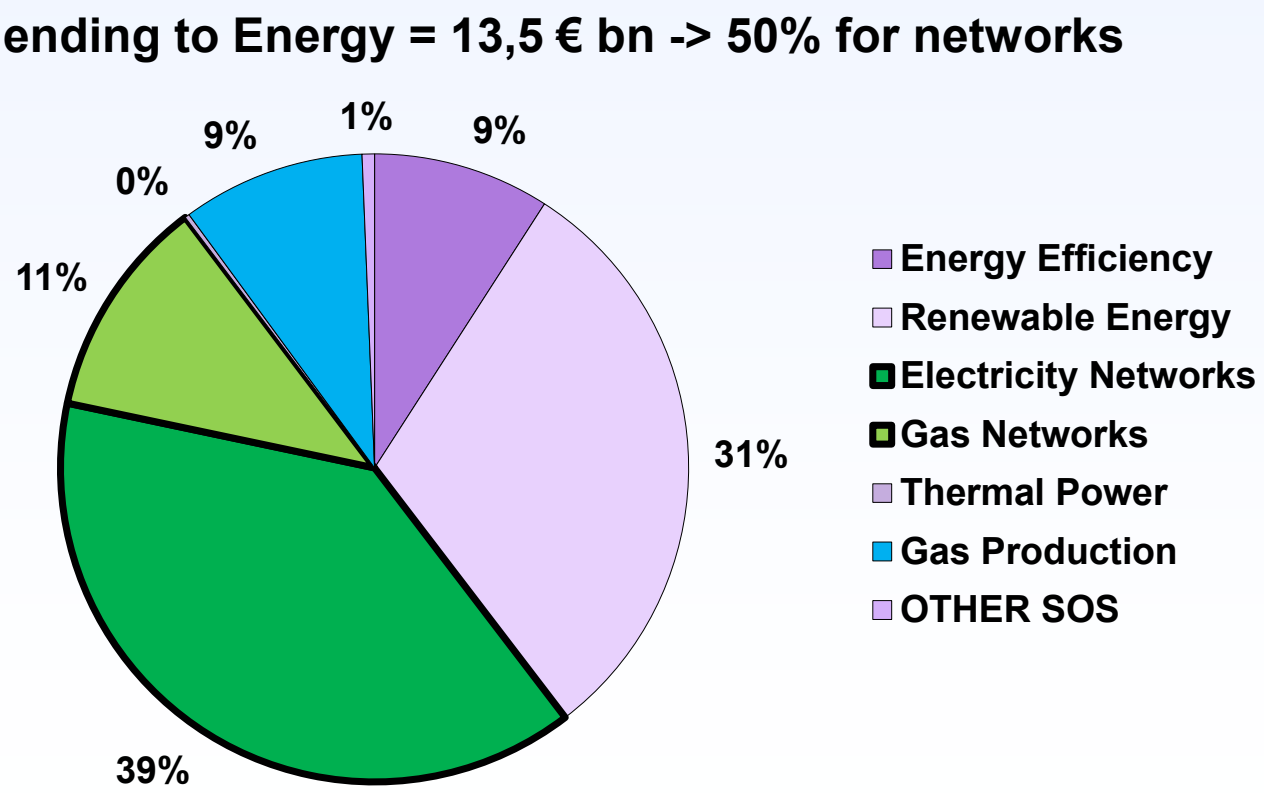
EIB's Financing for Smart Meters – Background (II)

- EIB's lending to the energy sector



EIB's Financing for Smart Meters – Background (III)

- For the past 5 years, 45% of all signatures in Energy were in energy networks



EIB's Financing for Smart Meters – Background (IV)

- Smart meters ≠ smart grids
- Less potential projects for smart meters in gas, in comparison with electricity, explained by the difference in results of national CBAs

- Evaluating smart meter projects – Just as any other project for the EIB, i.e. economic interest evaluated through a **Cost Benefit Analysis**
  - Specific conditions applied to the project
    - Economic life, regulation (incentivizing or not; level of cost control, …), technology applied (relevant for the list of benefits to expect), etc.
  - Relevant costs and benefits that are expected by the Promoter – some only qualitative, but goal is to quantify as many as possible
  - … Standardization allows for **comparison** of projects

- First things to know about the project:
  - CBA results in the country and Regulator's view on the project (regulated return rate envisaged; time-of-day tariffs envisaged?)
  - Main objectives of the roll-out (demand management; peak shaving; cutting commercial losses; regulatory obligation;…)
  - Unit cost expected for the meters

Cost Benefit Analysis – detailed information to collect

- Relevant costs
  - Capex (meters, installation, IT, communications, etc.)
  - Opex (incremental)
- Relevant benefits
  - Avoided costs
    - Conventional Meter Replacement Savings (avoided capex)
    - Reduced Maintenance and Meter Reading Cost Savings (avoided opex)
  - Reduction in commercial losses (fraud/theft), if applicable
  - Savings from induced reduction in demand (avoided generation)
  - Savings from peak shaving, if applicable
  - Reduced CO2 emissions from the above
  - Customer time savings (from avoided meter reading visits)

EIB's Financing for Smart Meters – Examples (I)

- First application at EIB
- GrDF project with 2.8 million gas meters
- France
- Q2/2013

- Followed by…

GrDF - Gas smart meters

- FRANCE -

ID: 2012-0521

Economic Analysis
(2013 Constant Prices)

General Assumptions	Units	
Discount Rate (SDR)	%	5
Start Year	-	2016
End Year	-	2031
Investment Cost	MEUR	413
CO_2 Allowances Scenario (base case)(2013 money)	EUR/tCO_2	
CO_2 emissions of supplied gas	tCO_2/TJ	56.1
Natural Gas Prices (2013 money)	EUR/MWh	1.02
Exchange rate	EUR/USD	1.3
Average annual growth gas demand without project	Δ/y	-1.3%
Impact on gas demand with project	Δ/BAU	-1.5%
Meters installed (EIB project)	Nr	2,818,286
Meters installed (TOTAL GrDF)	Nr	11,514,499
EIB project % in total GrDF investment programme	%	24.5%

			2014	2015	2016	2017	2018	2019	2020	2025	2030	2033
CO_2 Allowances Scenario (base case)(2013 money)	EUR/tCO_2		32.3	33.4	34.5	35.7	36.8	37.9	39.0	44.6	50.2	50.2
Natural Gas Prices (2013 money)	EUR/MWh	1.02	25.4	22.7	22.8	22.9	23.0	23.1	23.2	23.6	24.1	24.1

GrDF - Gas smart meters	Units	PV	2014	2015	2016	2017	2018	2019	2020	2025	2030	2033
Project Costs												
CAPEX per item of investment												
Main Equipments	MEUR		0	0	8	62	96					
IT and communications	MEUR		43	24	5	5	6					
Civil works / Installation	MEUR		0	0	6	48	74					
Studies	MEUR		10	12	14	0	0					
TOTAL	MEUR	344	52	36	33	115	176	0	0	0	0	0
OPEX												
Engineering and supervision	MEUR		2.3	2.9	8.7	18.8	18.0	13.2	12.7	0.8	0.8	0.8
IT and communications	MEUR		7.2	21.7	34.2	29.9	27.4	26.0	11.2	4.3	4.3	4.3
Replacement/failure of smart metering systems	MEUR		0.0	0.1	0.2	0.4	1.1	1.2	1.0	0.4	0.4	0.4
Costs of residual meter readings	MEUR		0.0	0.0	0.0	0.0	0.1	0.2	0.9	0.4	0.4	0.4
Call centre/customer care	MEUR		0.1	0.7	1.1	1.7	1.6	0.0	0.0	0.0	0.0	0.0
Staff Training - Conduct of change (including in project co	MEUR		0.0	0.5	0.6	5.3	5.7	5.5	5.2	0.8	0.8	0.8
Concentrator rental	MEUR		0.0	0.0	0.1	0.9	2.0	1.7	1.6	1.1	1.1	1.2
Revenue reductions (e.g. through more efficient consum	MEUR											
Additional bill printing costs	MEUR											
TOTAL	MEUR	317	10	26	45	57	56	48	33	8	8	8
Externalities and others												
Sunk costs from early meter replacement (within lifetime	MEUR				1	7	11					
Cost of changes to information system (for suppliers)	MEUR				1.0	0.0	0.1	0.1	0.2	0.3	0.3	0.3
Estimated Net Job Loss	nr											
Job Loss impact on GDP	MEUR											
CO_2 emissions	k tCO_2											
CO_2 emissions Cost	MEUR											
TOTAL	MEUR	18	0	0	2	7	11	0	0	0	0	0
TOTAL COSTS	MEUR	678	62	61	80	179	242	48	33	8	8	8
Project Benefits												
Number of Meters replaced (G4 to G10)	Nr/y				133,000	1,050,302	1,634,984					
Number of Meters replaced (G4)	Nr/y				127,536	1,014,388	1,576,569					
Number of Meters replaced (G6)	Nr/y				3,270	26,010	40,425					
Number of Meters replaced (G10)	Nr/y				2,194	9,904	17,990					
Average Unit Price of standard G4 meters (equip+install.)	EUR/meter	60.6										
Average Unit Price of standard G6 meters (equip+install.)	EUR/meter	88.8										
CAPEX for old meters replacement	MEUR				8	65	101					
Avoided CAPEX	MEUR	139	0	0	8	65	101	0	0	0	0	0
Reduced Meter Operating Costs	MEUR				0.0	3.1	3.4	2.1	1.6	0.5	0.5	0.5
Reduced Meter reading Costs	MEUR				1	3	10	11	11	12	12	13
Reduced call centre and customer care costs	MEUR											
Estmated reduction in billing cost	MEUR											
Avoided OPEX	MEUR	120	0	0	1	6	14	13	13	12	13	13
Gas demand for relevant customer base (w/o project)	GWh/y		150,800	148,885	147,572	144,819	142,782	140,846	139,043	130,207	122,912	118,493
Overall consumption reduction estimates	%	1.5%										
Reduction in Gas demand for relevant customer base (wi	GWh/y		0	0	26	223	524	517	510	478	451	435
Country savings from reduced consumption	MEUR		0	0	1	5	12	12	12	11	11	10
Gas theft/fraud w/o project (non-technical losses)	TWh/y	1.6										
Gas theft/fraud with project (non-technical losses)	TWh/y	1.2										
Reduction in non-technical losses (EIB portion)	GWh/y		0	0	5	30	93	101	103	108	113	117
Recovered revenue from reduction of non-technical losse	MEUR		0	0	0	1	2	2	2	3	3	3
Net change in suppliers revenue (reduction of demand a	MEUR		0.0	0.0	0.0	-0.2	-0.5	-0.5	-0.5	-0.4	-0.4	-0.4
Benefits from reduced consumption and losses	MEUR	125	0	0	1	6	14	14	14	13	13	13
Balancing costs	MEUR		0	0	0	0.1	0.2	0.2	0.2	0.2	0.3	0.3
Costs of covering risks of estimated billing	MEUR		0	0	0	0.1	0.3	0.3	0.3	0.3	0.3	0.3
Management of claims	MEUR		0	0	0	0.1	0.2	0.3	0.3	0.3	0.3	0.3
Special changes	MEUR		0	0	0	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Suppliers (Gas shippers) savings	MEUR	10	0	0	0	0	1	1	1	1	1	1
Time savings from reduction in complaints	H/y/meter	0.001										
Time savings from avoided physical meter readings	H/y/meter	8.00										
Meters not accessible	%	21%										
Share of working population in the country	%	50%										
Value of time in France	EUR/hour	14.53										
Customer Time Savings (only G4 Meters)	MEUR	309	0	0	2	14	33	33	33	33	33	33
Reduced CO2 emissions due to fuel savings in meter reac	k tCO_2				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Reduced CO_2 costs due to avoided metering	MEUR				0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Reduced CO_2 emissions due to reduction in gas demand	k tCO_2				5	45	106	104	103	97	91	88
Reduced CO_2 costs due to reduction in gas demand	MEUR				0	2	4	4	4	4	5	4
Environmental Benefit	MEUR	40	0	0	0	2	4	4	4	4	5	4
TOTAL BENEFITS	MEUR	742	0	0	11	93	166	65	65	64	65	65
PROJECT CASH FLOW	MEUR	64	-62	-61	-69	-87	-76	17	32	56	57	57
EIRR (15y)		7%										

EIB's Financing for Smart Meters – Examples (II)

- Followed by:
  - Gas
  - Italy (1.2M)
  - UK (5M+)
  - Electricity
  - Spain (6.9M)
  - Slovenia (0.2M)
  - Poland (0.3M)
  - UK (5M+)
  - Austria (smart grids)
- Prices are quite diverse
- Different technologies, regulatory setups, …

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