



EIB support to Energy Efficiency



BP Madrid Forum



Isidoro Tapia

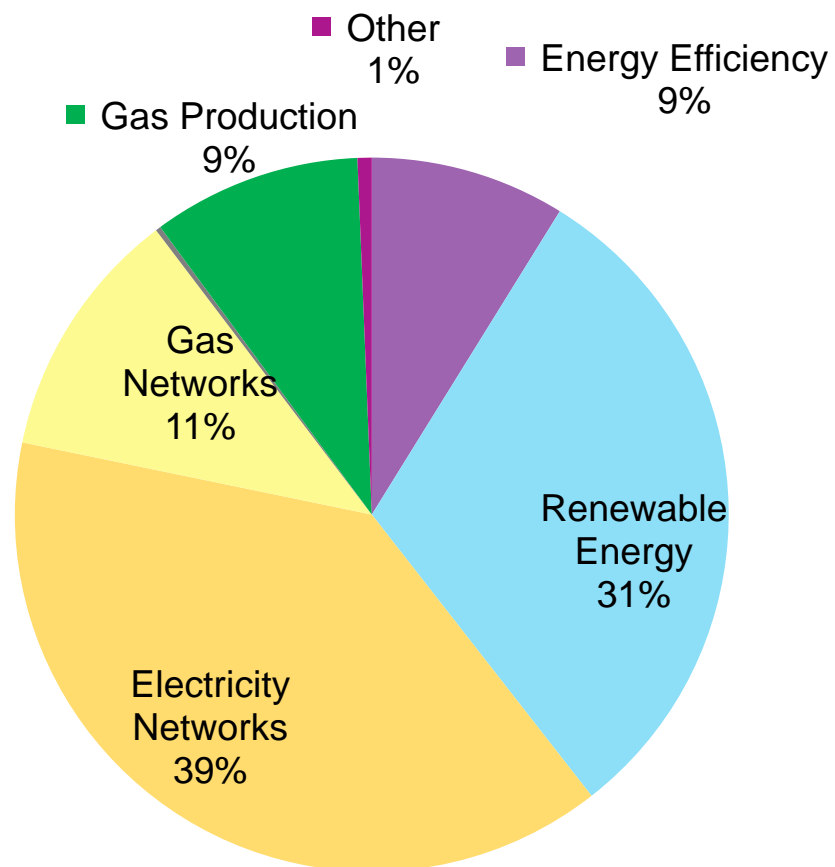
Energy Efficiency and Small RE Division

Projects Directorate

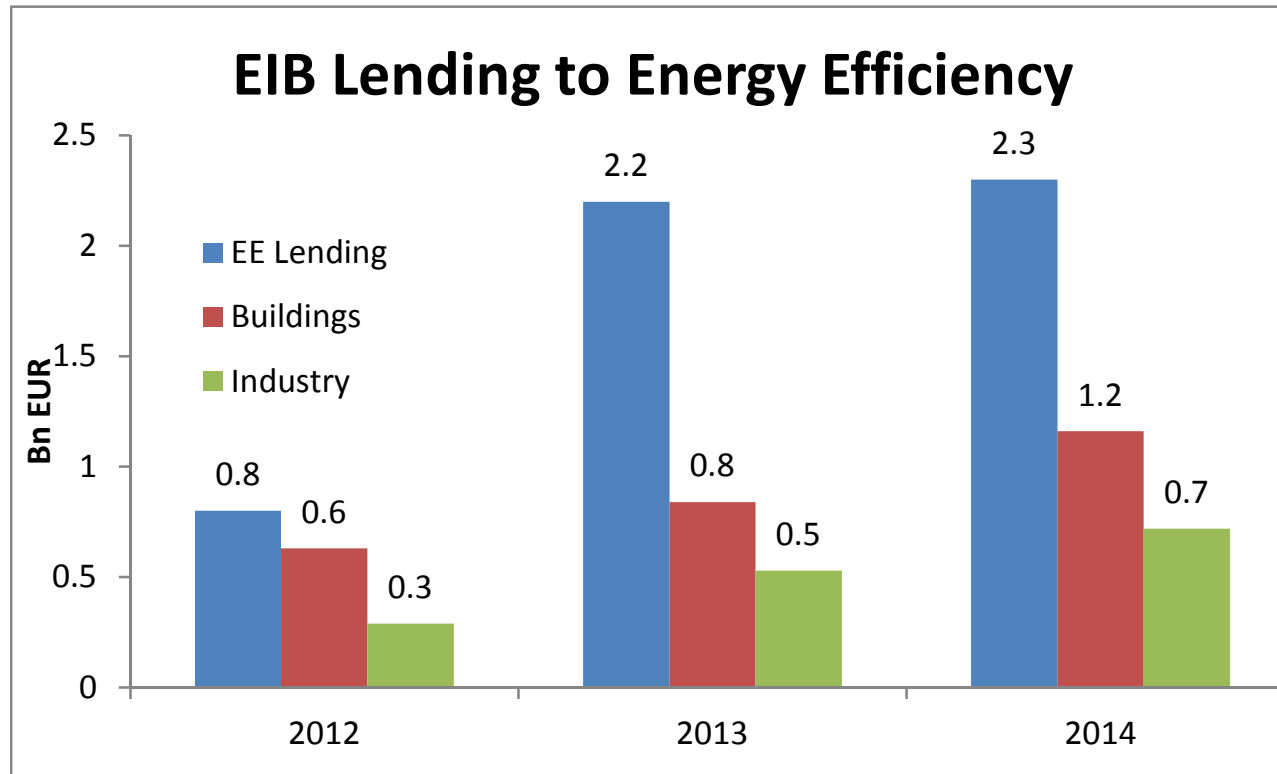
EUROPEAN INVESTMENT BANK

Madrid, September 29th 2015

2014 EIB Lending to Energy - 13.5 bn EUR (out of 77 bn EUR of total lending)



Upwards trend for EE



Why Energy Efficiency?

- EU imports 53% of energy needs at an annual cost of around €400 billion (first energy importer in the world)
- In the short term, EE is the only solution to the energy trilemma: competitiveness, security of supply and decarbonization.

1% of energy saved = 2.6% reduction in gas imports

What are the investment needs?

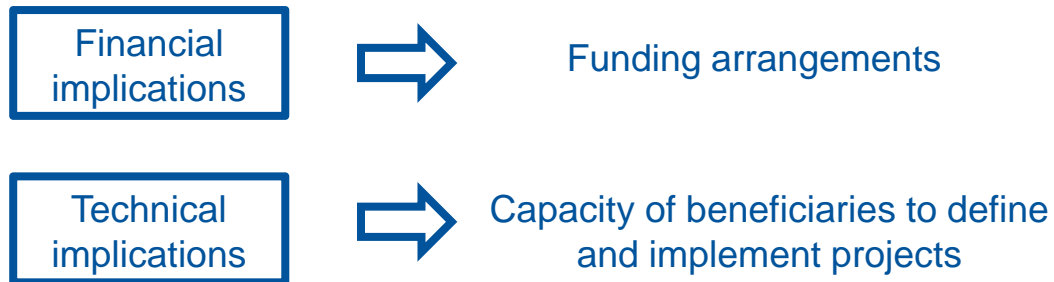
Estimated energy efficiency investments by sector in bn EUR to comply with the new 2030 framework of 40% GHG target:

Category	2011-2020	2021-2030 Previous Policy Scenario	2021-2030 40% GHG Target	Difference between GHG40 and Reference scenario
Buildings	656	345	833	489
Out of which Residential	454	261	531	270
Out of which Tertiary	202	83	302	219
Industry	166	222	313	91

Buildings account for ~ 40% of EU final energy consumption [transport for ~33% and industry for ~26%]. Given low annual new build rate (1.5%), pressure is on building renovation

What are the barriers?

- FRAGMENTATION OF PROJECTS

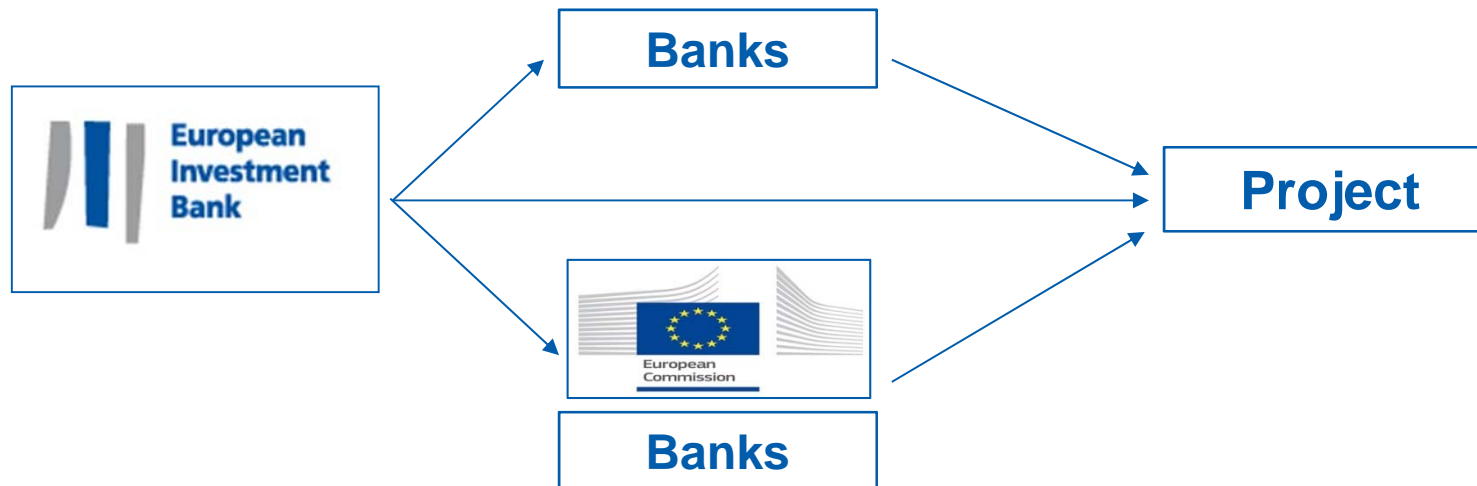


- WEAK INCENTIVES

- ➡ Long pay-back periods ?
- ➡ Subsidised heating costs / Decreasing prices
- ➡ Diverging incentives in rental properties

EIB products

- Investment loans (direct) – barriers usually taken care of
- Framework loans (intermediated) – to promote aggregation and crowding in of commercial lending
- Investment funds (equity) – to catalyse private investors
- Technical assistance – typically upstream, with or without links to operations



Co-financing of regional / municipal programmes

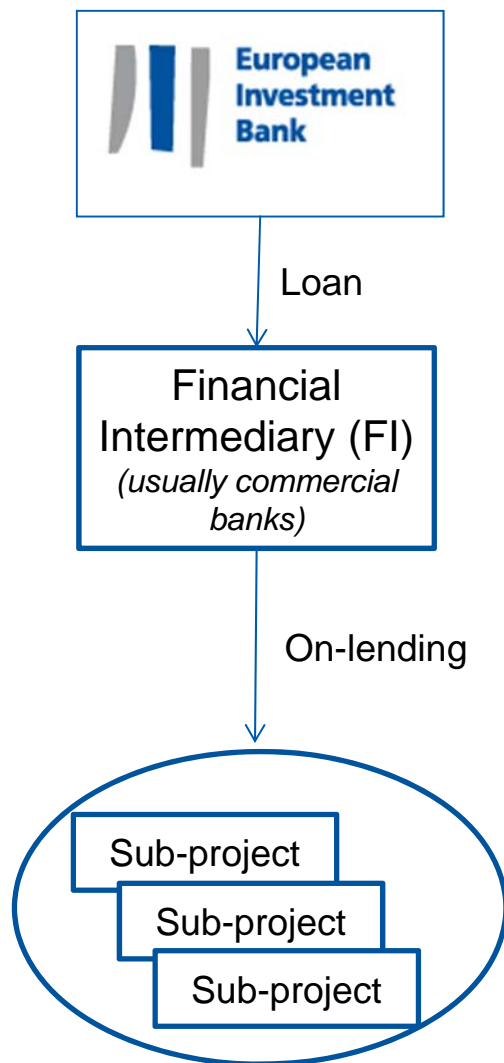


INVESTMENT LOAN

- Loans to Regions/Municipalities
- In the context of an EE scheme
- Thermal rehabilitation of residential buildings
- Measures recommended through energy audits, typically thermal insulation of building envelope
- Verification ex-post of EE savings

Framework loans for EE&RE projects

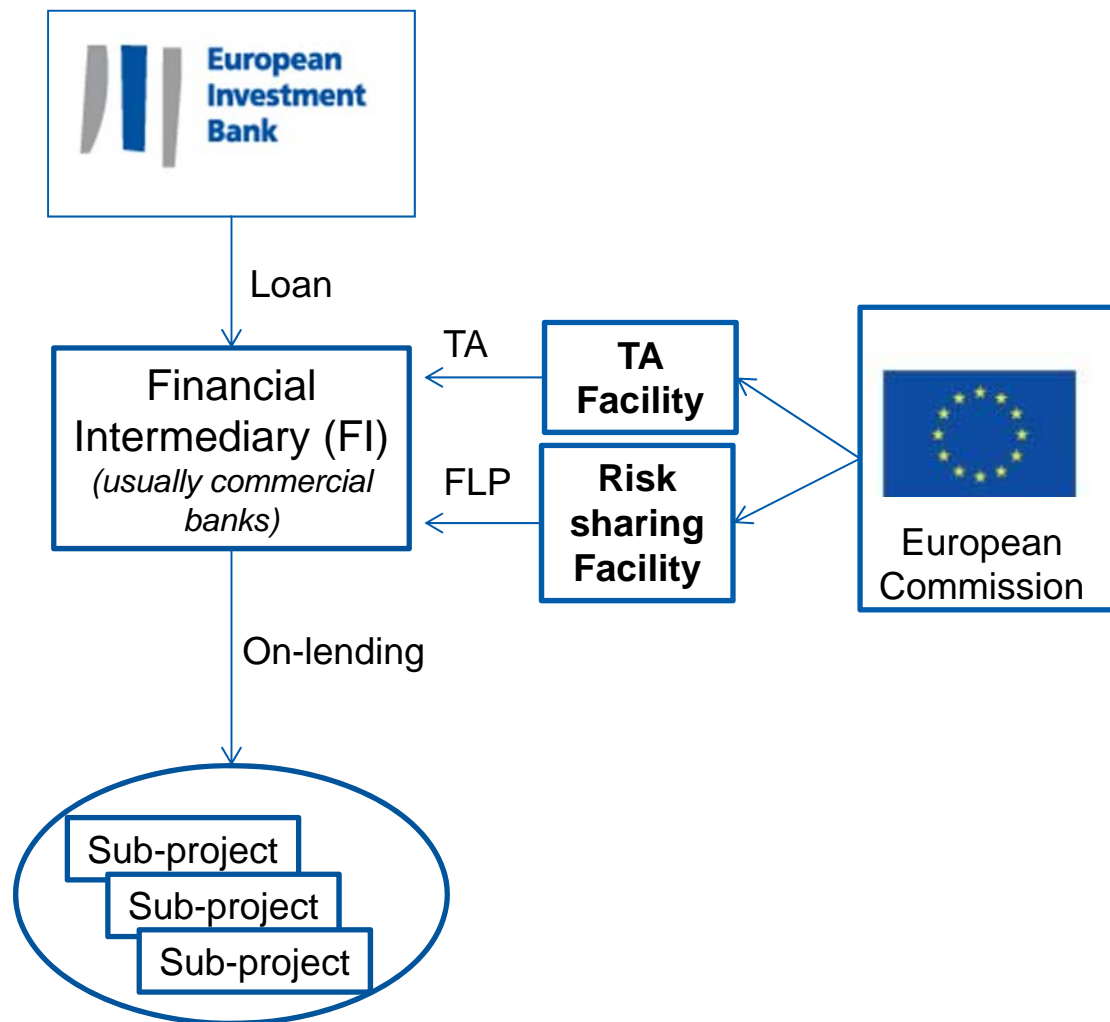
INTERMEDIATED LOAN



- Sub-projects \ll 50 MEUR
- FI to perform the due diligence of projects
- Beneficiaries:
 - Public bodies
 - Private promoters
 - Individuals
 - SMEs...
- Advantages for beneficiaries:
 - Allows financing of smaller projects
 - Faster (delegated) approval process

Private Finance for EE (PF4EE)

INTERMEDIATED LOAN

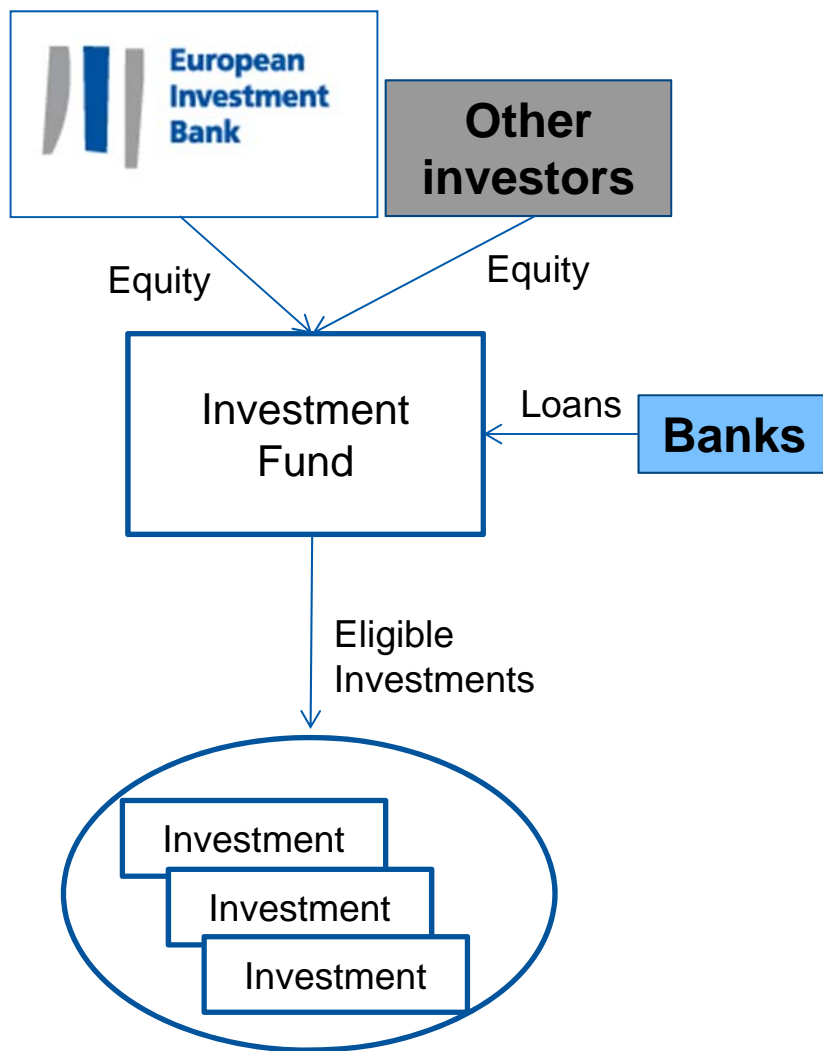


TA = Technical Assistance
 FLP = First Loss Protection

- Same as framework loans but enhanced support to FI:
 - mitigation of credit risk
 - TA to screen and monitor projects

Investment funds targeting EE&RE

FUND



- Equity investment in funds investing in EE&RE
- Catalytic effect to mobilize private investors

TECHNICAL ASSISTANCE (to promoters)

- Joint Assistance to Support Projects in European Regions
- EC-EIB-EBRD cooperation since 2006, with over 100 staff in 4 locations (Luxembourg, Vienna, Warsaw and Bucharest)
- Objective is to ensure high quality project applications with a view to rapid approval by the EC in all sectors benefiting from ESI funds
- Beneficiaries: Managing Authorities and project promoters (typically national, regional or even local authorities and other public bodies)
- <http://www.jaspers-europa-info.org/>
- <http://www.jaspersnetwork.org/>

European Local ENergy Assistance - ELENA

TECHNICAL ASSISTANCE (PDA)

- EC-EIB cooperation to support local and regional authorities to reach 20-20-20 targets
- Grant facility (Project Development Assistance)
- Eligible investments: EE, RE, clean transport
- Budget: variable, but around 20 mEUR / year
- Market replication focus
- Minimum investment leverage required (x20)
- Supported projects/programmes around EUR 3.7 billion
- <http://www.eib.org/products/advising/elena/index.htm>

Conclusions

- Energy efficiency is a priority for the EIB
- Huge investment needs requires crowding-in of commercial funding and private investors
- Fragmentation as main problem, but it can be mitigated with:
 - Project aggregation (EE schemes)
 - Promoter aggregation
 - Financial intermediation
 - TA to promoters and financial intermediaries

And now



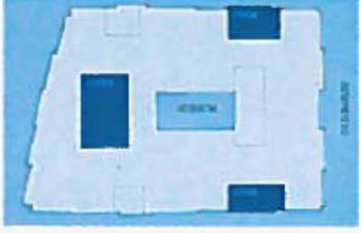
“The problem about energy efficiency is that there’s no ribbon to cut”

Daniel Yerguin, The Quest

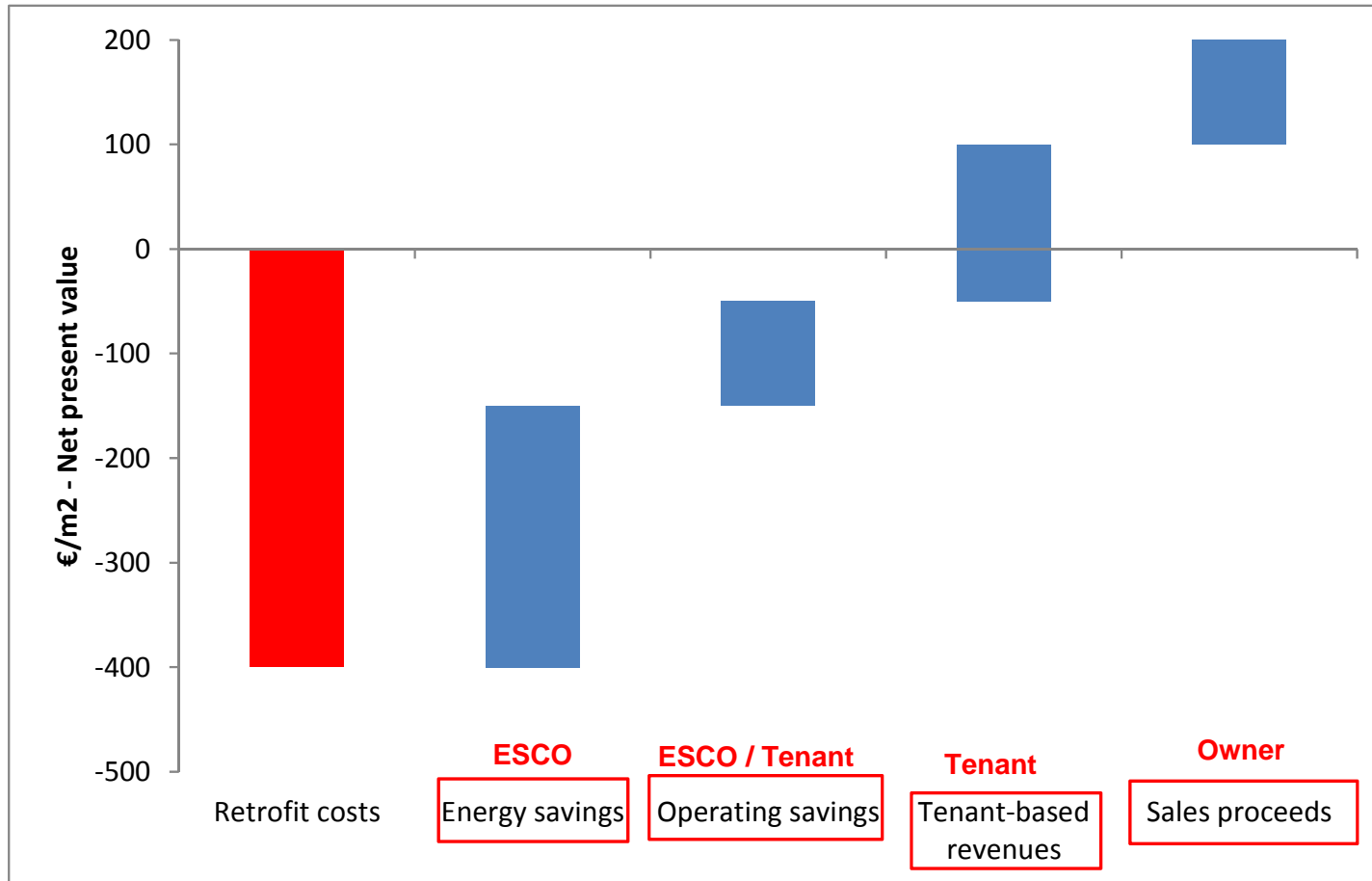


A typical refurbishment project

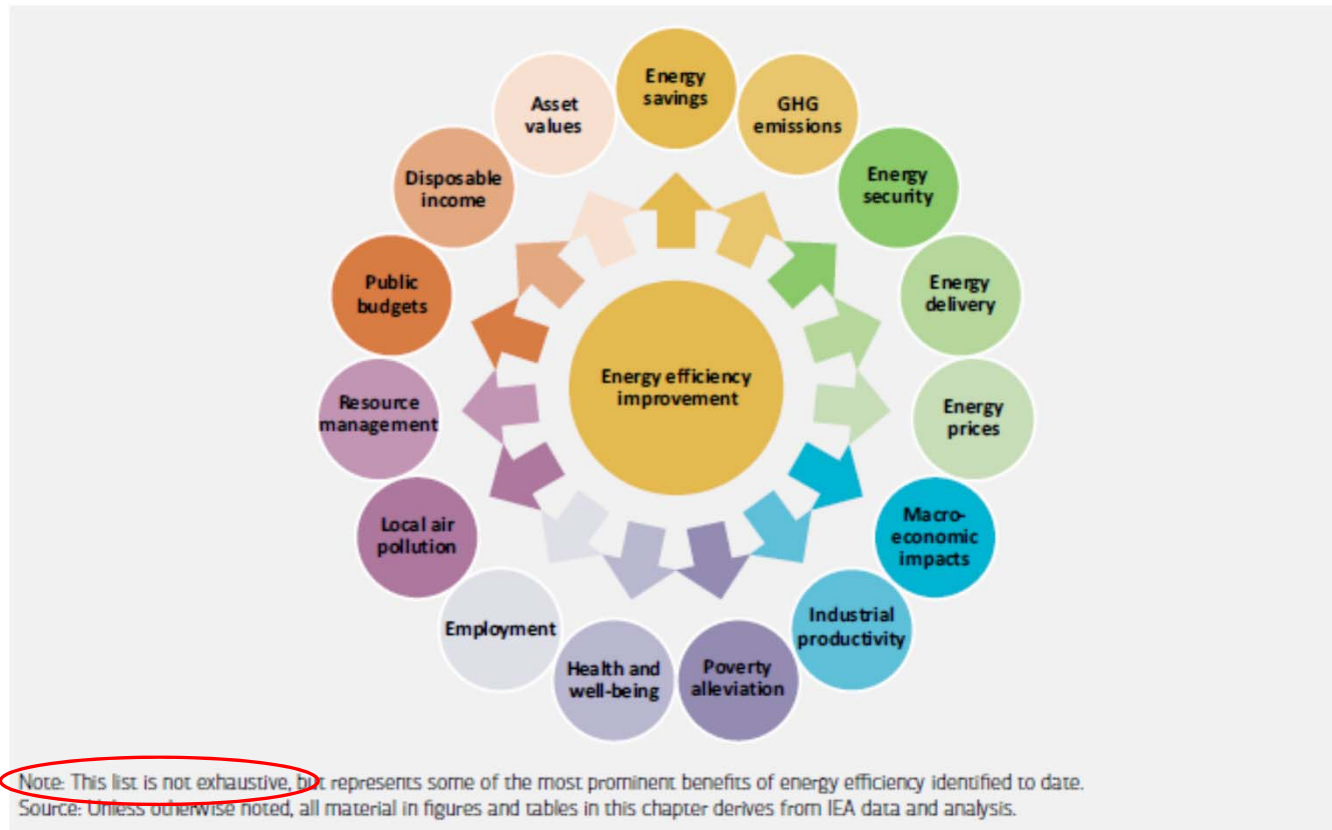
A range of possible interventions

Base Option	Refurbished Reception	
	New HVAC Installation	
	New Cat-A fitout	
	Refurbished cores and lifts	
	Central façade section replaced	
Enhanced Options	Enhanced Reception	
	Voids to Lower Ground	
	Infil over Car-Park Ramp	
	Cut Back Atrium at 6 th and 7 th	
	Infil Atrium corners	
	Add 8 th & 9 th Floors, balcony at 8 th	
	New Front façade	
	Removal of goods lift	
Optimum	Reconfigured Reception "Street"	
	Re-configured Cores – remove NW, SW and E	
	Re-configure Atrium	
	Upgrade to achieve BREEAM Excellent *	

Cost-benefit analysis



Financial vs economic return



Source: IEA

How to factor in multiple-benefits

Economic Analysis						
Costs	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Investment cost	-166.67	-166.67	-166.67	-	-	-
Benefits						
Energy savings from retrofits		11.06	22.12	33.18	33.18	33.18
Heating fuel replaced by biomass		0.00	0.00	0.00	0.00	0.00
Electricity from PV		-	-	-	-	-
Avoided CO2 allowances		1.45	2.90	4.35	4.35	4.35
Avoided NOX and SO2 emissions		1.62	3.25	4.87	4.87	4.87
Multiple benefits		10.00	10.25	10.50	10.75	11.00
Net cash flow	-166.67	-154.16	-141.64	37.53	37.53	37.53
ENPV	16.4					
EIRR	5.37%					

Increased returns when multiple benefits are factored in

Country	IRR	EIRR	EIRR (Multiple Benefits)
Austria	3.3%	3.1%	12.5%
Belgium	7.7%	8.9%	22.5%
Bulgaria	3.7%	7.4%	19.8%
Croatia	3.2%	5.8%	17.1%
Czech Republic	5.7%	7.0%	19.2%
Denmark	0.7%	-2.4%	4.3%
Estonia	8.4%	10.5%	25.9%
Finland	5.9%	6.2%	17.5%
France	2.6%	1.8%	10.5%
Germany	4.5%	2.9%	12.1%
Greece	8.0%	8.2%	21.0%
Hungary	3.3%	6.8%	19.1%
Ireland	0.8%	0.4%	8.2%
Italy	-0.9%	-3.6%	2.8%
Latvia	8.3%	10.5%	26.0%
Lithuania	0.8%	2.0%	10.9%
Luxembourg	4.4%	8.0%	20.8%
Netherlands	1.6%	-0.6%	7.1%
Poland	3.9%	7.1%	19.2%
Portugal	-3.2%	-4.3%	1.7%
Romania	4.7%	9.8%	24.8%
Slovakia	3.4%	3.8%	14.0%
Slovenia	4.7%	5.6%	16.5%
Spain	-1.7%	-3.3%	3.1%
Sweden	1.4%	0.2%	7.9%
United Kingdom	7.0%	5.4%	16.5%
Average	3.5%	4.1%	14.7%

Two striking predictions for 2025

Nick Butler

on energy and power

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Where will the energy business be in 2025?

Nick Butler Author alerts | Aug 23 10:30 | 37 comments | Share

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6. Coal prices touch a 40-year low as coal is forced out of the European and US markets by environmental regulations. In the absence of a global carbon price, however, coal remains the fuel of choice (or necessity) for most of the growing population of India and many other parts of the developing world, having overtaken oil as the largest single source of global energy supply in 2020.

7. Climate change remains a serious and unresolved issue because of the continued use of coal but the focus of attention has shifted to the impact of climate volatility and extreme weather conditions. Insurance premiums for low-lying areas that could be hit by flooding have tripled. In 2025, Singapore announces that it will proceed with the construction of the 40km Lee Kuan Yew sea wall surrounding the island, which can be raised and lowered according to the level of risk.

8. In Beijing, scientists announce the success of a collaborative energy storage project between the universities of Cambridge and Tsinghua to develop new graphene-based materials that can be incorporated into both vehicles and buildings and which can produce efficiency gains of up to 50 per cent.

9. The world second-largest energy company, Amazon Power, continues to expand its role in the electricity sector having displaced or absorbed many traditional utilities. Amazon acts as an aggregator rather than a power producer and its dominant role in the market has drawn criticism both from producers who find their margins squeezed to minimal levels and from civil liberty campaigners who dislike the presence in homes, offices and factories of Amazon boxes which monitor and manage energy usage on all devices. Worldwide, more than 1bn boxes are now in operation producing, according to the company, a 15 per cent reduction in electricity costs for consumers.

10. In Weekend FT Lucy Kellaway has lunch with the first woman appointed as chief executive of a major international energy company

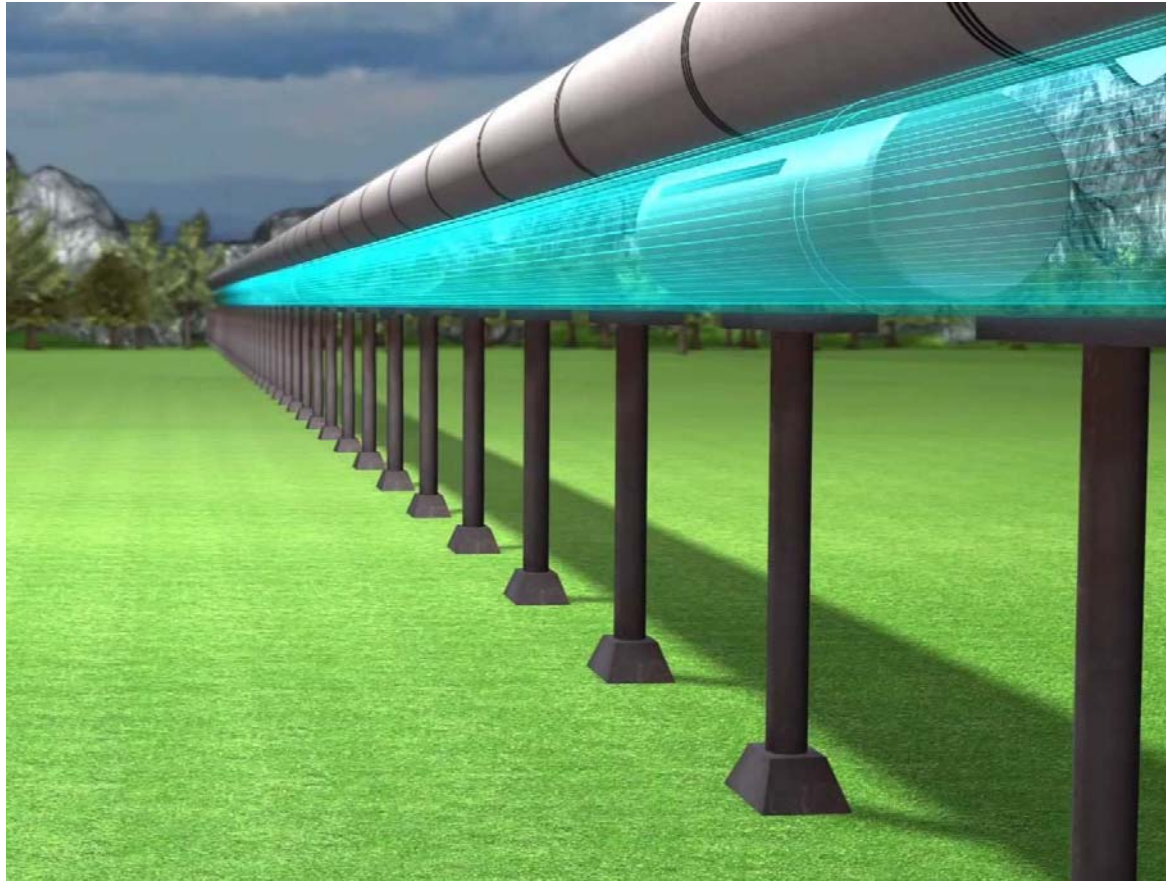
Some familiar features of the electricity systems:

- Highly centralized operations
- Overcapacity
- Lack of transparency
- Consumers taking the back seat

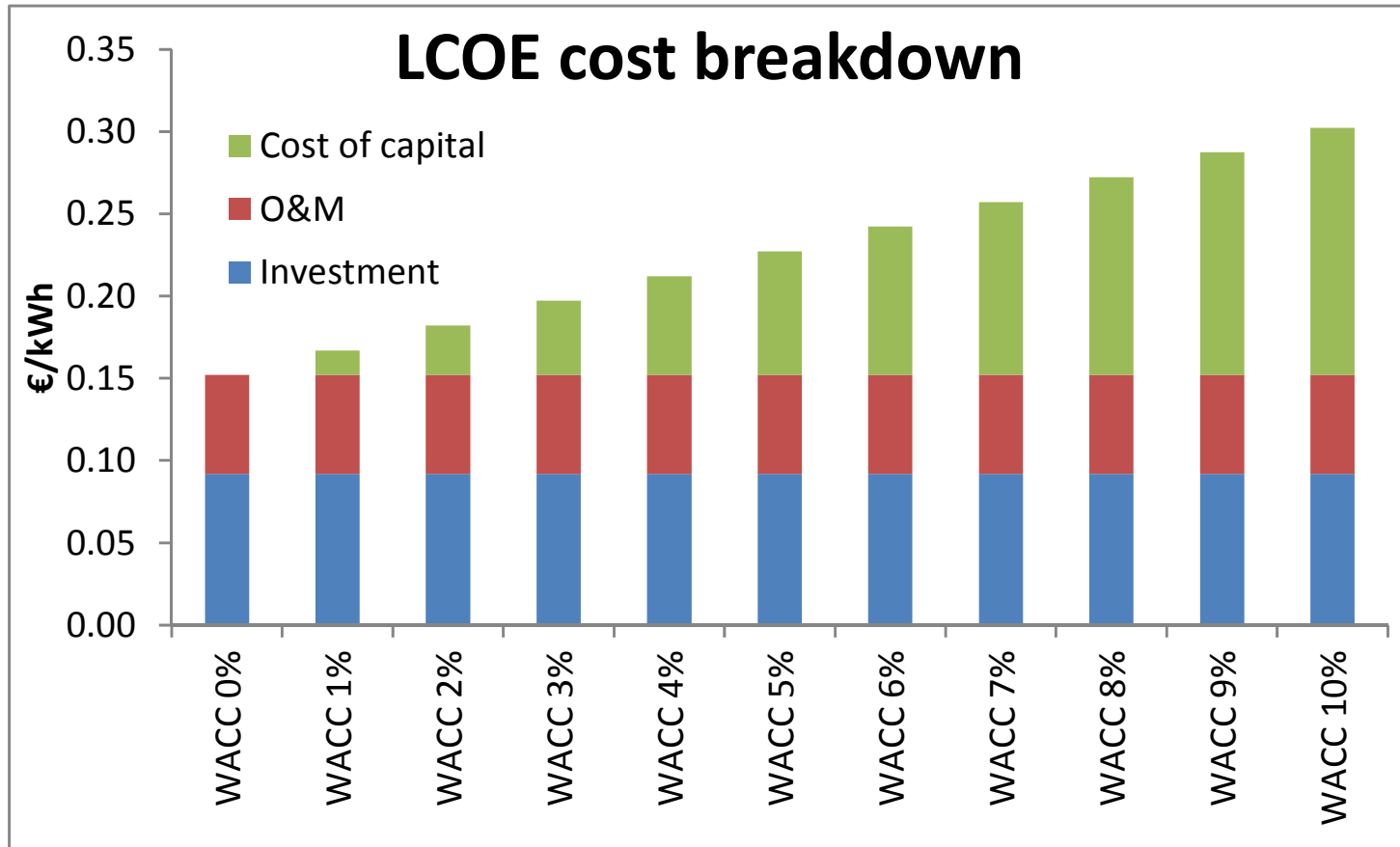
And some familiar outcomes



What is likely to be the “game changer”?



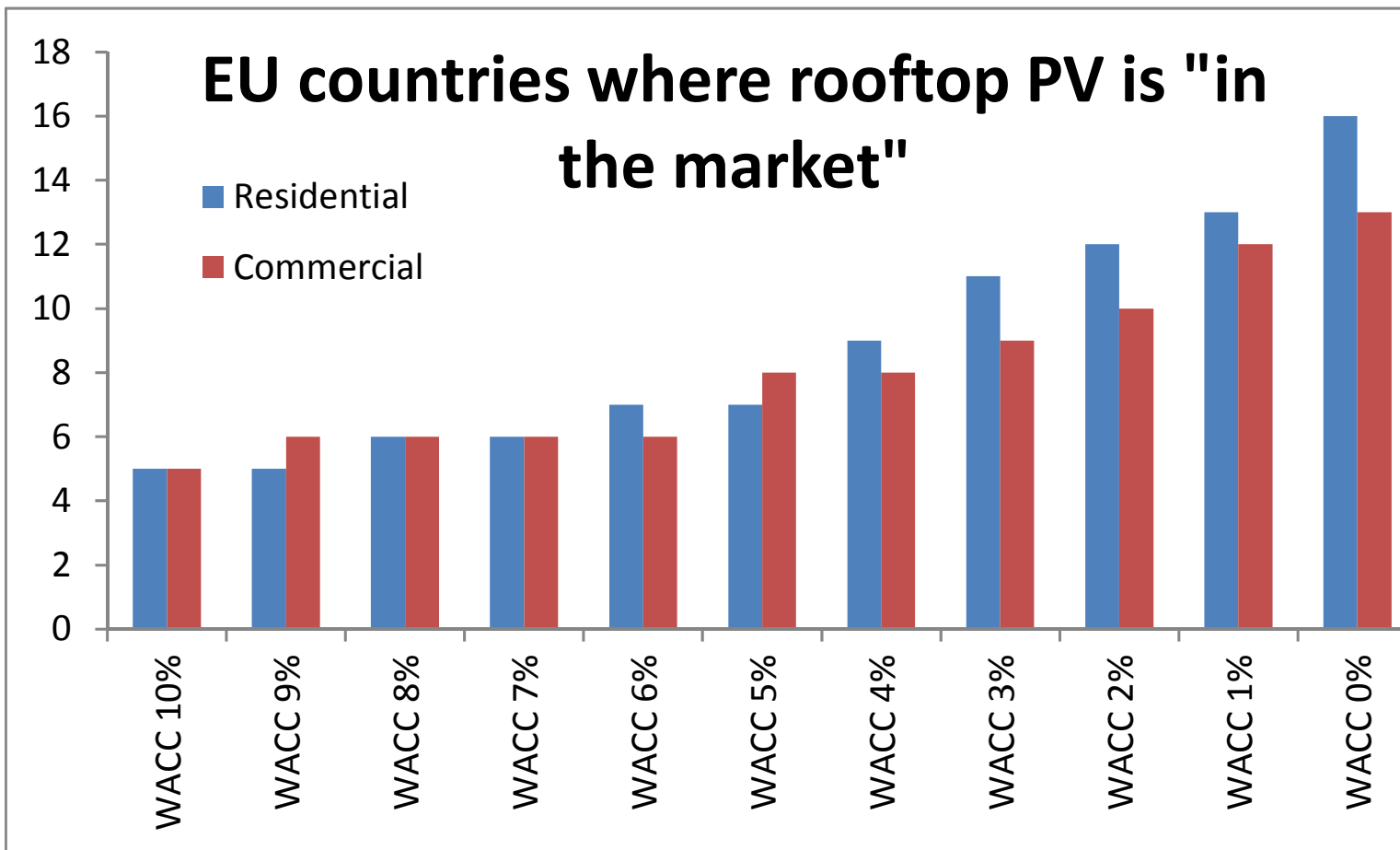




LCOE of PV distributed systems in the EU				
Country	LCOE Residential	Price Residential	LCOE Commercial	Price Commercial
	(€/kWh)	(€/kWh)	(€/kWh)	(€/kWh)
Austria	0.216	0.199	0.193	0.157
Belgium	0.332	0.204	0.281	0.159
Bulgaria	0.238	0.090	0.202	0.085
Croatia	0.215	0.132	0.180	0.123
Cyprus	0.203	0.236	0.169	0.237
Czech Republic	0.310	0.127	0.263	0.096
Denmark	0.299	0.304	0.258	0.231
Estonia	0.309	0.133	0.259	0.120
Finland	0.307	0.154	0.279	0.115
France	0.227	0.162	0.193	0.144
Germany	0.209	0.297	0.229	0.271
Greece	0.212	0.179	0.181	0.201
Hungary	0.264	0.115	0.224	0.115
Ireland	0.332	0.254	0.281	0.182
Italy	0.156	0.234	0.161	0.334
Latvia	0.317	0.130	0.269	0.141
Lithuania	0.320	0.132	0.271	0.121
Luxembourg	0.325	0.174	0.276	0.149
Malta	0.155	0.125	0.128	0.343
Netherlands	0.331	0.173	0.280	0.168
Poland	0.264	0.141	0.247	0.137
Portugal	0.183	0.223	0.165	0.201
Romania	0.242	0.125	0.205	0.122
Slovakia	0.284	0.152	0.241	0.123
Slovenia	0.257	0.163	0.219	0.131
Spain	0.193	0.237	0.194	0.179
Sweden	0.338	0.187	0.286	0.138
United Kingdom	0.279	0.201	0.250	0.168

In green, countries where estimated LCOE is below current retail price

In yellow, countries where LCOE is within 120% of current retail price



THANK YOU!

Any questions?

For more information...

<http://www.eib.org>

