The Financing of Energy and innovative RE projects

Alessandro Boschi
Head of Renewable Energy Division
European Investment Bank
1st December 2016

SET PLAN CEEC 2016, Bratislava
The EIB: the EU bank

- Created in 1958
- Shareholders: 28 EU Member States
- Driven by EU policy
- Around 90% of lending is within the EU
- Operates outside EU through specific Mandates

Investing in Europe’s growth
EIB lending in 2015: EUR 78bn

(EIB signatures)

Total EUR 77.5bn

European Union
EUR 69.7bn
EUR 7.8bn

Outside EU

EFTA & Enlargement Countries
EUR 2.7bn

Eastern Neighbours
EUR 1.5bn

Africa, Caribbean, Pacific, South Africa
EUR 1.1bn

Asia and Latin America
EUR 1.1bn

Southern Neighbours
EUR 1.4bn
EIB energy lending 2012-2015

Security of Supply
Energy Networks
Energy Efficiency
Renewable Energy

<table>
<thead>
<tr>
<th>Year</th>
<th>Security of Supply</th>
<th>Energy Networks</th>
<th>Energy Efficiency</th>
<th>Renewable Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>0.58</td>
<td>3.99</td>
<td>1.29</td>
<td>3.30</td>
</tr>
<tr>
<td>2013</td>
<td>0.38</td>
<td>3.97</td>
<td>2.03</td>
<td>6.44</td>
</tr>
<tr>
<td>2014</td>
<td>1.35</td>
<td>5.27</td>
<td>2.09</td>
<td>6.05</td>
</tr>
<tr>
<td>2015</td>
<td>0.87</td>
<td>5.81</td>
<td>3.63</td>
<td>3.43</td>
</tr>
</tbody>
</table>
EIB Energy Lending Criteria

• Priority areas are:
  • energy efficiency,
  • energy networks (national and regional)
  • renewable energy
    - mature RE (hydro, biomass, onshore wind etc)
    - emerging RE (offshore wind, solar CSP)
  • energy RDI
    - focus on low carbon technologies
# EIB Products

<table>
<thead>
<tr>
<th>LENDING</th>
<th>BLENDING</th>
<th>ADVISING</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Project Loans</td>
<td>Combining EIB finance with EU budget</td>
<td>Financial/technical advisory.</td>
</tr>
<tr>
<td>• Intermediated Loans</td>
<td>Examples are:</td>
<td>Examples are:</td>
</tr>
<tr>
<td>• Guarantees</td>
<td>• ESIF Financial Instruments</td>
<td>• JASPERS</td>
</tr>
<tr>
<td>• Microfinance</td>
<td>• Project Bond Initiative</td>
<td>• ELENA</td>
</tr>
<tr>
<td>• Equity</td>
<td>• INNOVFIN – EU Finance for Innovators</td>
<td>• INNOVFIN Advisory</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• NER 300</td>
</tr>
</tbody>
</table>

Attracting FUNDING for long-term growth
Investment Plan for Europe

- Driven by EU investment and competitiveness gap due to financial and non-financial barriers

- Consists of three pillars:
  - Boosting investments in strategic sectors – EFSI
  - Providing technical assistance - Advisory Hub (EIAH)
  - Promoting structural reforms at national level

- How does EFSI work?
  - addresses market failure in risk taking currently hindering investments in the EU
  - provides support in the form of guarantee to higher risk projects
  - increases risk bearing capacity of EIB through new products and higher volumes
  - projects need to be commercially sound as well as economically and technically viable
European Fund for Strategic Investments (EFSI)

EU Guarantee EUR 16bn

EIB EUR 5bn

EFSI - European Fund for Strategic Investments EUR 21bn

Infrastructure and Innovation Window EUR 16bn

SME Window EUR 5bn

Deployed by EIB

Deployed by EIF

Financing: approx EUR 49bn

Catalytic effect

Blended multiplier effect of x15

Final investments EUR 240bn

Final investments EUR 75bn

02/01/2017

European Investment Bank Group
EFSI Dashboard 15/11/2016

EIB Group figures
As of 15/11/2016

EUR 15.1bn signed

Approved EFSI financing*

Total investment related to EFSI approvals

EUR 27.5bn
EUR 154bn

* EIB-approved: EUR 19.8 bn
EIF-approved: EUR 7.7 bn

EFSI investment by sector

- Environment and resource efficiency: 4%
- Social infrastructure: 4%
- Transport: 7%
- Digital: 11%
- RDI: 20%
- Energy: 22%
- Smaller companies: 32%

385 approved transactions in 27 of 28 EU countries
RENTEL Offshore Wind Farm

- Total investment: € 1.1 billion
- EIB loan: € 300 M (€ 250M under EFSI) signed on 3rd October 2016
- Total capacity of 309 MW
- 34 km from Zeebrugge, 40 km from Ostend
- 42 Siemens D7-type off shore wind turbines
- Height wind turbine at hub: 106 m
- Diameter rotor: 154 m
- 1 offshore substation + 220 kV export cable
- Yearly consumption of 285,000 households
- Creation of 1,400 direct jobs during implementation phase and 100 long term jobs when operational
Innovfin Products Overview

**SMEs**
- **InnovFin** SME Guarantee
- **InnovFin** SME Venture Capital

SMEs and small Mid-Caps < 500 Employees
- Intermediated SME/Mid-Cap Financing

**Midcaps**
- **InnovFin** MidCap Guarantee
- **InnovFin** MidCap Growth Finance

Mid-Caps < 3,000 Employees
- Intermediated and/or direct Corporate lending

**Large Caps**
- **InnovFin** Large Projects
- **InnovFin** Direct Corporate Lending

Large Caps Typically > 3,000 Employees

**Thematic Finance**
- **InnovFin** Energy Demo Projects
- **InnovFin** Infectious Diseases

SPV, Mid-Caps and Large Caps
- Project Finance and/or Direct Corporate Lending

**Advisory**
- **InnovFin** Advisory

Public and Private Sector Promoters
- Financial Advisory

---

**direct products**

**indirect products**
• Key player in organic photovoltaic and a manufacturer of solar films targeting the BIOPV – Building Integrated Organic Photovoltaic – market

• Expansion of its HeliaFilm® manufacturing capacity located in Dresden.

• Transparent flexible OPV foil (13.2% efficiency in lab) based on unique proprietary concept derived from OLED technology

• EIB loan of EUR 20 million under Innovfin – MGF signed in September 2016

• Financing includes also MEUR 42 in equity and ~ MEUR 18 in subsidies under ERDF.
InnovFin – EU Finance for Innovators which is a joint initiative by the EIB Group and the European Commission under Horizon 2020, the EU framework for research and innovation (“R&I”) 2014-2020.

The objective of InnovFin EDP is to support bridging the valley of death from demonstration to commercialization, helping the further rollout of low-carbon energy technologies to the market. It has been designed to address a financing bottleneck identified in the EU's Strategic Energy Technology (SET) Plan.

InnovFin Energy Demo Projects enables the EIB to finance innovative first-of-a-kind demonstration projects in the field of renewable energy, sustainable hydrogen and fuel cells.
How does it work?

- Pre-commercial stage
- Broad range of instruments
- Loan amount: **min EUR 7.5m, max EUR 75m, max 50% of project costs**
- Loan maturity: **max 15 years**
- Comprehensive due diligence (legal, financial, technical, etc.)
- EIB standard documentation under English or Luxembourgish law
Eligible Energy Demo Projects must be in the **renewable energy, hydrogen or fuel cells sector**. These might include first-of-a-kind power, heat, and/or fuel production plants and first-of-a-kind manufacturing plants.

<table>
<thead>
<tr>
<th>1. Innovativeness</th>
<th>Are the project’s key technologies considered innovative in relation to the state of the art for each technology? Does the project demonstrate for the first time commercial viability?</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Replicability</td>
<td>Does the project have the potential to be replicated elsewhere? Does the project offer prospects for cost efficient CO2 reductions?</td>
</tr>
<tr>
<td>3. Readiness for demonstration at scale</td>
<td>Is the proposed project sufficiently mature to be ready for demonstration at the proposed scale? Is such scale equal to the one of future applications?</td>
</tr>
<tr>
<td>4. Timeline</td>
<td>Is the projected start of commercial operation of the whole plant expected to happen within a period of maximum 4 years?</td>
</tr>
<tr>
<td>5. Prospects of bankability</td>
<td>Does the project have the potential to be or to become bankable by the guarantee release date?</td>
</tr>
<tr>
<td>6. Commitment</td>
<td>Are the promoters, sponsors and/or operators willing to substantially co-fund the project?</td>
</tr>
</tbody>
</table>
Risk and pricing

Design, Construction and Early Operational Phase

Operating Phase

Implementation and Performance Risk

Guarantee release

Operating Risks and Market Risks

EU 95% FLP risk
EIB 5% RRT risk

EIB 100% risk

FLP – First loss piece
RRT – Residual risk tranche
"Wave Roller” technology

- Near shore device installed on seabed
- Developed by a pioneering start-up company located in Finland
- Operation site in Portugal with 100kW prototype in operation
- Full scale will be 350-700kW
- EIB loan (10 MEUR) signed on 06/07/2016
- It will part finance remaining development and first commercialization of the technology
- Equity type transaction given project risks

Potential market capacity of ~200GW based on detailed coastline analysis
Windfloat

- Floating offshore windfarm in Portugal (3 x 8 MW)
- Semi-submersible floating structure
- 20 km from shore
- Water depth 85-100 m
- Pilot installation, 2 MW (2011)
- Currently under appraisal by EIB
- EIB loan 25 MEUR (over an investment cost of 104 MEUR)
- Benefits from an NER 300-grant (first round 2012)
- Success of this technology would open up a new vast market
- It is estimated that up to 80% of offshore wind resource in the EU is in deep water
Conclusions

• EIB is keen to continue supporting renewable energies and innovative RE projects as they will be needed to achieve the long term climate goals

• We will do this by offering a wide range of financial instruments as well as our technical expertise

• Our final objective is to stimulate growth, employment as well as to contribute to the decarbonization of the European economy
• Thank You!