

1st Solar Bankability Public Workshop

09-10/05/2016 Cologne (DE)



Welcome notes and Project Highlights



David Moser (EURAC)



Funded by the Horizon 2020
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European Union

www.solarbankability.eu

Project Overview



- SOLAR BANKABILITY

“Improving the Finance-ability and Attractiveness of Sustainable Energy Investments in PV: Quantifying and Managing the Technical Risk for Current and New Business Models”

- Develop and establish **a common practice for professional risk assessment** which will serve **to reduce the technical risks** associated with investments in PV projects.

Project Overview



- European Union Horizon 2020 Work Programme
- 24 months (March 2015 – February 2017)
- 5 consortium partners:





Specific Project Objectives

- To develop, document and establish **practices for evaluating and mitigating the technical risks** associated with investments in PV
- To evaluate how these **risks affect the electricity production and the expected return of investment** in different business models
- To develop, document and establish **practices on how to reflect these risks in the financial modelling** of PV projects by investors
- To enable the key actors to **widely adopt the project results as best practices for the mitigation of risk** of sustainable energy investments with current and new business models

Technical and financial risks quantification, assessment and mitigation



Expected Impacts

- Reduce uncertainty, increase investors' confidence and trust towards solar PV investments
- Valuation methodologies of solar PV investments based on standardised risk rating system
- Standardised descriptions and proposal for models for cost calculation including practices for accounting of technical risks in solar PV energy investments
- National strategies for financing solar PV energy investments

Technical and financial risks quantification, assessment and mitigation

Project Reports



Ref. Ares(2015)3361918 - 28/08/2015



SOLAR BANKABILITY

PV Business Model Country Snapshots

August 31st, 2015



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Technical risks in PV projects

Report on technical risks in PV project development and PV plant operation

Merged Deliverable D1.1 and D2.1 (M12)
Version 1.0



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Project Advisory Board Closed Workshops #1 and #2 - Proceedings

Deliverable D5.2 (M12)



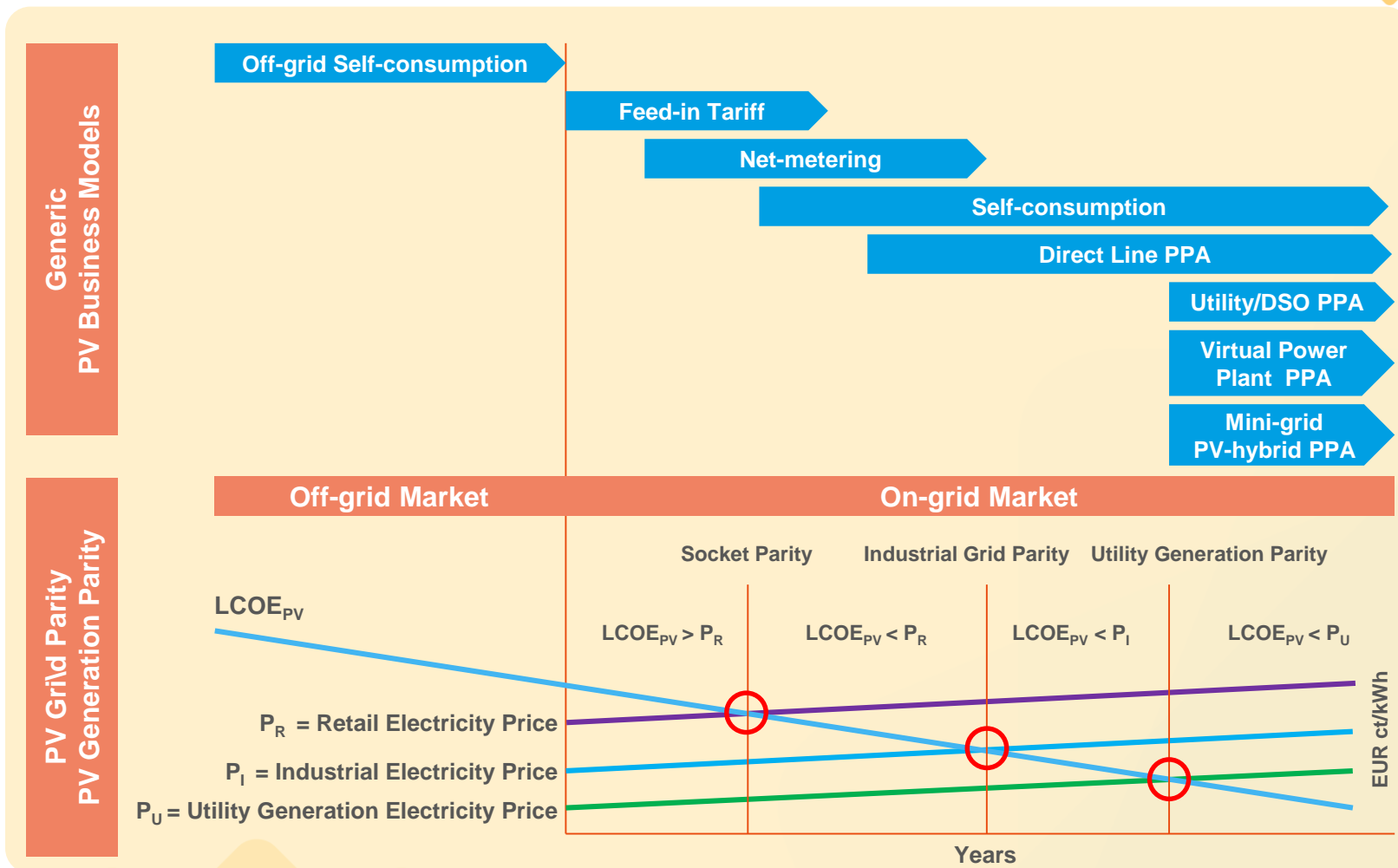
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PV Business model country snapshots

Generic PV Business Models



PV Business model country snapshots

PV Market Climate



**PV Market
Climate Estimate
June 2015**

**Average Global
Horizontal
Irradiation
(kWh/m²)**

**Cum. Installed
PV Capacity
(Gwp)**

**NREAP
Target 2020
(Gwp)**

**PV share of Net
Electricity Producti
on (%)**

**Residential
Electricity Retail
Price
(EUR ct/kWh)**

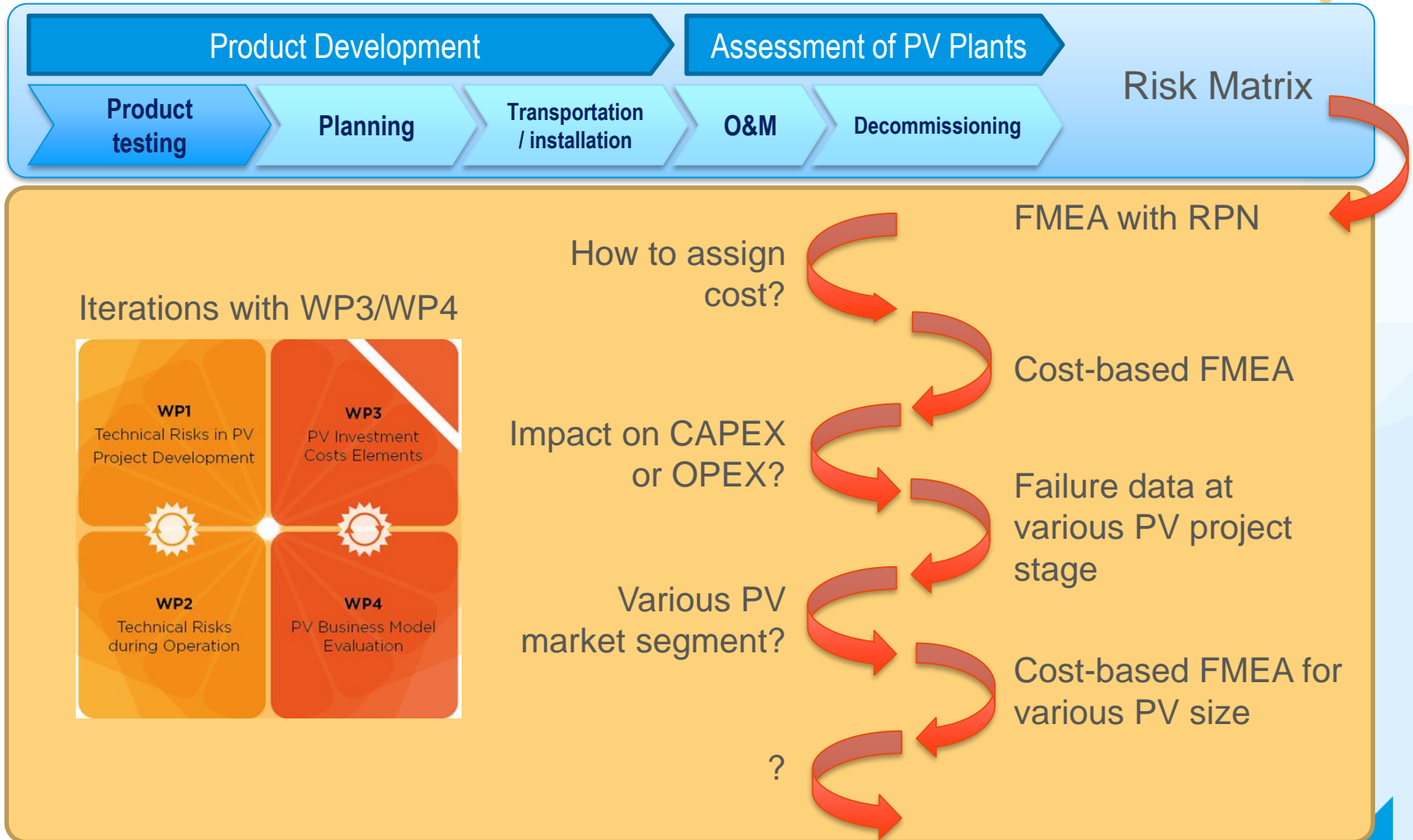
**LCOE Indicator
Utility Scale PV
(EUR ct/kWh)**

Country	Climate Estimate	Average Global Horizontal Irradiation (kWh/m ²)	Cum. Installed PV Capacity (Gwp)	NREAP Target 2020 (Gwp)	PV share of Net Electricity Production (%)	Residential Electricity Retail Price (EUR ct/kWh)	LCOE Indicator Utility Scale PV (EUR ct/kWh)
DE	Cloudy	936	38.24	51.75	6.3	29.74	8.16 - 10.61
IT	Cloudy	1326	18.31	8.00	8.7	23.39	6.71 - 8.16
FR	Sunny	1100	5.63	4.86	1.1	17.51	6.71 - 10.61
ES	Rainy	1600	5.39	8.37	4.9	23.67	6.71 - 9.00
UK	Cloudy	970	5.23	2.86	6.1	20.14	10.61 - 12.00
RO	Rainy	1200	1.22	0.26	2.7	12.47	8.16 - 10.61
NL	Sunny	950	1.07	0.77	0.1	17.32	10.20 - 10.61

Complete report: www.solarbankability.eu

Technical Risks in PV Projects

Technical Risk Identification & Analysis



Agenda Day 1



Day 1 15:00-18:00

15:00	Registration & Welcome Coffee	Forum
15:30	Welcome notes from project coordinators/host	David Moser, EURAC Ulrike Jahn, TÜV Rheinland
	Session 1: Technical Risks Quantification and Assessment	Moderated by Michael Fuhs, pv-magazine
15:40	Improving the Financeability and Attractiveness of Sustainable Energy Investments – EU Horizon 2020	Björn Zapfel, Executive Agency for SMEs - European Commission
15:50	Presentation on Project Results (mid-term)	Ulrike Jahn, TÜV Rheinland David Moser, EURAC
16:15	Expert Debate on <i>Technical Risks in PV Investments</i>	Stephan Padlewski, DuPont Photovoltaic Solutions Marius Kaiser, Canadian Solar Andreas Falk, SMA Bjarn Röse, Conergy Services
17:45	Summary	Caroline Tjengdrawira, 3E
18:00	End of Session 1	
19:00 – 21:00	Networking Dinner	Restaurant Pronto!

The participants of the event are welcome to join the networking dinner.

Agenda Day 2 morning



Day 2 09:00-17:00

08:30 Registration & Good Morning Coffee Forum

09:00 Opening Remarks Willi Vaaßen, TÜV Rheinland

09:10 Session 2: Technical Risk Quantification and Assessment - Experts on Failures from Planning to Operation Moderated by Willi Vaaßen, TÜV Rheinland

09:10 What are established technologies, when is a technology new? How we can determine the risk level throughout PV value chain? André Richter, Meyer Burger AG

09:30 Technical Risk Assessment during the Planning and Construction of PV Plants/Solar Parks Ingo Klute, juwi AG

09:50 Technical Risk Assessment during the Operation and Maintenance of PV Plants/Solar Parks Manfred Bächler, E.ON Energie

~ 10 min additional Q&A session

10:30 Networking Coffee / Tea Break Forum

11:00 Session 3: Considerations from the O&M Experts / Mitigation Techniques Moderated by David Moser, EURAC

11:00 The Requirements for an Effective O&M Strategy Paolo Vincenzo Chiantore, Kenergia Sviluppo

11:20 Solar Bankability: An O&M Perspective Richard Jackson, Lark Energy

11:40 How to Mitigate Risks and Maximize Yield during Operation Martin Schneider, Meteocontrol

12:00 Operating and Optimizing Utility Scale PV Gerhard Mütter, Alternative Energy Solutions GmbH

~ 10 min additional Q&A session

12:30 Lunch Break Restaurant Pronto!

Agenda Day 2 afternoon



13:30 **Session 4: Financial Risk Quantification and Assessment - Experts on Financing and Insurance** **Moderated by Achim Woyte, 3E**

13:30 Minimizing Financial Risk throughout Design, Construction, Operation and Maintenance **Oliver Herzog, Enerparc**

13:50 Managing Financial Risks in PV Assets during Project Development and Operation **Francesco Girardi, Bluefield LLP**

14:10 Making Solar Bankable from an Insurance Point of View **Harry Wolkenfelt, Solarif**

14:30 Risk Analysis for Insurance of PV Manufacturers and PV Parks **Ulrich Bohnert, Munich RE**

~ 10 min additional Q&A session

15:00 **Networking Coffee/Tea Break** **Forum**

15:30 **Session 5: How to Enhance Solar PV Investment Attractiveness** **Moderated by James Watson, SolarPower Europe**

15:30 PV Financing: Identifying the Most Profitable Business Models and Financing Schemes for PV Systems **Luz Alicia Aguilar, PV Financing**

15:40 Panel Discussion on
 - *Quality Standards*
 - *Risk Monitoring, Modelling and Mitigation*
 - *Repowering*
 - *New Business Models* **Matthias v. Arnansperg, ACCELIOS Solar / Solar Bankability EU Project
 Luz Alicia Aguilar, BSW / PV Financing EU Project
 Julien Pourqu ry, Solaire Direct
 Willi Vaaßen, TÜV Rheinland**

16:30 Summary of Workshop **David Moser, EURAC
 Ulrike Jahn, TÜV Rheinland**

16:45 **End of Workshop**

Thank you

PRESENTED BY
David Moser
Ulrike Jahn



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