European Cooperation in PV RTDI and beyond - Highlights, Lessons Learned and Future Perspectives

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Partners in the SOLAR-ERA.NET Cofund 2 Consortium

TÜBİTAK

Projektträger Jülich Forschungszentrum Jülich

PROJEKTTRÄGER Forschungszentrum Jülich

GENERAL SECRETARIAT FOR RESEARCH AND TECHNOLOGY

Netherlands Enterprise Agency

Swedish Energy Agency

GOBIERNO DE ESPAÑA MINISTERIO DE CIENCIA E INNOVACIÓN

AGENCIA ESTATAL DE INVESTIGACIÓN

MINISTERIO DE CIENCIA E INNOVACIÓN

CDTI

Ministry of Energy www.energy.gov.il

ADEME Agence de l'Environnement et de la Maîtrise de l'Energie

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Federal Office of Energy SFOE

MIUR MINISTERO DELL'ISTRUZIONE, DELL'UNIVERSITÀ E DELLA RICERCA

klima+ energie fonds

FFG Forschung wirkt.

AGENCE NATIONALE DE LA RECHERCHE ANR

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AGENTSCHAP INNOVEREN & ONDERNEMEN

Vlaanderen is ondernemen

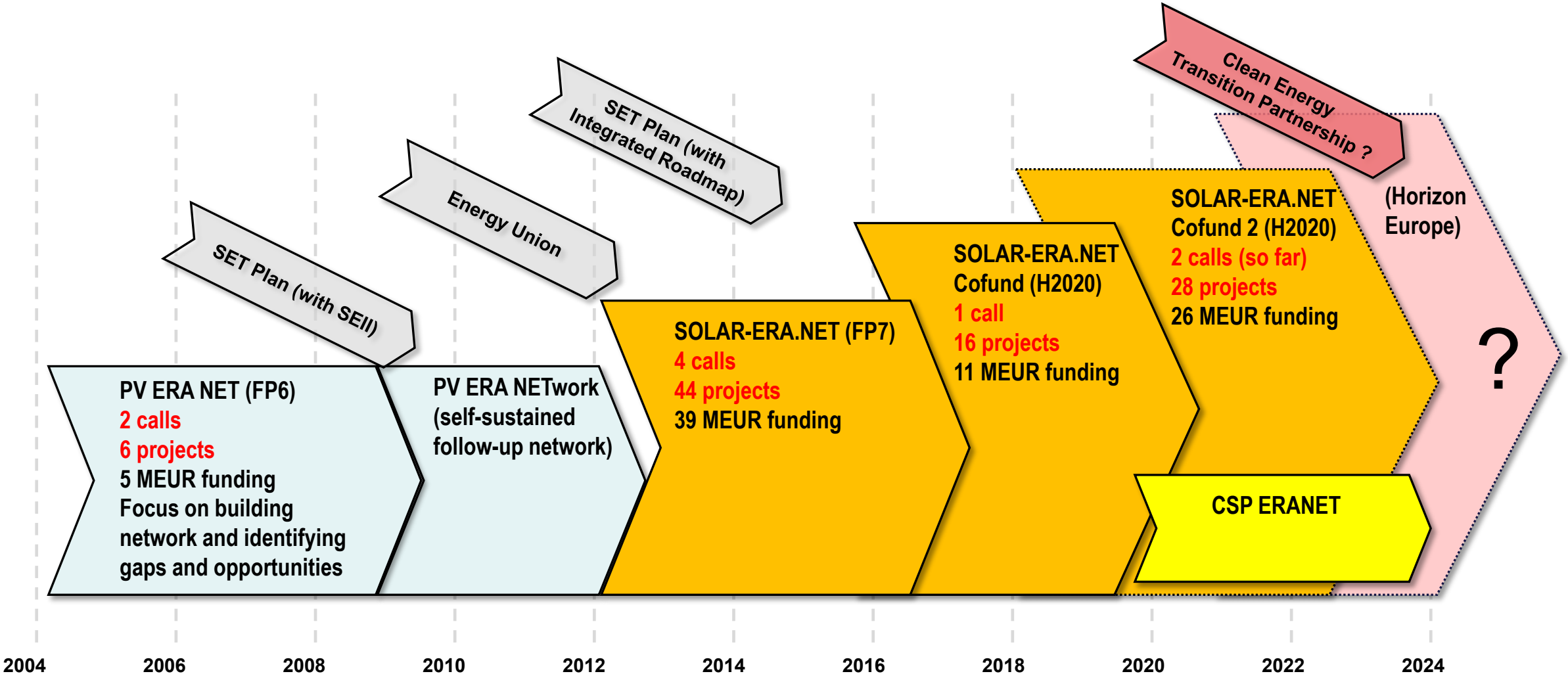
Wallonie

SPW Service public de Wallonie

Outline

- Brief history of European transnational cooperation in PV RDTI
- Some Achievements
- Lessons Learned
- Future Perspectives – Challenges and Opportunities
- Conclusions

Towards 20 years of European transnational cooperation in PV RTDI

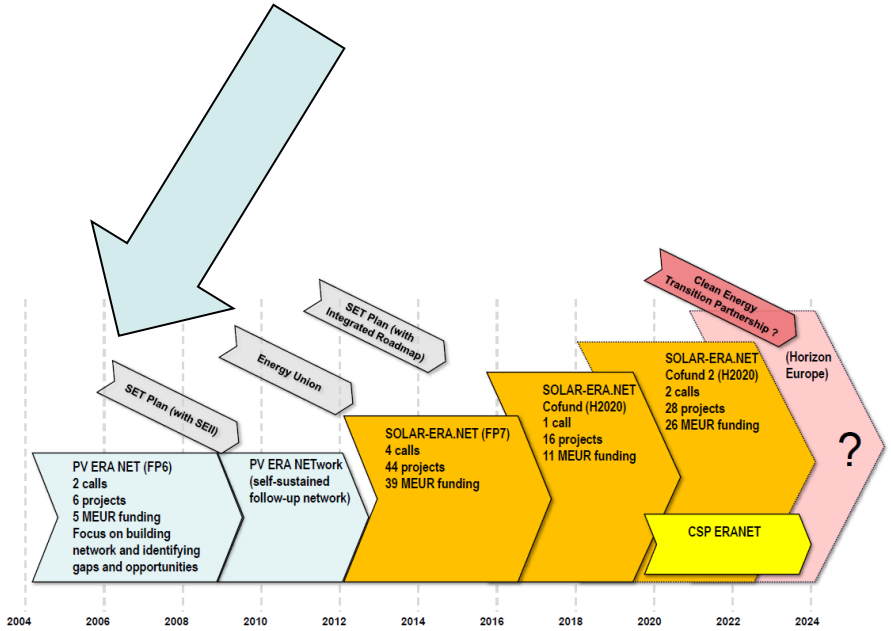


Learning to work together (in joint activities)

PV ERA NET (2004 – 2009) – self sustained to 2012

- EC support for network of national / regional RD&I programmes
- Exploration phase and laying the foundation for exchange and mutual understanding (trust)
- Work with and around the different set-up's and rules in different programmes

→ 2 transnational joint calls with a few projects

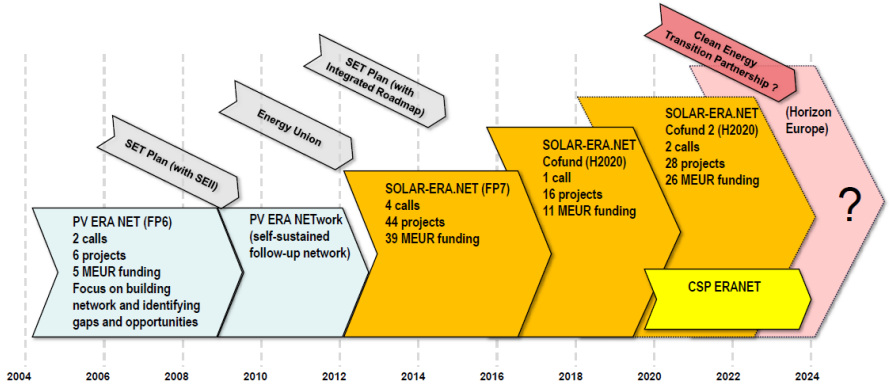


Ramping up the collaboration

SOLAR-ERA.NET (2012 – 2016)

- Renewed and structured EC support for network of national / regional RD&I programmes
- Oriented towards launching of joint calls
- Flexible structure and set-up

→ Set of 4 (annual) transnational joint calls with 11 projects per call (on average)

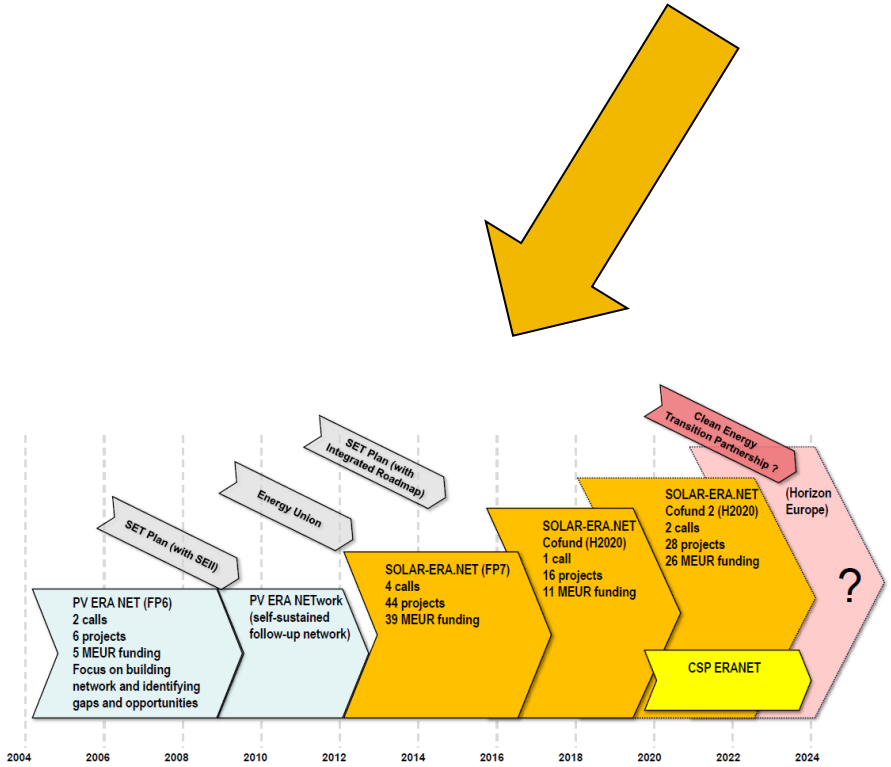


Gaining momentum

SOLAR-ERA.NET Cofunds (2016 – 2023)

- EC support for co-funding transnational projects (no direct support for the network of national / regional RD&I programmes)

→ Increase of funding budget available and number of projects (Cofund 1: 16, Cofund 2: 19 + additional calls)



Highlights

- Networking and collaboration between countries and agencies across Europe
- Addressing common strengths and complementarities
- Established procedures and tools enabling coordination
- More partnerships and transnational PV RTDI
- SOLAR-ERA.NET as an important/strategic element in transnational cooperation
- For participants a stepping stone for international cooperation
- Flexibility and bottom-up nature, no “one size fits all” approach
- Strong diversity of explorative and innovative projects
- Critical contents both upstream and downstream along the value chain

In more concrete terms: Some facts and figures

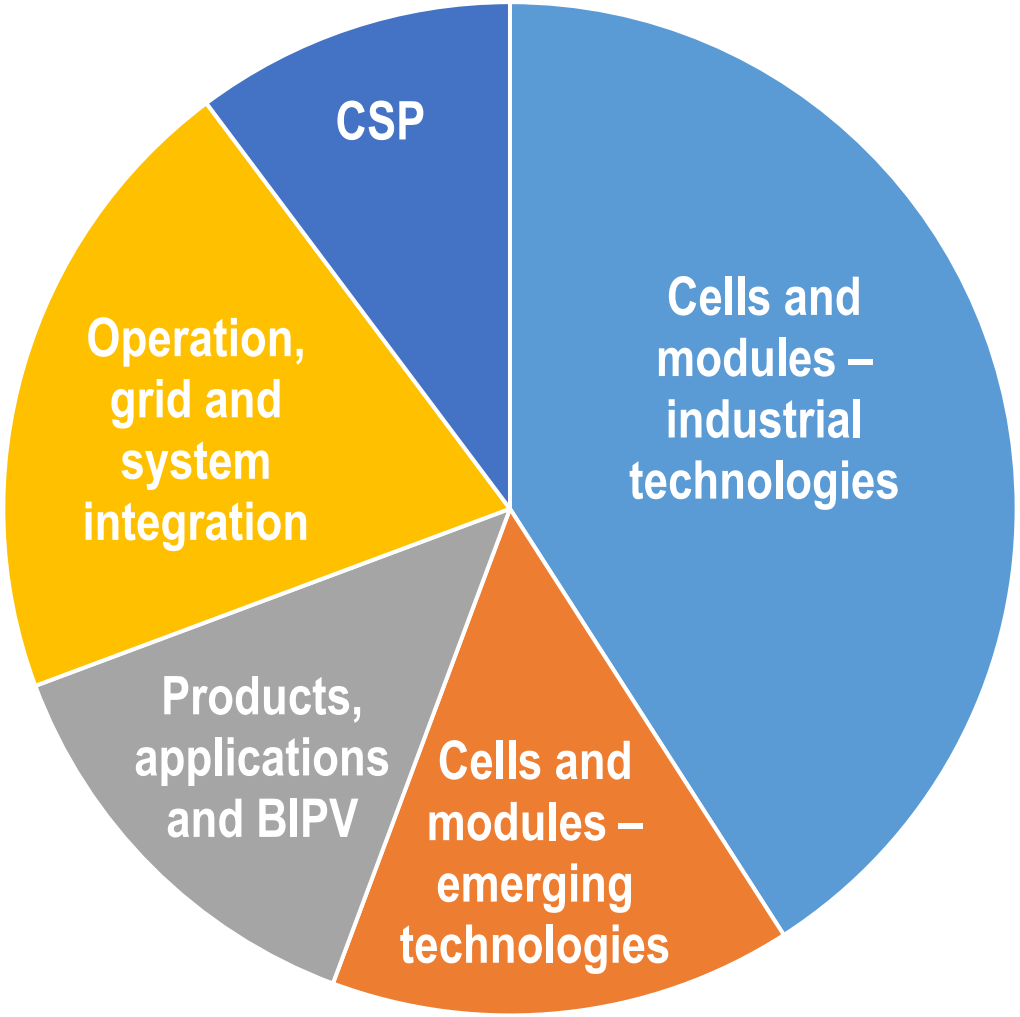
- Overall 7 joint calls over 7 years, different support schemes
- 310 preproposals and 166 full proposals submitted
- 88 projects supported
- 60 finished / about to be finished, 23 running, 5 in preparation
- 460 partners involved in projects (multiple counting)
- 112 MEUR project volume with 76 MEUR funding, of which 9 MEUR from EC

Typical project:

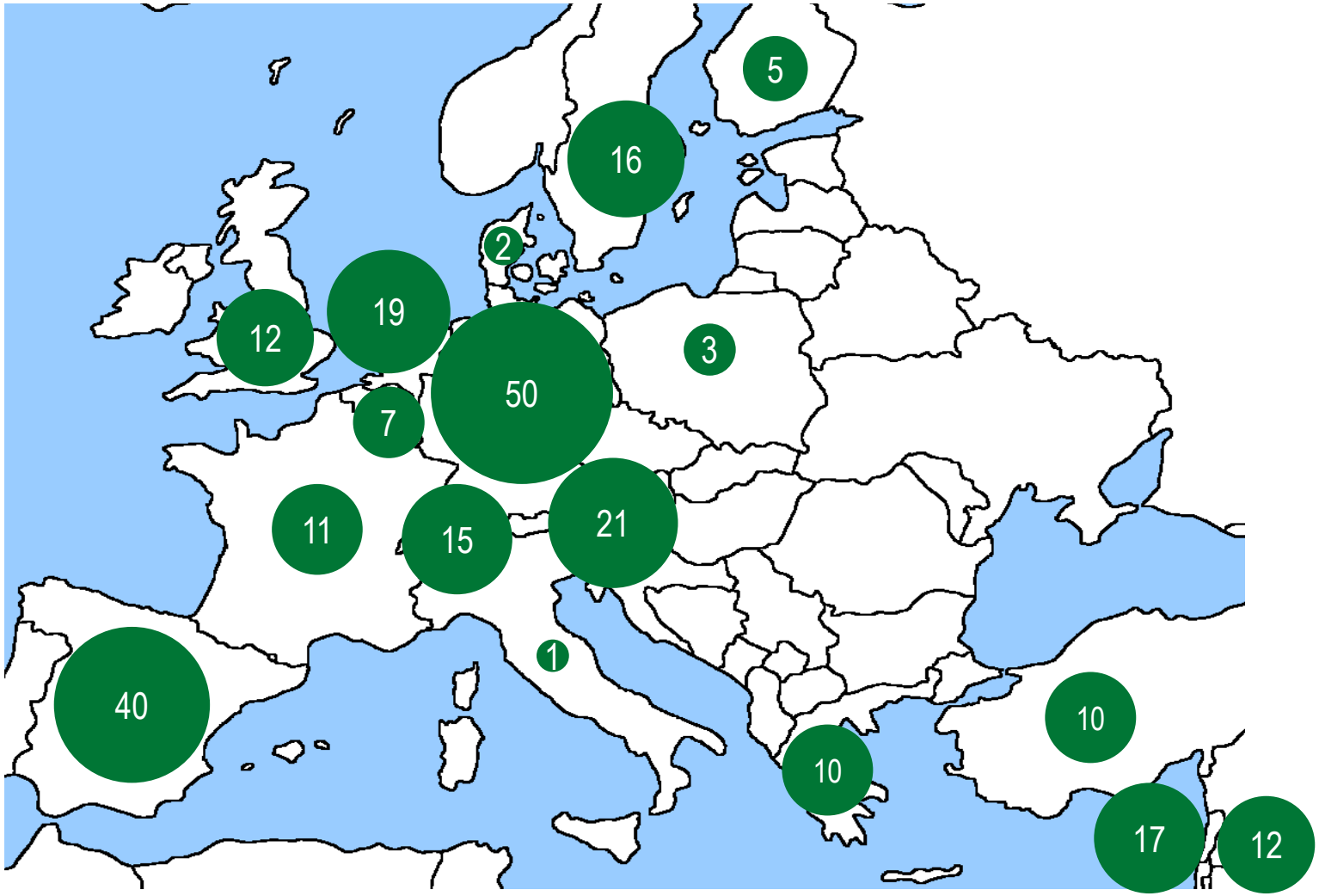
- 3 – 5 partners from 3 – 4 countries
- 1,2 MEUR project volume (of which 0,8 MEUR public funding)

Check out for more details in the written contribution / SOLAR-ERA.NET website!

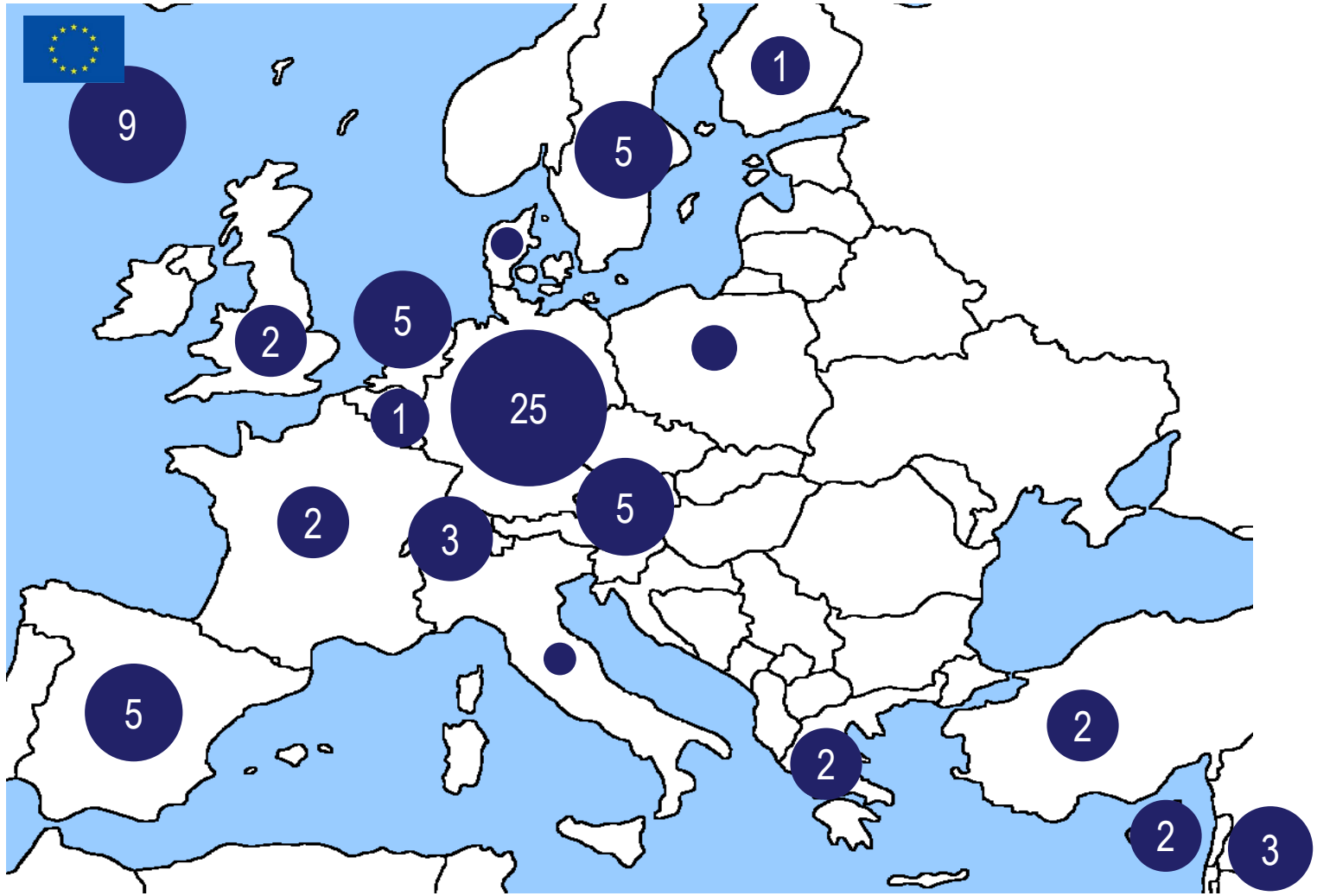
Thematic split of the 88 projects over all 7 calls (simplified)



Number of projects supported



Funding in M€ ranging from 0,065 (Italy) to 25,198 (Germany)



Lessons learned

- It takes time to develop trust and cooperation but experience is now available
- Industrial implementation remains a challenge
- How to close the gap between R&D excellence and (mass) manufacturing
- Flexibility is required at all levels, in particular in the present context
- At today's level of PV cost (LCOE), a broader set of issues becomes important
  - the role of technology vs. cost, design, socio-economics, etc.
  - the challenge of sustainability (in all dimensions)
  - PV going everywhere
  - the impact of digitalization
  - the integration in the energy system
- Challenges and opportunities for many new innovations

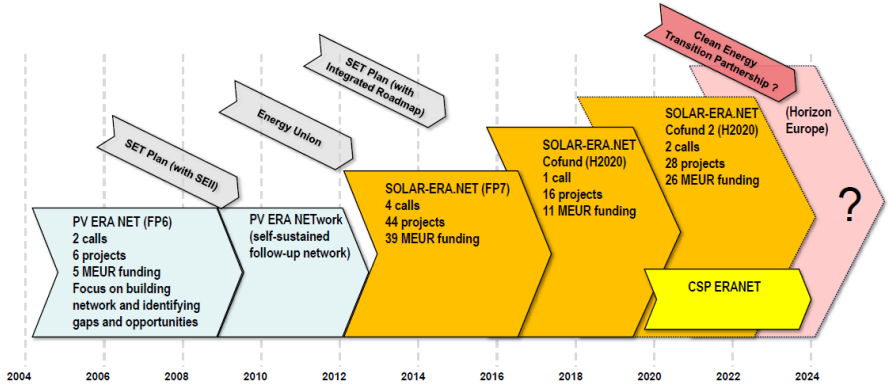
Next opportunities

- Launch of 8th Joint Call expected for 6 October 2021 with participation from
  - Austria (KLIEN / FFG)
  - Belgium - Flanders (VLAIO)
  - Israel (MoE)
  - The Netherlands (RVO)
  - Switzerland (SFOE)
  - Turkey (Tübitak)
- Pre-proposals before end of 2021, projects to be started in second half of 2022
- Webinar 6 October 2021: “Exchange of Experiences”
- Stay tuned to www.solar-era.net

Looking ahead

Clean Energy Transition Partnership (in preparation)

- EC support mainly for co-funding transnational projects
- More agencies and thematically larger
- Challenges oriented based on 7 “transition initiatives”, of relevance for PV
  - TRI2: Enhanced zero emission power technologies
  - TRI7: Integration in the built environment
- First set of calls eventually late 2022 / early 2023

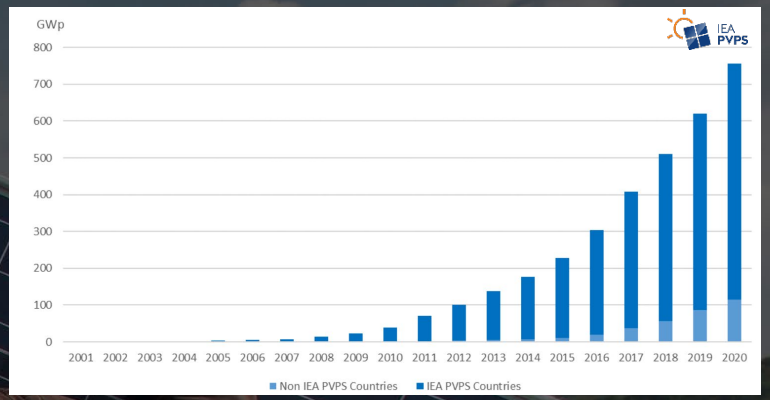


Some key questions

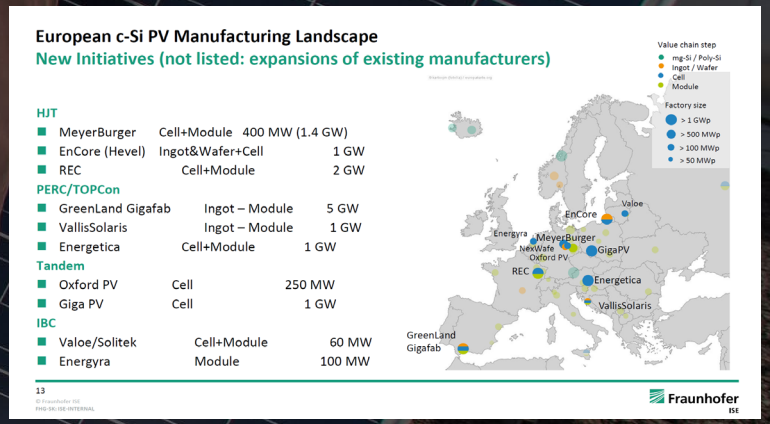
- Addressing the right challenges and topics ?
- Sufficient resources and mobilization ?
- Appropriate efficiency and impact ?

Quote Diederik Samsom, EC (EU PVSEC 6 Sep. 2021): We can do better !

Opportunities



- PV strongly gaining momentum (worldwide and in Europe)
- Europe's strength in R&D, creativity, innovation and system approach
- Bringing manufacturing back to Europe ?
- Various national und EU Recovery Plans
- Growing investments along the value chain
- Experience and tools for international cooperation



European c-Si PV Manufacturing Landscape

New Initiatives (not listed: expansions of existing manufacturers)

HJT		
MeyerBurger	Cell+Module	400 MW (1.4 GW)
EnCore (Hevel)	Ingot&Wafer+Cell	1 GW
REC	Cell+Module	2 GW
PERC/TOPCon		
GreenLand Gigafab	Ingot – Module	5 GW
VallisSolaris	Ingot – Module	1 GW
Energetica	Cell+Module	1 GW
Tandem		
Oxford PV	Cell	250 MW
Giga PV	Cell	1 GW
IBC		
Valoe/Solitek	Cell+Module	60 MW
Energyra	Module	100 MW

To conclude: How can we do better ?

PV RTDI community – focus on …

- … meaningful innovation and industrial impact
- … true partnerships and implementation

Agencies – focus on …

- … adequate, balanced and flexible budgets
- … smooth and efficient national procedures

EC – focus on …

- … efficient and flexible support schemes
- … continuity and outreach to countries

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