

WORKSHOP “Double Green Minimizing PV Environmental Footprint”



Proposal for EU ECOLABEL for SOLAR PHOTOVOLTAIC panels



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Proposal for EU Ecolabel for solar Photovoltaic Panel

*How to support
Industry and
secure investors
and consumers*

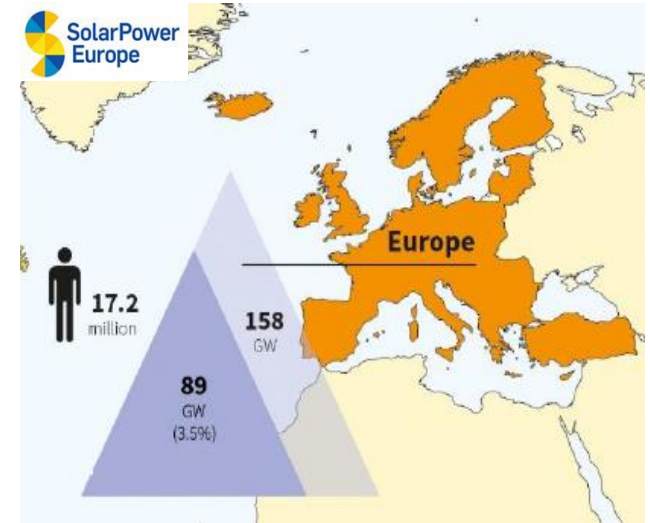
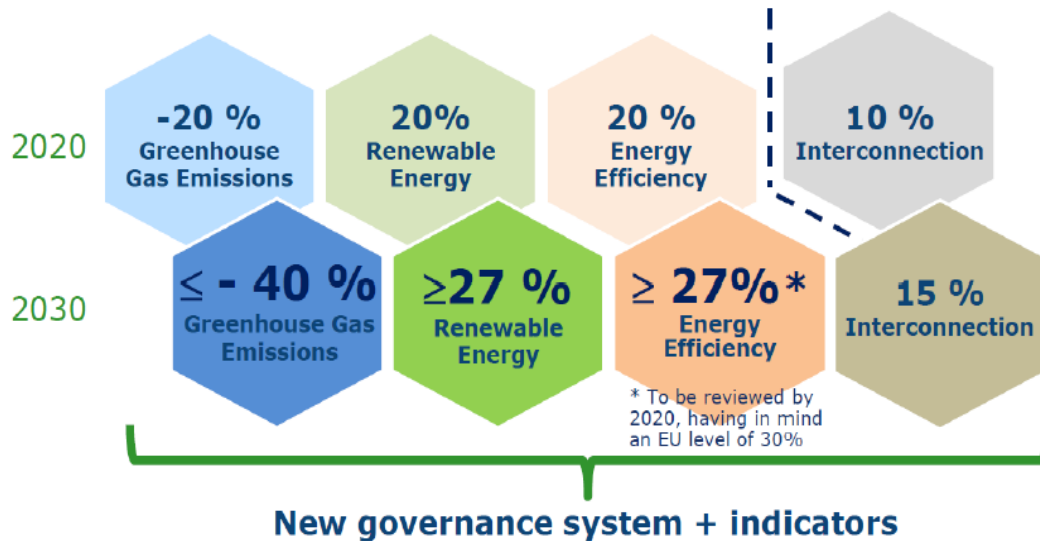
CONTENT

1. **PV Market Growth and Challenges:
Why an Ecolabel Initiative**
2. Objectives, framework and stakeholders
3. Status and relation to other initiatives: PEFCR, and Ecodesign Directive
4. Conclusion & Perspectives

Framework

2030 framework for climate and energy policies

[COM(2014)15 & COM(2014)520] European council of 23-24/10/2014

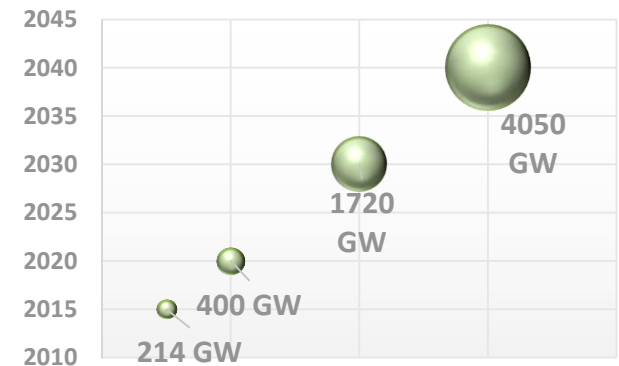
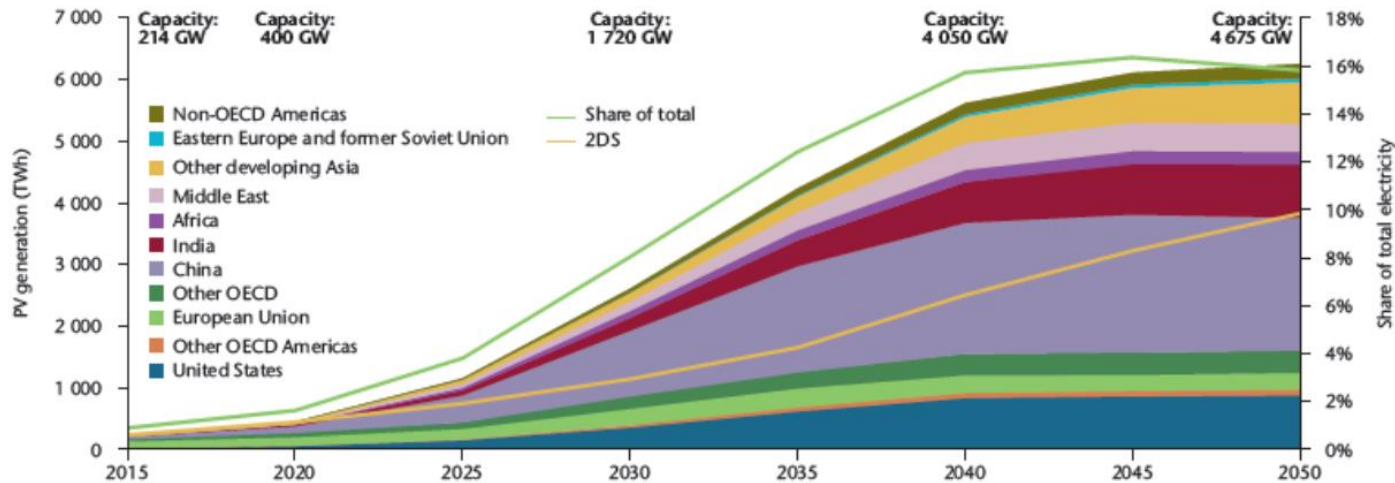


To meet RE target, PV is essential

- To maximise environmentally friendly energy production
- To provide reliable, eco-relevant information to consumers

The breakthrough of solar Photovoltaics worldwide

Regional electricity production from solar PV in TWh and share of global electricity

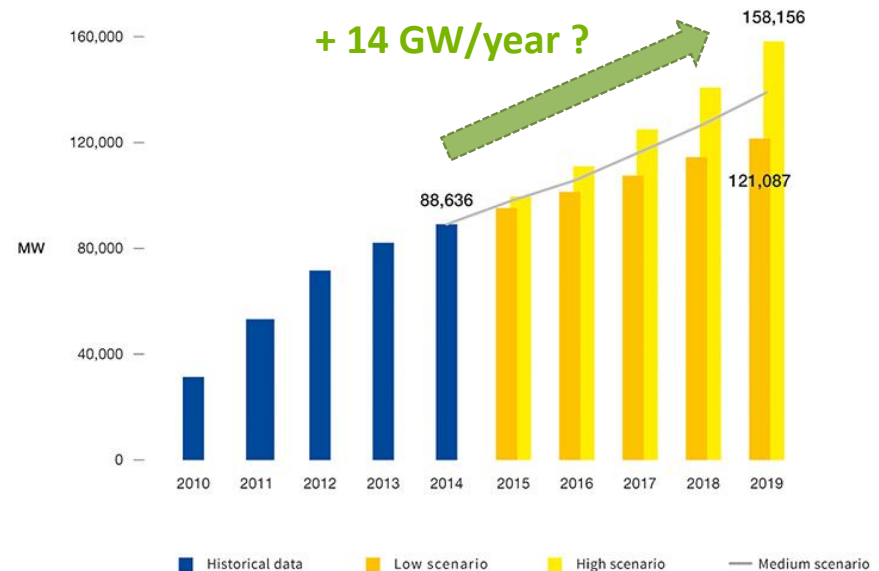


- Photovoltaic is a fast growing market: Compound Annual Growth Rate (CAGR) of PV installations
 - 2000 -2014 : + 44%, in 2014: + 45 GW
 - in 2015: +50 GW, +1/3rd %/2014; 220GW globally
 - **forecast end 2016: about 300 GW globally**
 - **Towards 100 GW/year in 2020 & 200 GW/year in 2030**

Solar PV European Market

- It is essential that this transition to a low carbon electricity mix
 - delivers in the **long term** the carbon free solar energy expected by European citizens
 - Is made in an optimal way with **respect to energy efficiency, carbon footprint, resource efficiency** etc...
 - Provides an incentive for PV industry to **continuously improve product quality** meeting the best environmental standards and **stimulating worldwide demand** for these higher quality products.

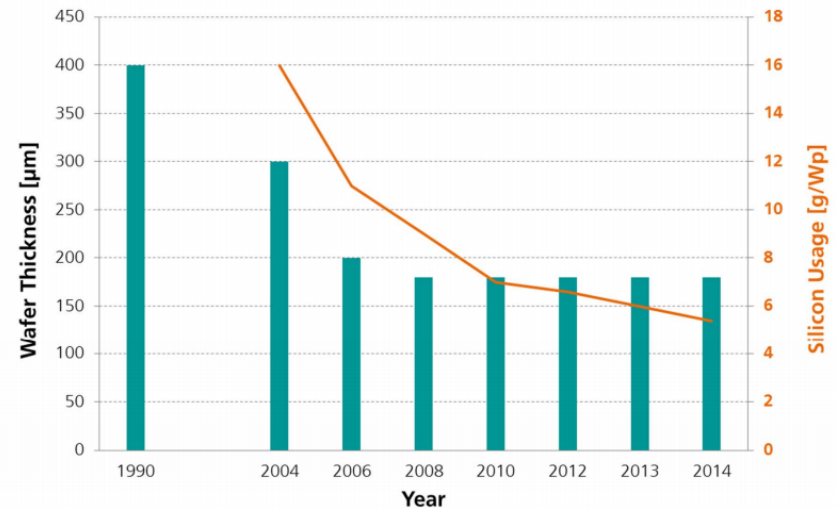
● EUROPEAN CUMULATIVE SOLAR PV MARKET SCENARIOS Until 2019



Market Growth and other Environmental issues

- Reduction of energy consumption during the manufacturing phase
- Limitation of land use
- Reduction of material use
 - c-Si Solar Cell :
 ↓ silicon Usage [g/Wp] > 50%
 - Rare earth and metals :
 - tellurium, indium, gallium
- Recycling:
 - Encourage application of results of on going research for recycling of silicon panels and thin film solar panels

c-Si Solar Cell Development Wafer Thickness [μm] & Silicon Usage [g/Wp]



Data: until 2012: EU PV Technology Platform Strategic Research Agenda, from 2012: c-Si Roadmap ITRPV; 2f

Why an Ecolabel Initiative?

- To accelerate the promotion of high quality PV products
 - Ecolabel is a tool based on
 - a multi-criteria approach (reliability, technical & environmental performances),
 - Aiming at helping professionals and consumers in identifying high performance modules on technical and environmental point of views;
 - Could contribute to sustain European photovoltaic industry because of high quality requirements;
- In France, ADEME is committed to supporting the Ecolabel initiative dedicated to PV modules since 2015.
- ADEME is also involved in the carbon footprint methodology implemented in the French PV tenders:
 - validation of specific emission factors provided by PV manufacturers;
 - Goal: encourage and valorize alternative process and products with low environmental impact in term of CO₂-Equivalent emissions.
 - Proposal: implementation of Ecolabel in the French PV tender instead of simplified carbon footprint assessment.

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Market key Issues, Challenges and Objectives

- ISSUES

- Lack of product-specific, reliable information on environmental performance, and durability
- Need for methodologies and criteria to qualify and guarantee the better products

- CHALLENGES

- Compliance with environmental regulations (REACH, CLP, RoHS, WEEE)
- Methodologies for assessing Performance / Reliability / Lifetime
- Life cycle analysis : in link with EU PV PEF Product Environmental Footprint

- OBJECTIVES :

- Reliability and environmental quality of PV panels :
- Comprehensive information for consumers and investors
- Market Trust
- **Solar industry's green credibility**

2. EU Ecolabel Initiative

<http://ec.europa.eu/environment/ecolabel/>

- *Framework*

- *Consortium & Stakeholders*

- *Scope*

- *Prerequisites*

- “The EU Ecolabel helps you identify products and services that have a *reduced environmental impact throughout their life cycle*, from the extraction of raw material through to production, use and disposal. Recognised throughout Europe, EU Ecolabel is a *voluntary* label promoting environmental excellence which can be trusted.”



- Panel + Junction Box + Cables
- Compliance with EU Ecolabel Regulation: Articles 6(6)/(7) on SVHC: REACH & RoHS
- Demonstration of stakeholders' interest
- Fulfillment of consumers' needs

➤ Results of the SVHC scoping study: possibility of compliance with REACH, CLP and RoHS

Objective : to assess if it is possible to produce PV panels avoiding SVHC referred to in Article 57 of REACH, CLP and in RoHS (1&2)

NB : PV panels are currently excluded from RoHS compliance

11

○ Data & Methodology

- Bill of materials from Smartgreenscan, expert, Mrs. Mariska De Wild-Scholten
- Foreground of Fraunhofer ISE and CEA-INES, interview of manufacturers and suppliers

○ Results



A general REACH compliance is possible

- An ECOLABEL initiative may **help to create awareness and visibility** on the actual amount and use of REACH compliant plasticisers



A general RoHS compliance is possible

- The ECOLABEL PV initiative would **create awareness and visibility on the actual use of ROHS compliant flame retardant**
- and **accelerate the transition towards lead-free processing,**

Ecolabel : Stakeholders' interest

- PV Manufacturers and Solar Power Europe support the launch of the PV Ecolabel initiative → **letters of interest**
- Public Authorities in the EU want to be able to ascertain that their support for PV is in conformity with all their environmental objectives.
- Investors and consumers want to know if their investment is durable and environmentally optimal /responsible.
- If decision of the EUEB is positive : the consortium is looking forward to an inclusive and fruitful cooperation with all competent interested parties

PUBLIC MARKET CONTEXT

- Environmental impacts of PV systems can vary significantly according to different parameters like the module technology, the electrical mix used for PV components manufacturing, the system yield and the lifetime of the system, independently of irradiance.
- PV systems will be over time one of the main contributor in term of renewable electricity production and greenhouse gas reduction .
- Renewable energies and Photovoltaics in particular have also to be exemplar in terms of environmental performances, in a context of important development of PV installations at an international level.

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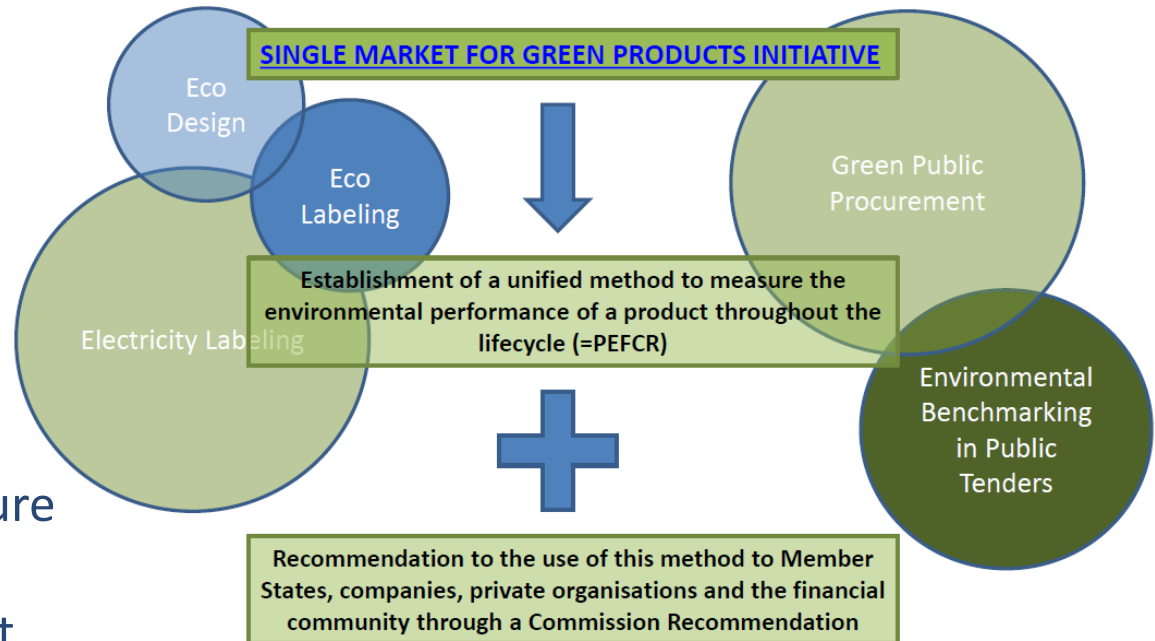
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EU Environmental initiative PEFCR on PV Electricity

- **Product Environmental Footprint Category Rules on Photovoltaic Modules :**

=> PEFCR Pilot Project
“Photovoltaic Electricity Generation”

- Unified method to measure the environmental performance of a product throughout the lifecycle.
- Validated by national bodies before the EC.



[PEFCR EUEB Presentation, Andreas Wade - First Solar]

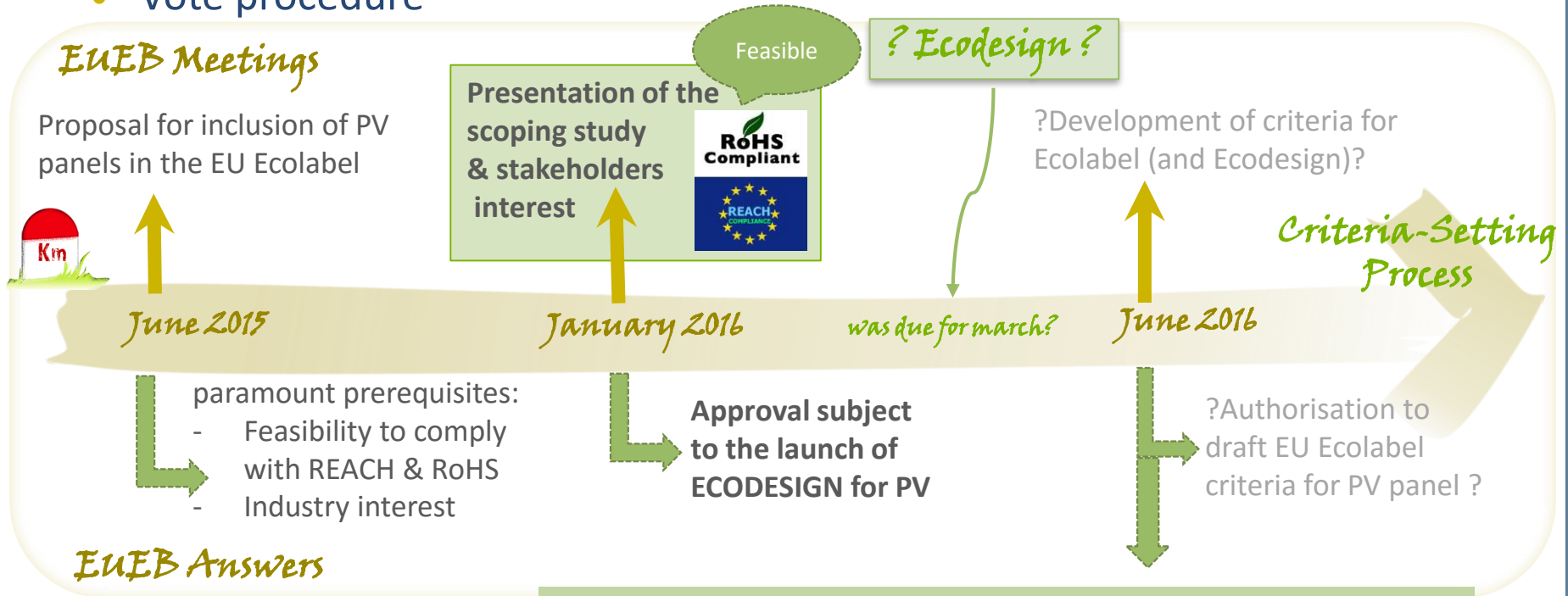
Other Environmental initiatives on PV

- ECODESIGN Directive:
 - **Inclusion of PV currently in discussion**

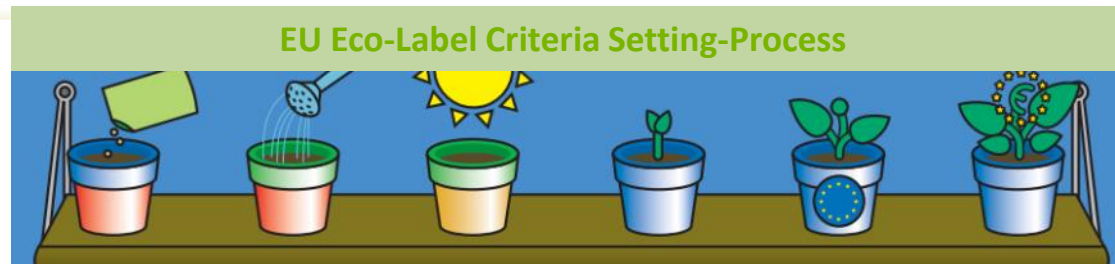
 - US NSF NSF Standardisation Process
 - Sustainability Leadership
 - Standard for Photovoltaic Modules
 - Initiative lead by industry, investors, installers, utilities, consumer organizations, scientists
- ⇒ Objective : SYNERGY
- implement findings of PEFCR in the criteria development process and of all the other initiatives

Ecolabel Initiative : Current Status

- European Union Ecolabelling Board – **EUEB** : 25 Member States
 - Vote procedure



EUEB Answers



<http://ec.europa.eu/environment/ecolabel/documents/general.pdf>

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Conditions for the UPTAKE of PV panel ECOLABEL

- Market conditions :
 - **2030 wide bidding RE target**
- Industry situation :
 - Industry is seeking for positive differentiation :
 - ✦ Trigger to those making the effort to improve their practices and products.
- Political & societal context: increased environmental awareness and economy's responsiveness
 - Enormous investments in PV required to meet COP21 objectives
 - Holistic approach of environmental impact → Especially requested for RE

Conclusions

- An EU Ecolabel for PV modules is **not only feasible but needed** by a variety of stakeholders (authorities, investors, consumers, Industry...)
- A growing share of PV modules marketed today in Europe appears already compliant with REACH and RoHS directives (art. 6,(6)/(7) of the Ecolabel) or could become so at competitive cost. *(e.g. leadfree soldering, replacement of hazardous phthalates in plasticizers).*
- A PV EU Ecolabel would contribute to accelerate Eco compliance and reward the first movers.
- Along with other instruments, a PV EU Ecolabel would powerfully contribute to reaching EU objectives on Environment protection and Climate-Energy.
- The consortium is ready to deploy its expertise and resources to assist in developing the most relevant criteria, **provided it is funded.**



21

THANKS FOR YOUR ATTENTION

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