The European Commission's science and knowledge service

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Solar photovoltaic modules, inverters and systems

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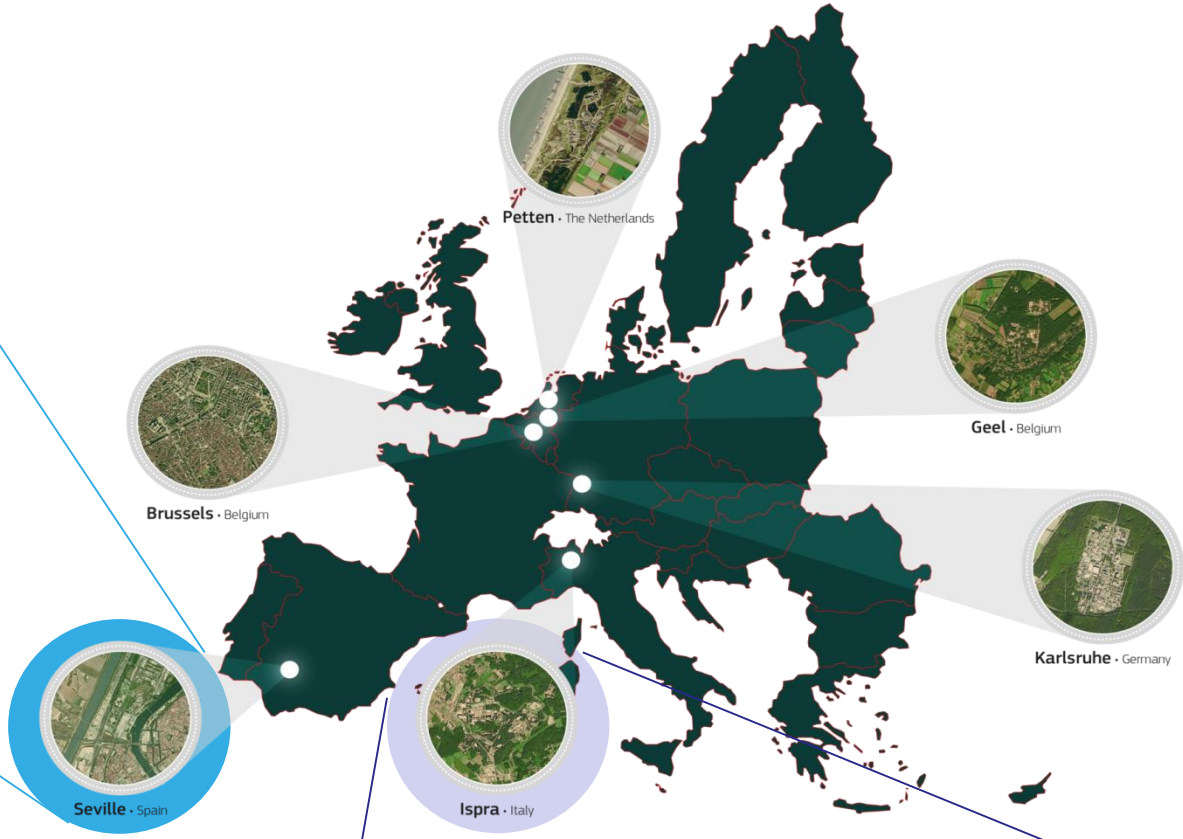
Nieves Espinosa, Scientific/project officer, JRC B5

The Joint Research Centre study team

JRC Sevilla – B5 Unit

- Leading the technical research and analysis
- Co-ordinating stakeholder dialogue



JRC Ispra – C2 Unit (ESTI)

- Technical support on standards/testing (parallel project)

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Preparatory study scope

Coherent implementation of product policies to improve life cycle cost and environmental performance.

Scope: Modules, inverters and systems

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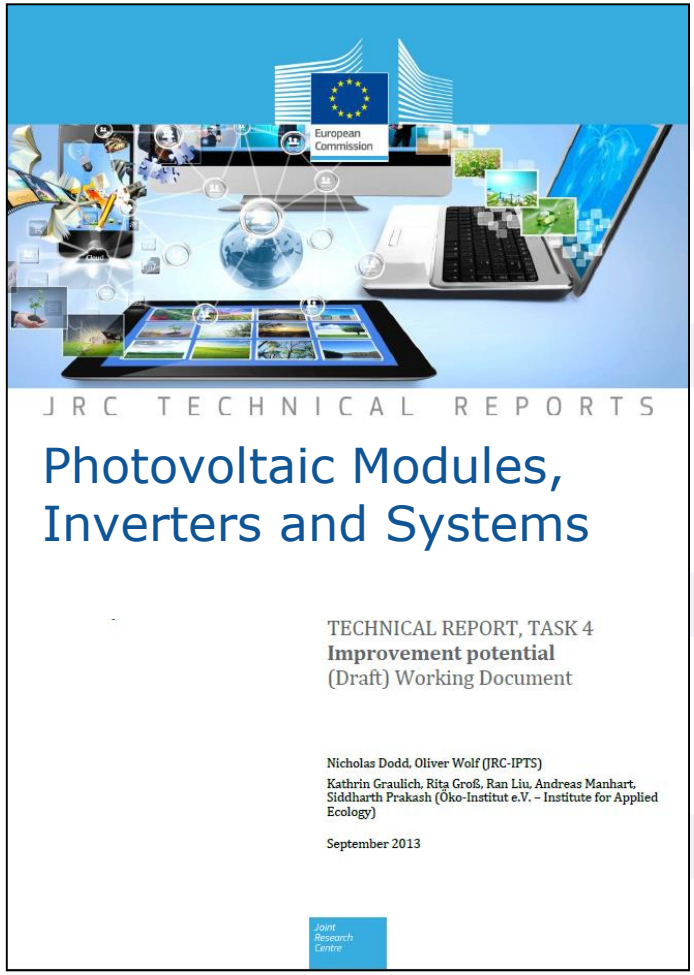
One policy development process: DGs GROW (lead), ENER and ENV are involved.



Ecodesign minimum requirements

Energy Label classes

Ecolabel criteria

GPP criteria

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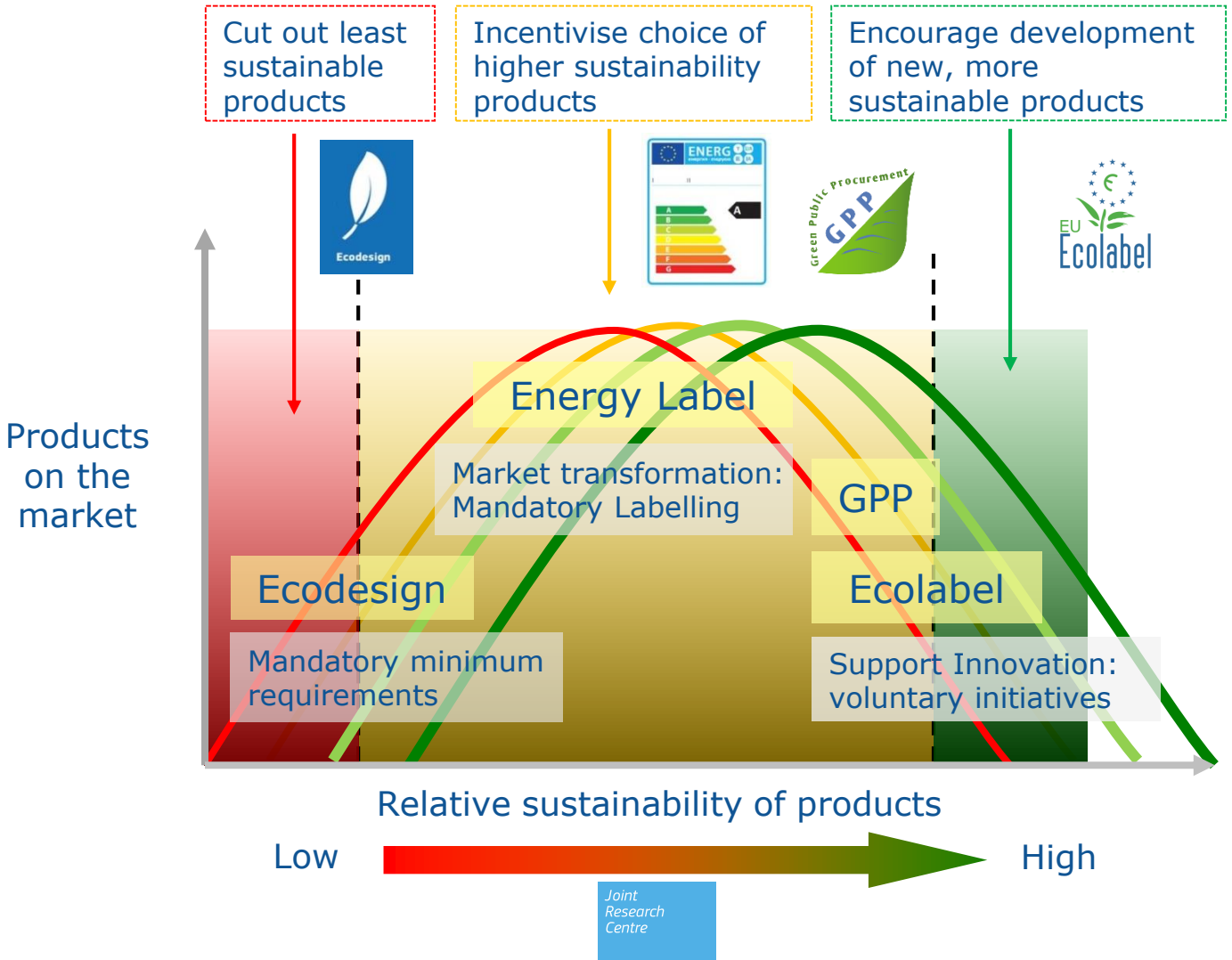
Overlay of EU product policy instruments



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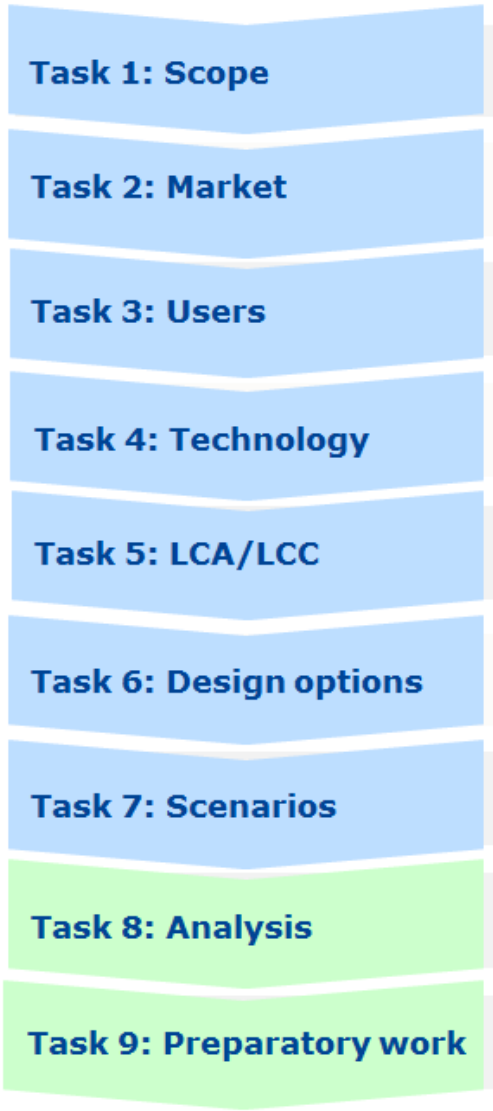
Ecodesign: MEErP methodology

'….framework requiring manufacturers of energy-related products to improve the environmental performance of their products by meeting minimum energy efficiency requirements, as well as other environmental criteria such as water consumption, emission levels or minimum durability of certain components before they can place their products on the market.

- Methodology for a 'preparatory study' under ED
- Minimum requirements to place products on the market
  - Energy performance and material efficiency criteria
- Energy Label complements enabling end-consumers to identify the better-performing ErP (A-G scale)



Ecolabel: market 'pull'

'….promote products with a reduced environmental impact during their entire life cycle…. avoid the proliferation of environmental labelling schemes and to encourage higher environmental performance in all sectors for which environmental impact is a factor in consumer choice.'

- Regulation (EC) No 66/2010 on the EU Ecolabel
- Multi-criteria sets informed by LCA
  - ✓ Shall indicatively reflect best 10-20% products on market
  - ✓ Aspects may include energy, chemicals, circularity, CSR
- Identification of **front runner** product specifications
- Includes a focus on hazardous substances

Green Public Procurement: market 'pull'

'... a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured.'

- COM(2008) 400 Public procurement for a better environment
- Multi-criteria sets informed by LCA and LCC
  - ✓ Core: minimum additional verification or cost increases
  - ✓ Comprehensive: additional verification or slight cost increase (EU Ecolabel)
  - ✓ **Award: can be used to encourage the market to innovate**
- Engagement of procurement expertise
- Criteria must follow the Procurement Directive

MEErP methodology

Task1
Scope

- Modules, Inverters and systems

•Functional unit

-Standards & Labels

- Legislation

• Reshaping of EU electricity market
• RER targets
•Near zero energy buildings
•CRM, WEEE

Task2
Markets

- Stock models

• PV modules
• Inverters

- EU Shipments

Routes to market

EU installed capacity

(With a differentiation per type of techs and market segments)

Task3
Users

- Direct VS Indirect impacts

• Performance Ratio/Substituted energy

- Self-consumption

•Focus on residential scale including storage

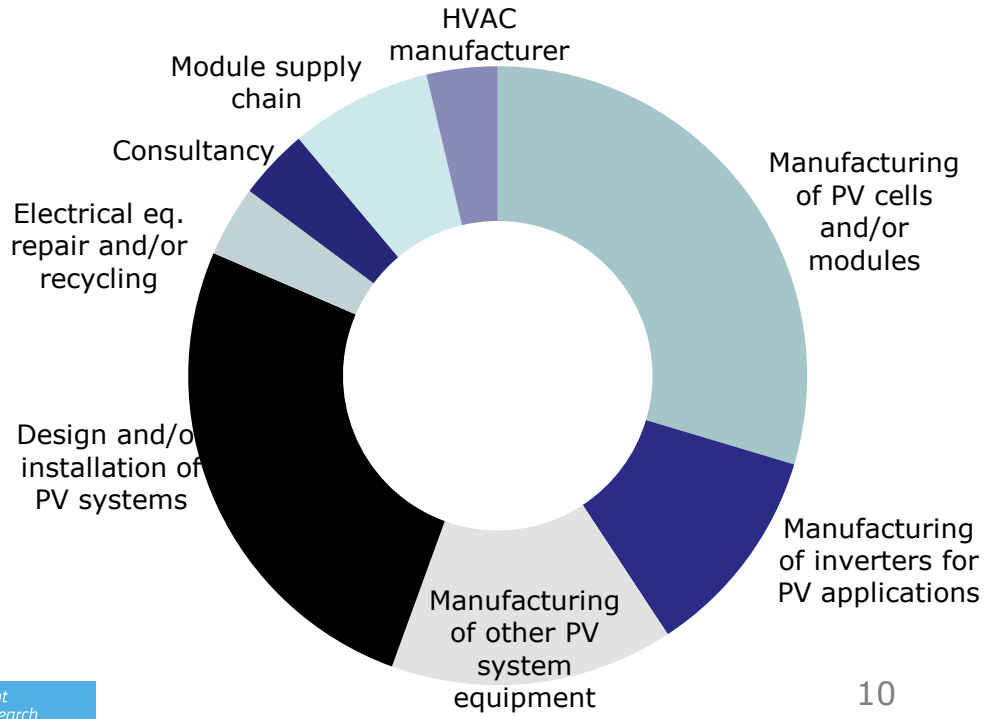
- End of life

• Stock and common practices
• Maintenance, repairs, recycle, remanufacturing

Questionnaire's key aspects

118 registered SHs, 50 replies

- **Modules**
  - ✓ Cut-offs limits: 50 Wp, no cell number restriction
  - ✓ BIPV 75% of stakeholders in favour
- **Inverters**
  - ✓ All stand-alone sizes included
  - ✓ Microinverters: as a system
- **Systems**
  - ✓ IN
    - Tracking structures
    - Cleaning systems
    - Batteries
  - ✓ OUT
    - Consumer electronic products



Analysis of improvement potential

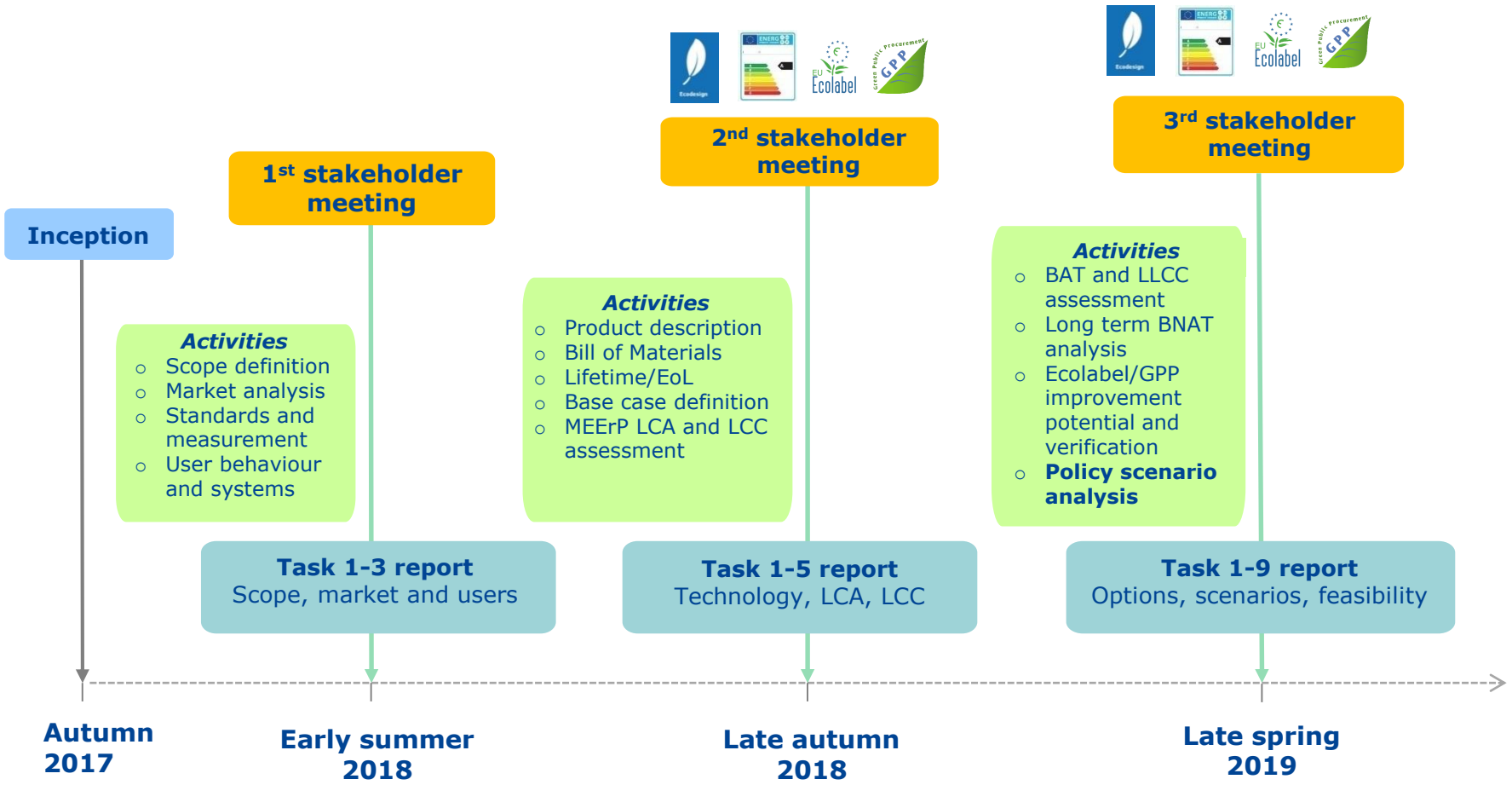
Identification of Best and Best Not (yet) Available Technology (BAT/BNAT)

- ✓ **PV component** efficiency, reliability and durability
- ✓ **PV system** performance parameters
- ✓ **Electricity network** effects

Influencing factors?

- Quality control in factory
- Decisions at system design stage
- Consumers as generators
- Circular economy aspects

Preparatory study draft work programme



How stakeholders can take part

- **Register** as a stakeholder
  - ✓ Via the study website
- **Comment** on draft working documents
  - ✓ Registered stakeholders will be able to comment within defined time frames
- **Participate** in stakeholder meetings
  - ✓ Three meetings will take place
- **Share** information, experience and data
  - ✓ Bi-lateral basis or as part of technical sub-groups

Contact points

Stakeholder enquiries
email: jrc-b5-photovoltaics@ec.europa.eu

Study home page (for stakeholder registration)
http://susproc.jrc.ec.europa.eu/solar_photovoltaics

EU Science Hub:
ec.europa.eu/jrc

Facebook:
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