



NL Agency
Ministry of Economic Affairs

New Forms of Organisation for Grid Connected PV in the Netherlands

Presentation workshop
PVPS task 1 I
the Netherlands
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» Focus on sustainability,
innovation and international



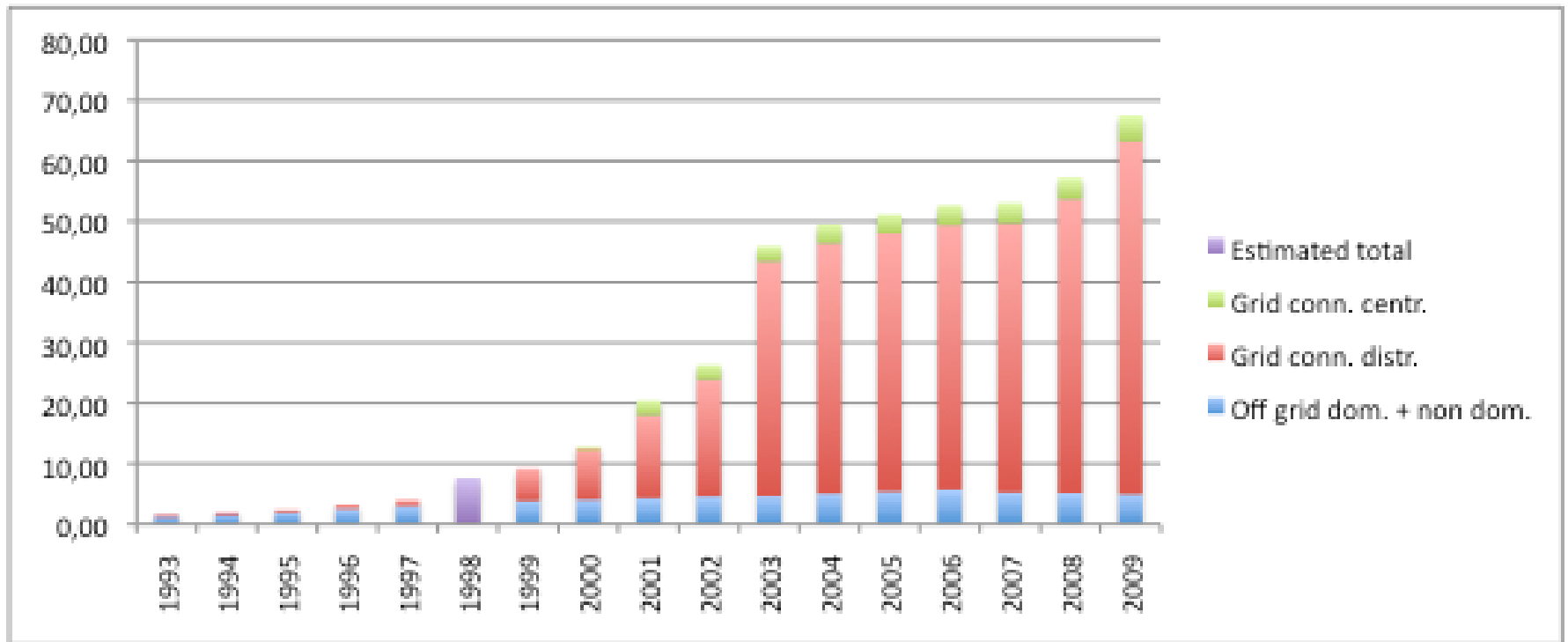
Content:

1. Dutch PV home market
2. Dutch PV research
3. From technology push to demand pull
4. New forms of organisations of PV demand.
5. To conclude



Dutch PV home market

Cumulative installed capacity in MW 1993-2009 in 3 submarkets.
In 2010 expected to reach 76MW well below 1 % total 36 GWh.





Bottlenecks small home market small systems SBIR Call



- STANDARDS
- INTEGRATION BUILDING PRACTISES
- UNIFORM CONNECTIONS
- REGULATION

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Dutch PV home market.

Small innovative home market and changing support schemes.

- In 2010 feed in tariffs for 2011 and smaller systems cancelled.
- In 2011 new feed in tariffs expected only for larger systems over 15 kWp and with a maximum 15 euro cent.
- Smaller systems can deliver back to the grid up to 5000 kWh.

Still Dutch PV sector exported 600 Meuro and outperforming all other renewable energy sources.

- Most export is from equipment manufacturers, from cell/modules producers and some from high end and BIPV applications.
- Three tier export oriented industry.



PV in the Build Environment



Red PV Façade in Almere City photo Sun Factory •



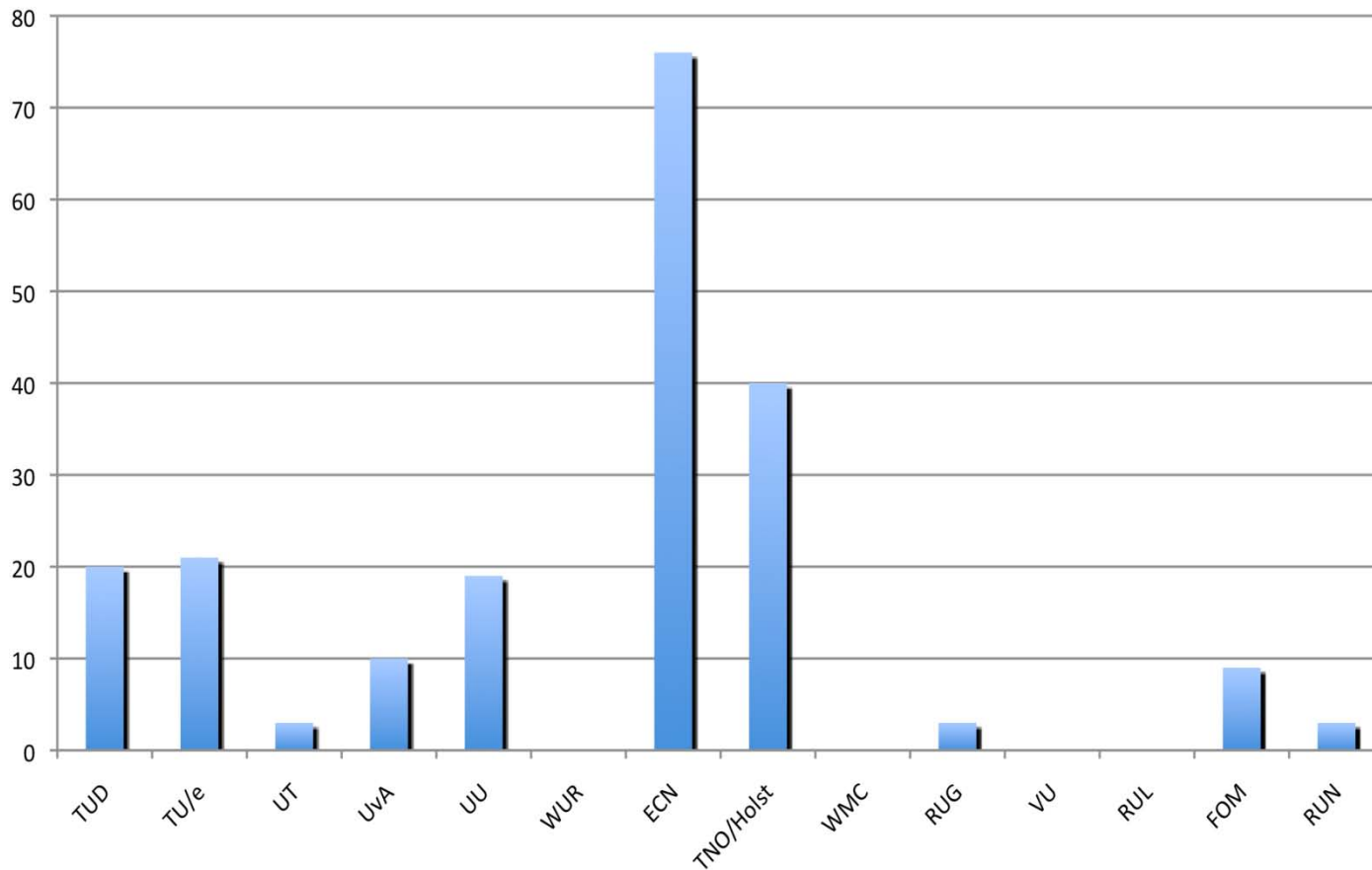
PV in the Build Environment



Cold bend PV panels project partners Movares, ECN and BRS Building systems



PV Research over 200 FTE's



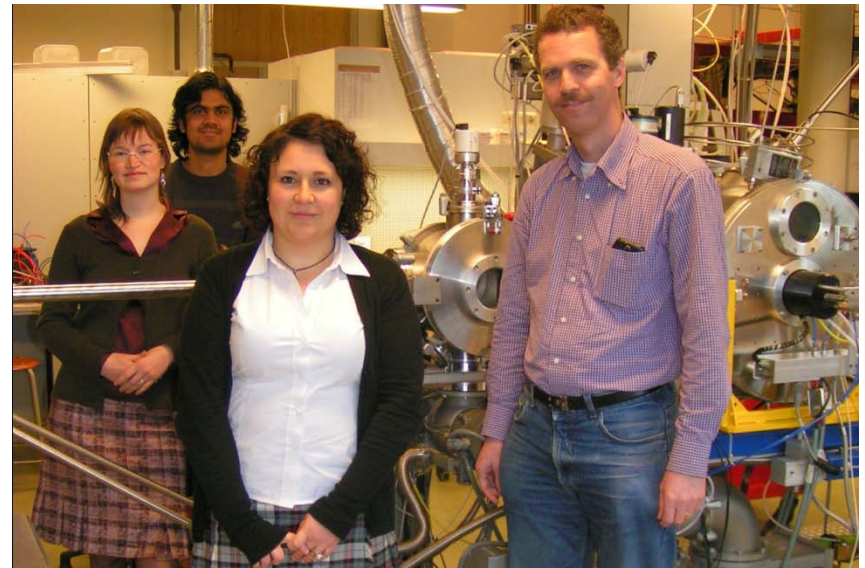
Committed fte's in 34 running RTD projects



Dutch PV Research

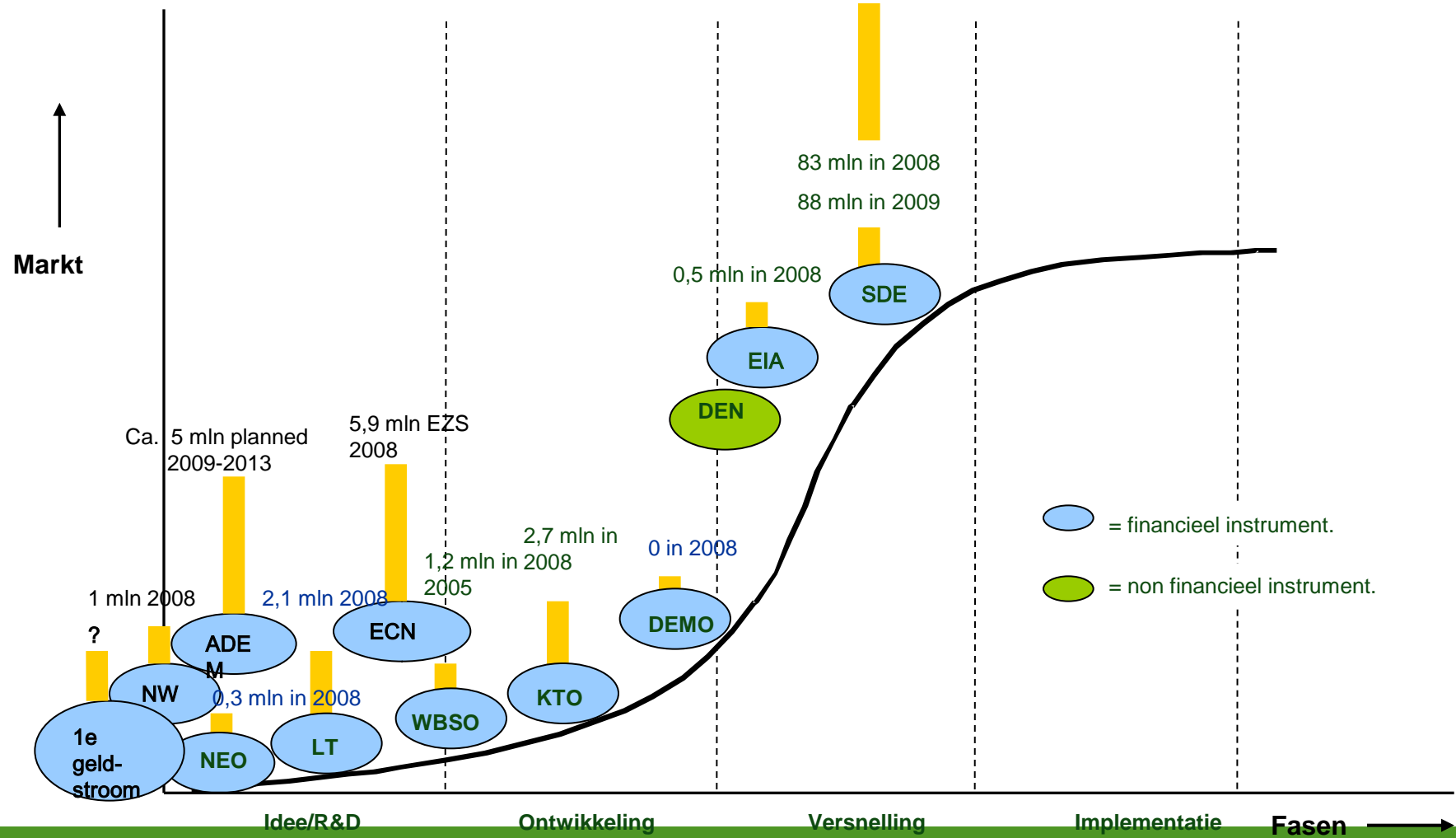
- Adjusted calculation of research expenditure in NSR > 28M€
- Research projects all along the value chain and moving up the innovation S curve.
- New integrated energy research centers, not only technical.
- Innovation systems.
- Regulation and technology.

Novasil project team TUE and TUD, tf crystalline silicon on glass, high deposition of amorphous silicon using expanded thermal plasma CVD and subsequent solid state crystallization.





Current supporting schemes moving up the innovation curve





From Technology Push to Demand Pull.

Sofar deployment with FI 1. Large Scale or 2 Small Roof Tops.

- Some countries/utilities discovered peak shaving.
- FI are reduced under economic pressure and falling prices.
- We need however easy medium sized systems $> 15\text{KWh} < 5\text{MWh}$

PV sector moves out of the pioneering phase to a mature industry.

- International consolidation, big companies, intense competition.
- Grid parity is not a business model. $>$ specify
- We need demand to pull PV over the S curve.

Several PVPS task have this capability task 8, 9, 11, 14 and 15?

- Only task 9 incorporates explicitly socio-economic aspects so far.



From Technology Push to Demand Pull.

- Back to the small but innovative Dutch PV market.
- Look at specific market segments in the build environment.
- Look at local usage as an alternative business model.
- Look at financial bottlenecks like high up front costs and long ROI.
- Look at mitigation investment risks.

For each of the possible solutions you need other types of organisations.
For each of the possible solution you may need to redesign system.

All need a sound financial basis, a certain scope and speed of action.



New Forms of Organisations of PV Demand

- Innovative project development like city car parks.
- Cooperatives join forces in negotiating, upfront finance, regulation issue.
- Virtual power plants is another way of bundling demand and scale.
- Public/private partnerships, guarantees.
- High end market and BIPV, esthetics.
- Lease constructions compete with other commercial loans.
- Solar screens and semi transparent modules, the PV experience.
- Combined PV and cooling systems, develop local usage.
- Local sustainable energy companies, take over entire exploitation.



To conclude

- Will demand pull PV over the S curve?
- What kind of organisations are needed for PV in Turkey?
- Are these trends global or local?
- Will PVPS anticipate these trends?
- PVPS needs to accommodate emerging economies.
- You are welcome to join the tasks.

- Thank you.



Thank you

