



SOLELFORSKNINGS- CENTRUM SVERIGE

Excellence center, funded by Academia, Industry and
the Swedish Energy Agency

Marika Edoff, Director





SOLVE is one of in total 11 excellence centres

- Biogas solutions research center (Linköping University)
- Swedish electromobility center (Chalmers University of Technology)
- The Swedish electricity storage and balancing centre (Chalmers University of Technology)
- Technologies and innovation for a future sustainable hydrogen economy (Chalmers University of Technology)
- The Swedish hydropower centre (Luleå University of Technology)
- ANItA, academic-industry nuclear Technology initiative (Uppsala University)
- CESTAP competence centre for sustainable turbine fuels for aviation and power generation (Lund University)
- Broadleaf competence centre (Swedish University of Agricultural Sciences)
- RESILIENT energy systems competence centre (Mälardalen University)
- The competence centre for catalysis (Chalmers University of Technology)
- **SOLVE Solar Electricity research centre** (Uppsala University)

**SOLVE is coordinated
from Uppsala University**



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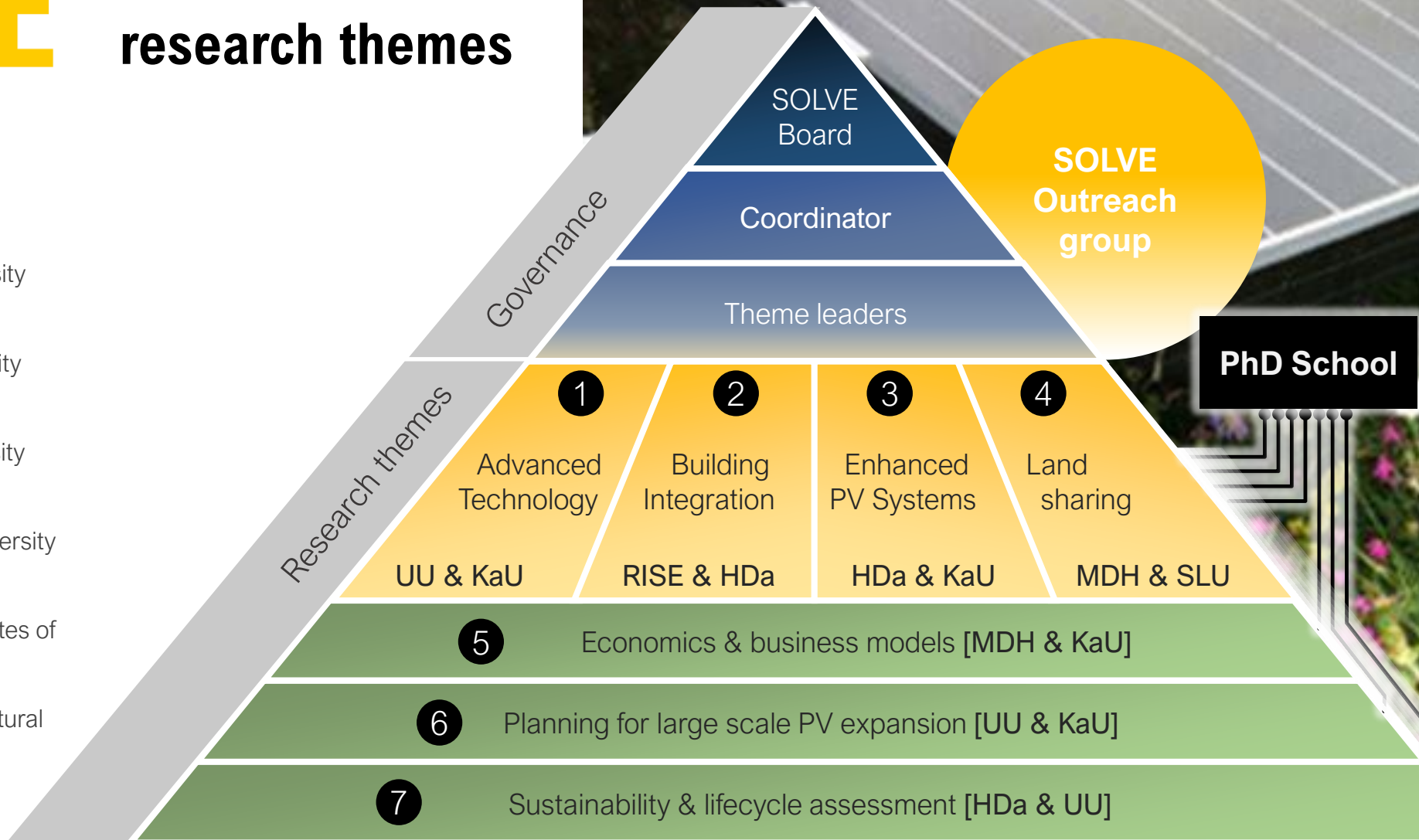


UU VICE CHANCELLOR Prof Anders Hagfeldt



Structure & research themes

-  Uppsala University [UU]
-  Dalarna University [HDa]
-  Karlstad University [KaU]
-  Mälardalen University [MDH]
-  Research Institutes of Sweden [RISE]
-  Swedish Agricultural University [SLU]

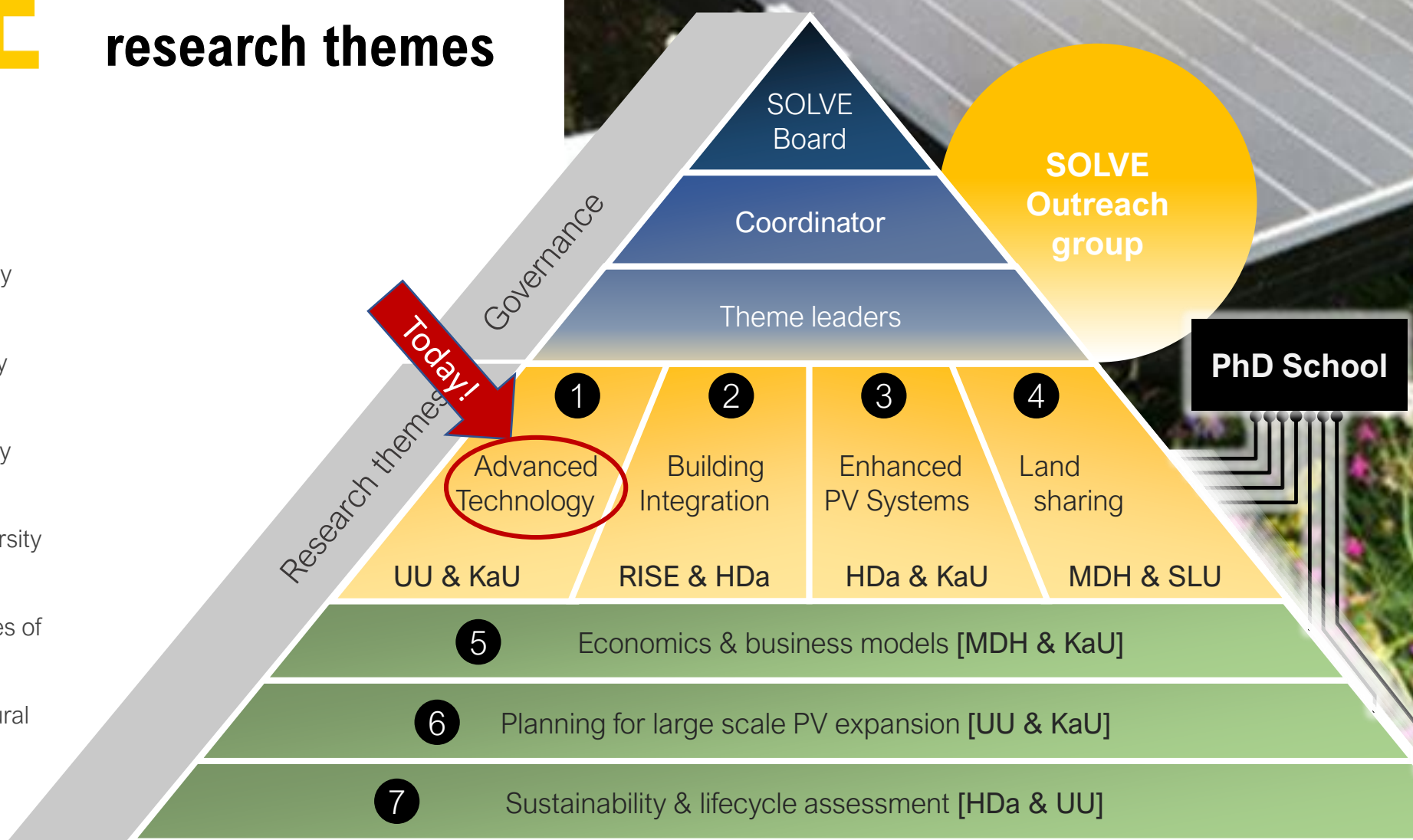


Funding: 129 MSEK, whereof 36,5 MSEK from Energy Agency



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Theme 1, 2023

New solar cell technologies

Perovskite solar cells

- High bandgap for tandem
- Electron and hole transport layers
- Long term stability

Silicon solar cells

- Contacting
- System simulation (PVCheck)



People:

PhD students:

Yawen Liu (UU) (Has successfully defended her thesis June 2023)

Bhavya Rakheja (UU)

Klara Kiselman (UU)

Majid Salari (KaU) new

Supervisors:

Markus Rinio

Uwe Zimmermann

Marika Edoff

Ellen Moons

Tobias Törndahl

Erik Johansson

Gerrit Boschloo

Non-academic supervisor/mentor:

Erik Wallin (Evolar/First ETC)

Jonas Buddgård Sticky Solar



New solar cell technologies

Perovskite solar cells

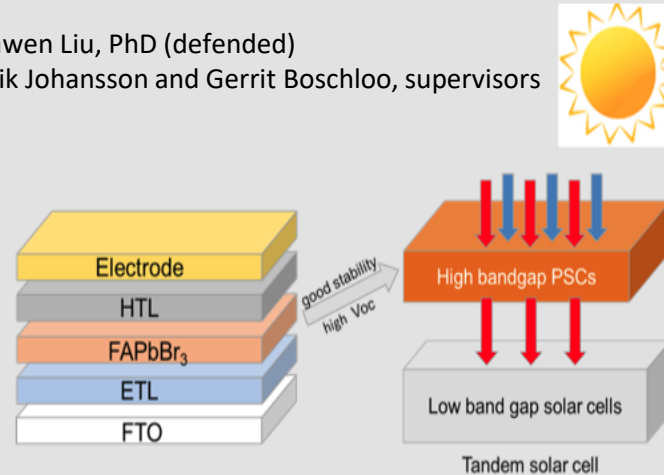
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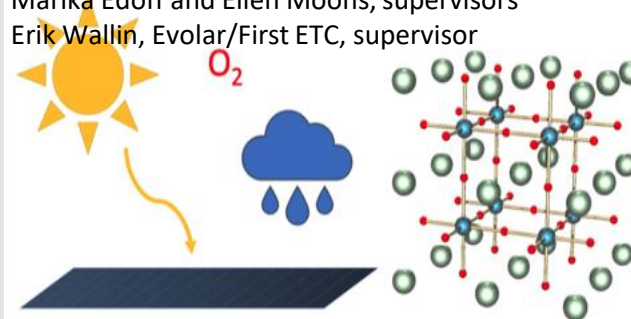
PhD project: High bandgap perovskite solar cells

Yawen Liu, PhD (defended)
Erik Johansson and Gerrit Boschloo, supervisors



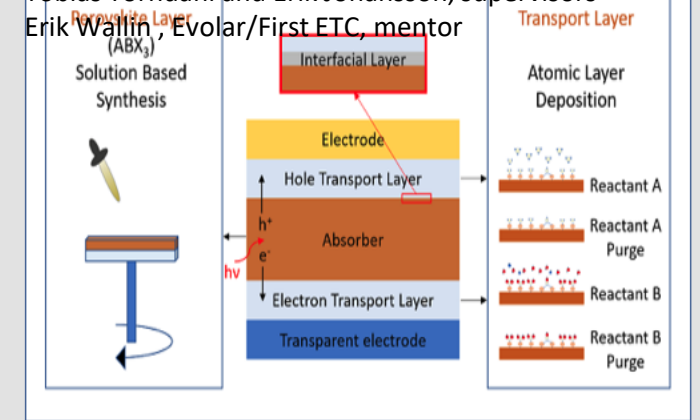
PhD project: Characterization methods for high stability thin film solar cells

Klara Kiselman, PhD student
Marika Edoff and Ellen Moons, supervisors
Erik Wallin, Evolar/First ETC, supervisor



PhD project: Synthesis and characterization of new contact materials for perovskite solar cells

Bhavya Rakheja, PhD student
Tobias Törndahl and Erik Johansson, supervisors
Erik Wallin, Evolar/First ETC, mentor



PhD project: Innovative contacting and contact properties of silicon and thin film solar cells

Majid Salari, PhD student
Markus Rinio and Uwe Zimmermann, supervisors
Jonas Buddgård Sticky Solar, mentor





PV will now grow rapidly in the Swedish energy system to beyond 10% of electricity generation.

Therefore there is a need for:

new technology generations

smart solutions for land-use integration

address grid stability issues

Solve climate-specific technology and system challenges





What is specific to Sweden?

- Historically: low electricity prices and low carbon emission energy system
- High latitude
 - Low solar angle
 - Long winter nights
 - Snow load and coverage
- Large country,
 - high degree of electrification,
 - in some places weak low voltage grids

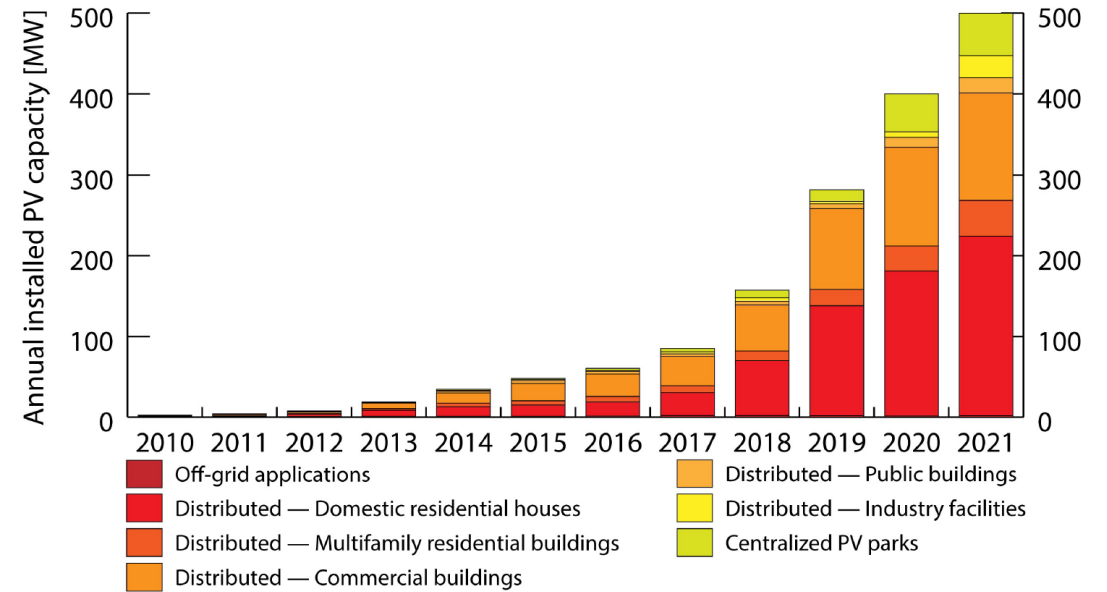


Figure 1: Annual installed PV capacity in Sweden

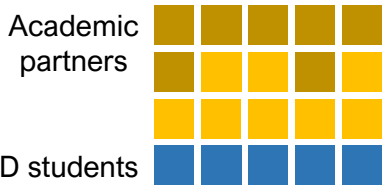
IEA-PVPS Task 1 National report Sweden





How can you be involved?

1. Research Partners



Members of currently active projects
PhD Supervisors & industry mentors

2. Infrastructure partners



Test site owners
Provide access & data
Priority involvement in projects

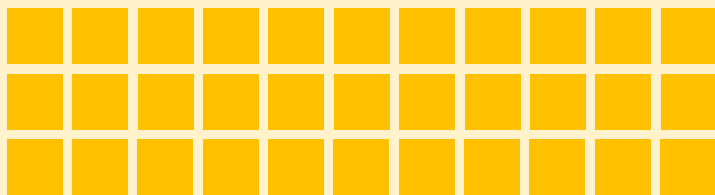
3. Outreach partners



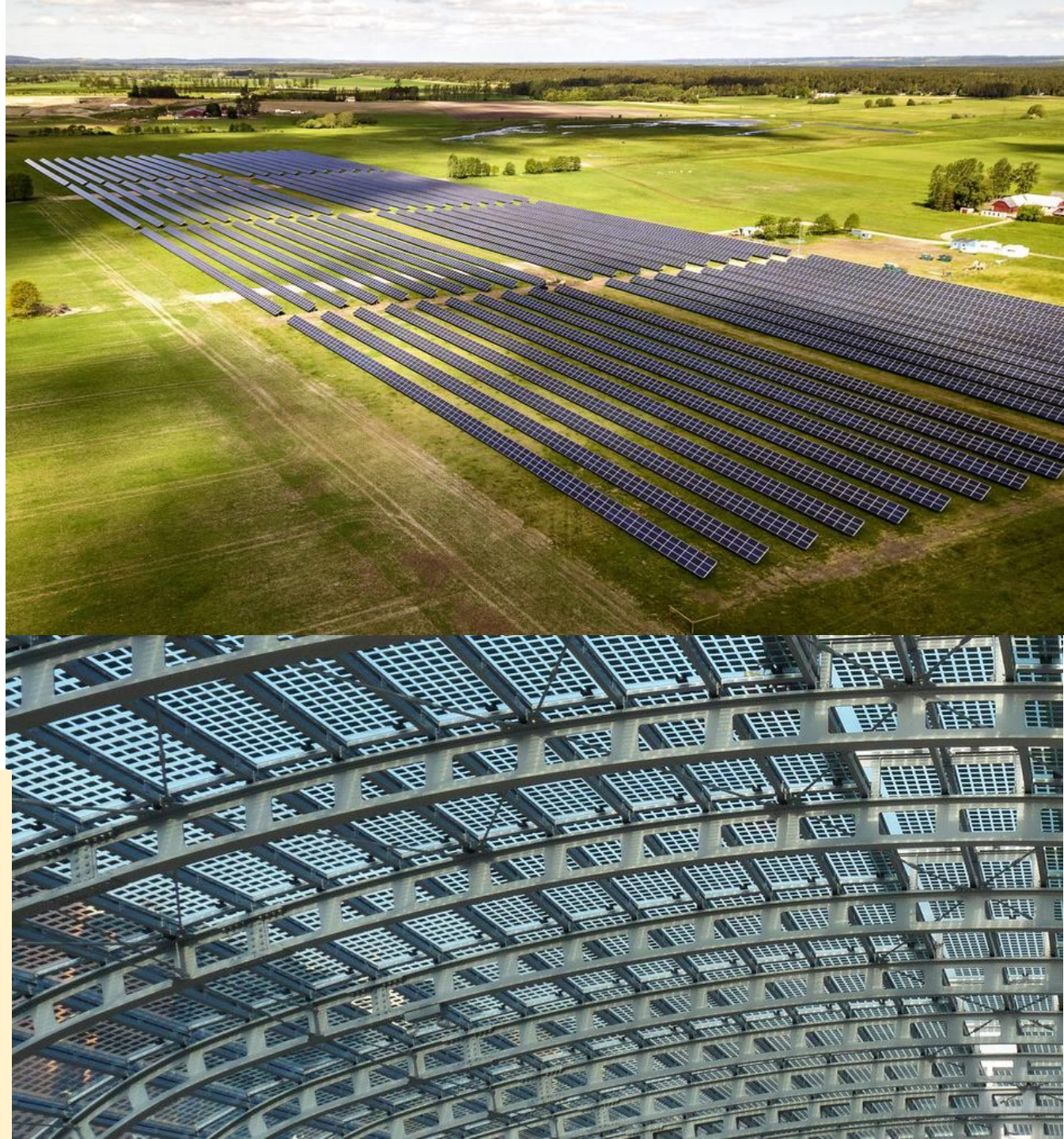
Dissemination within specific groups



SOLVE partner pool all non-academic partners



Member network and events
All partners can propose collaborative projects on a 6-monthly basis





WELCOME on board!

Who is involved?

6 Universities/Institutes
50 Companies/Organisations

