GREEN SCANS

Solar as an environmental product

Mariska de Wild-Scholten

SRC/MIST Forum on Solar-Electrical Energy Systems
27 March 2011, Abu Dhabi

Research directions

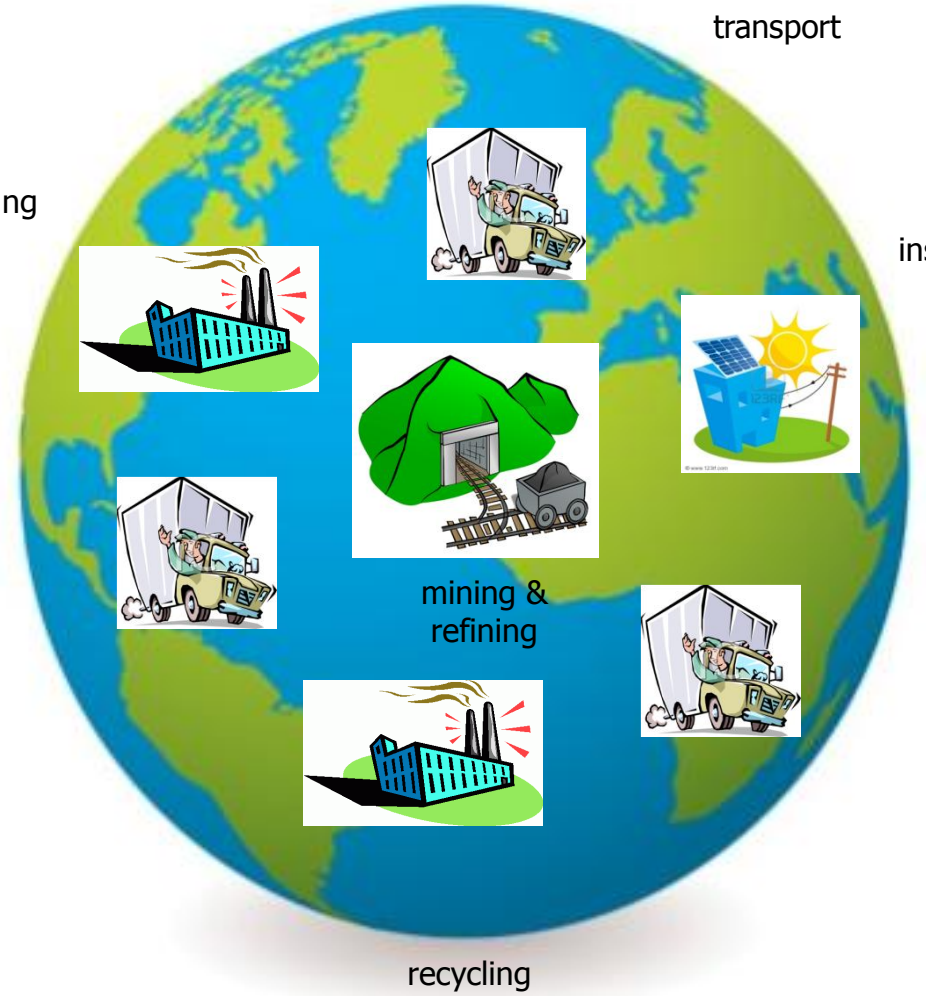
- ✓ Save resources
- ✓ Reduce environmental impacts

- !! Reduce use of scarce materials & reuse/recycle
- !! Reduce material and energy consumption
- !! Reduce waste and emissions to the environment
- !! Increase performance
- !! Increase lifetime

Life Cycle Assessment

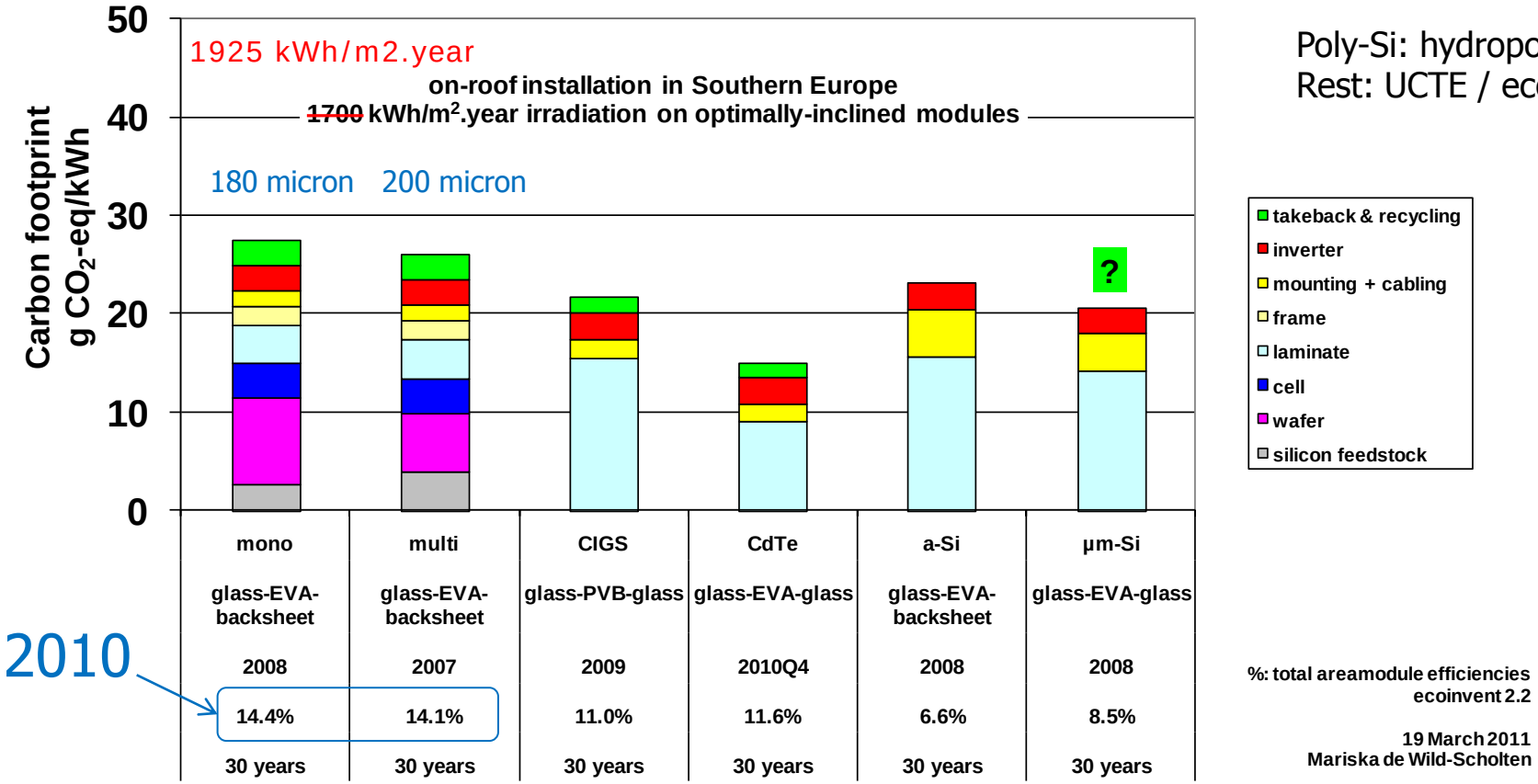
A fair comparison can only be made by taking all steps of the life-cycle into account

Life Cycle



cradletocradle

Carbon footprint



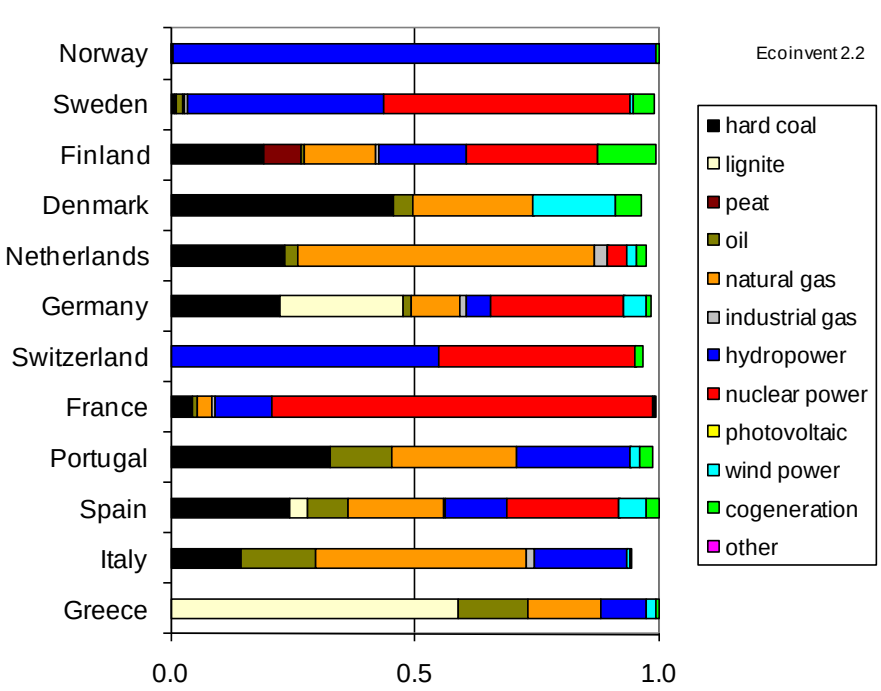
Poly-Si: hydropower
Rest: UCTE / ecoinvent

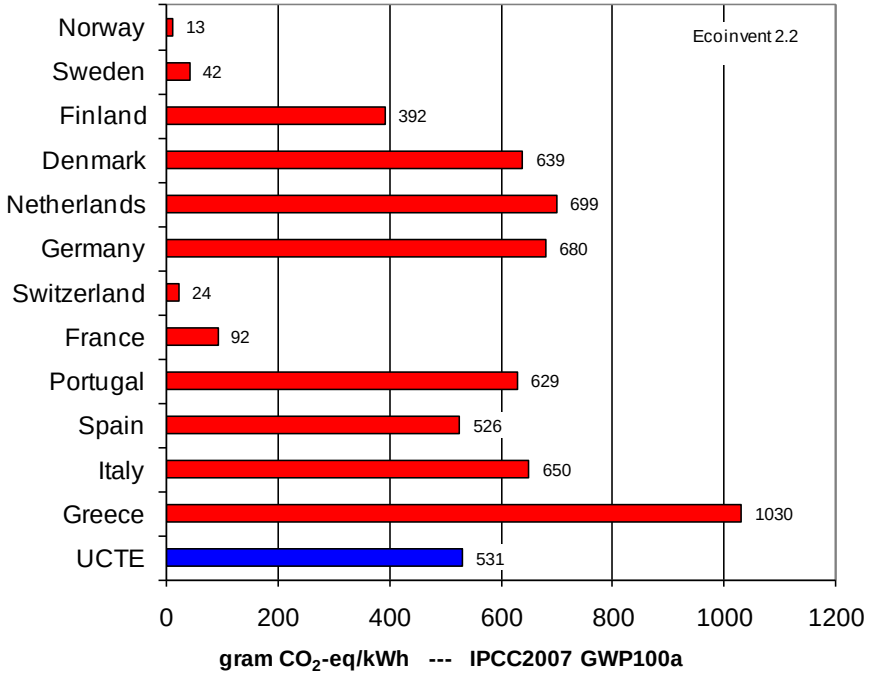
%: total areamodule efficiencies
ecoinvent 2.2

19 March 2011
Mariska de Wild-Scholten

Masdar City: 2062 kWh/m^2.year irradiation on optimally inclined plane (JRC)

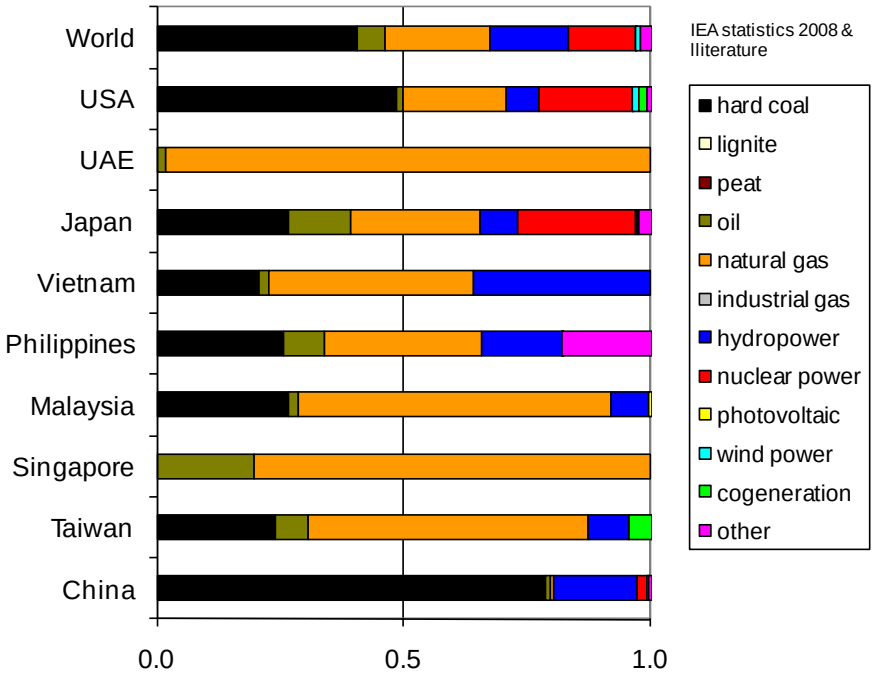
Carbon footprint
Electricity from Europe

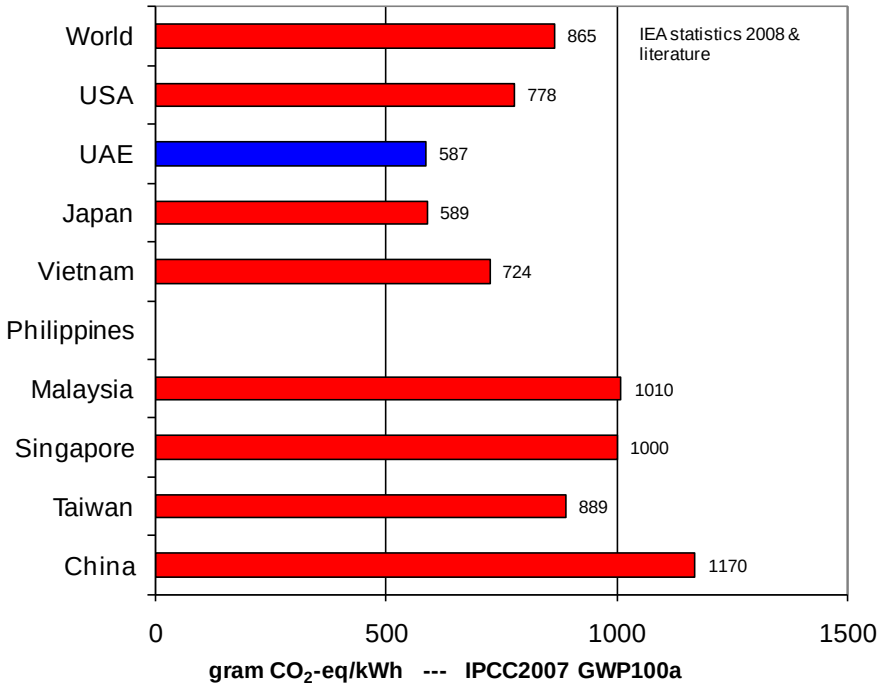




Carbon footprint Electricity from ROW

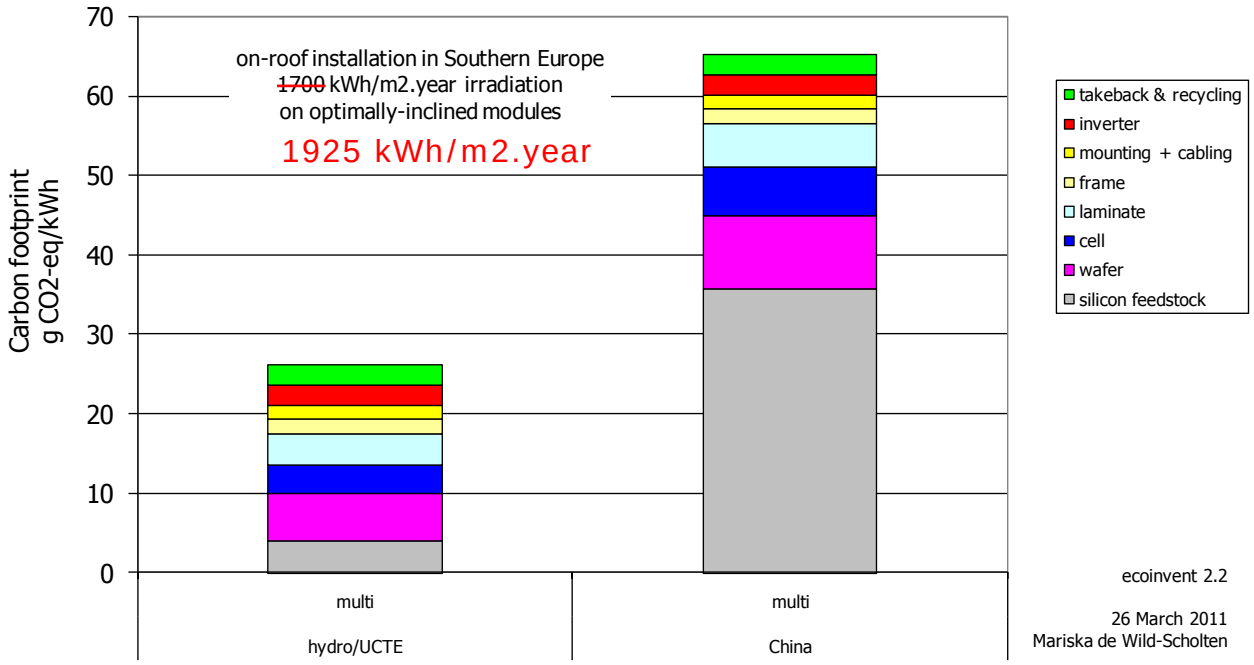
Shipments 2010: China/Taiwan 58%, Europe 15%, Japan 8%, US 7%, ROW 12% (Paula Mints 2011)





Carbon footprint

Low carbon footprint PV electricity is made from low carbon footprint energy and materials.

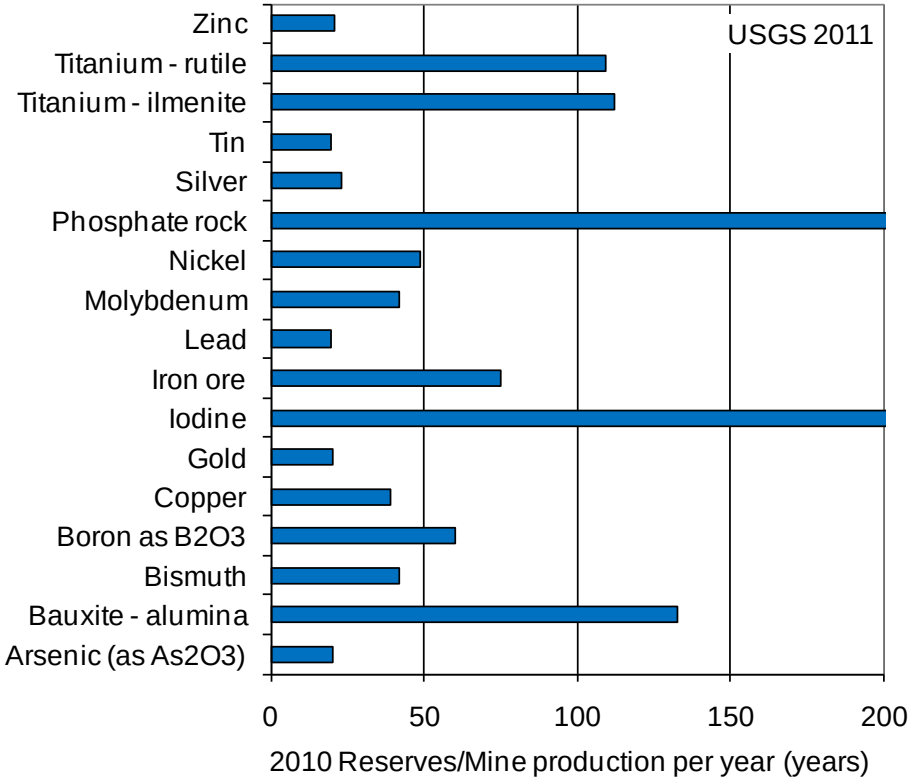


Toxicity

Zero toxicity electricity generation does not exist:

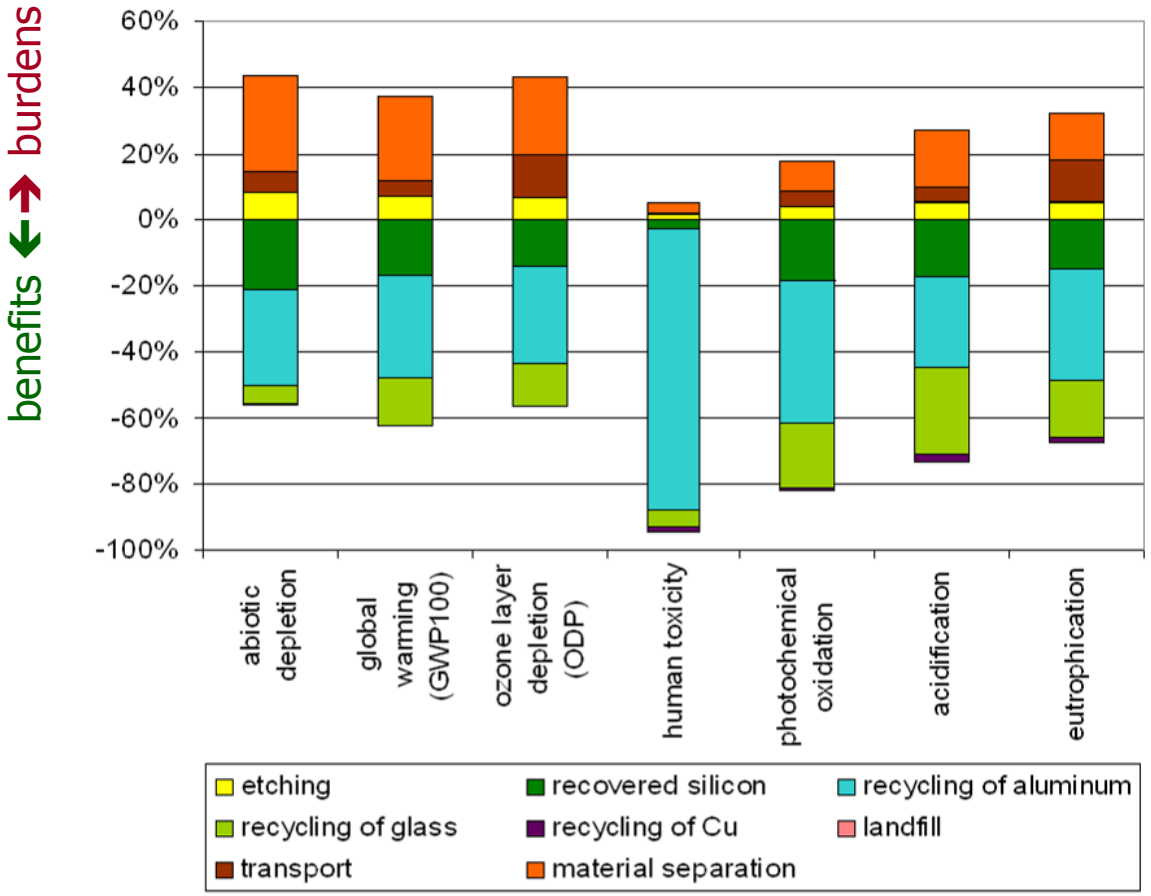
- Emissions from electricity generation
- Emissions during manufacturing

Materials availability



A very rough indication of material availability.

LCA of recycling xSi modules by Sunicon



environmental burdens < benefits

Source: Wambach et al. (2008) EPVSEC23

Acknowledgements:

ECN Solar Energy

Further info:

mariska@smartgreenscans.nl

LinkedIn