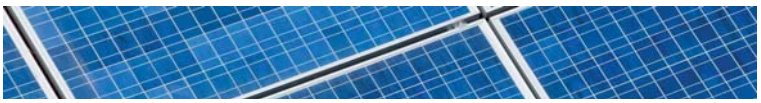
smart GREEN SCANS



Life Cycle Assessment of Energy

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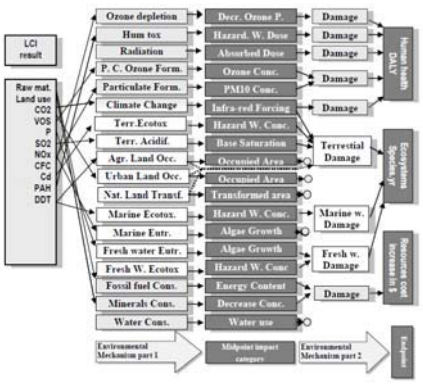
21ST OSCE Economic and Environmental Forum
Prague, 12 September 2013

Life Cycle Assessment (LCA)

- **LCA**: Determination of environmental impact of a product from cradle to grave/cradle
- A ***fair comparison*** can only be made by taking all steps of the life-cycle into account:
  mining – refining – manufacturing – installation - use – recycling & transport

ReCiPe 2008
impact assessment method



LCA → Environmental / External costs

LCA → Life-cycle emission data

(kg / kWh)

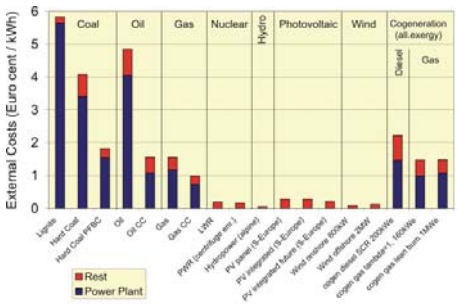
x damage of emission

(€ / kg)

= Environmental costs

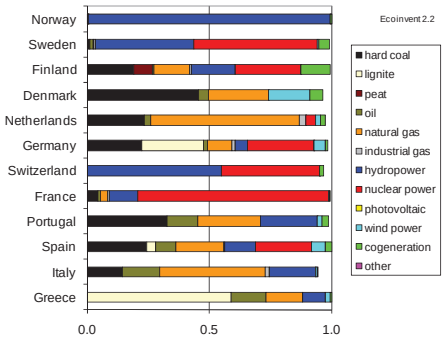
(€ / kWh)

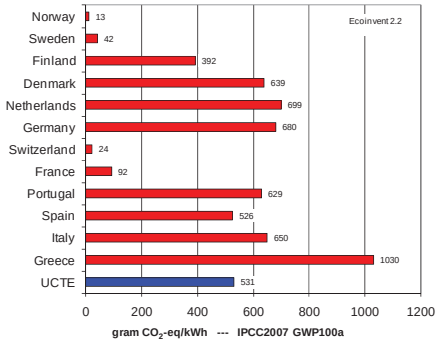
External cost of electricity (Dones 2005)



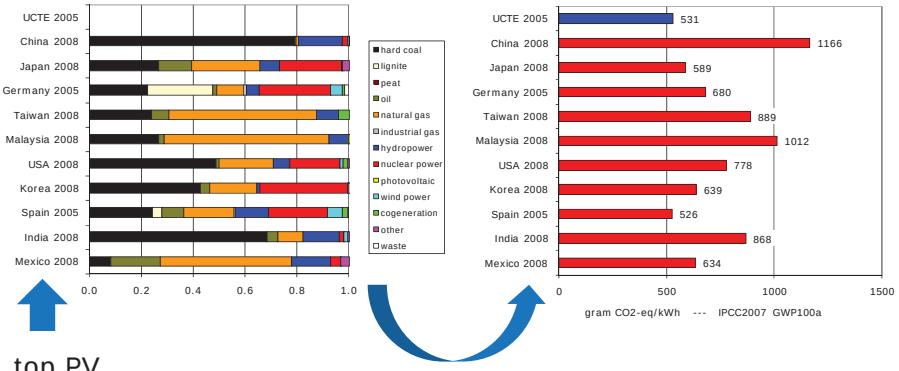
http://gabe.web.psi.ch/projects/externe_pol/index.html

Carbon footprint Electricity from Europe





Carbon footprint
Electricity from various countries

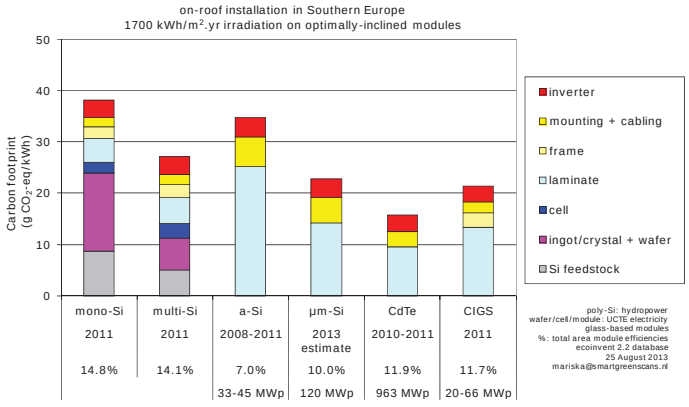


top PV manufacturing locations

high uncertainty

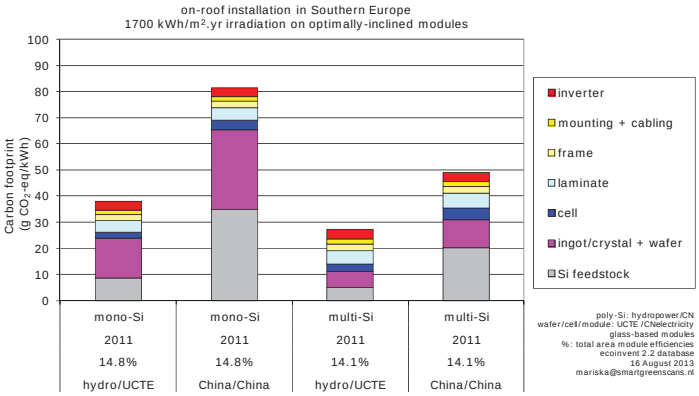
Carbon footprint of photovoltaics

Impacts depend on technology used



Carbon footprint of photovoltaics

Impacts depend on production location (electricity mix)



Research directions to improve the environmental footprint

- ✓ 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

Recommendations for the OSCE

- Collect LCA data on all life-cycle phases of energy production so decision makers use reliable info
- Evaluate environmental costs associated with energy production (external cost) which are not included (yet) in the cost paid by consumers