INFORSE-Europe Sustainable Energy NGO Seminar

European Green Capital, Hamburg, Germany
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http://www.inforse.org/europe/seminar_2011_Hamburg.htm

Good Practice for transition to sustainable energy: Examples across EU

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Umweltzentrum Gut Karlshöhe, Hamburg, Germany

Many levels of Good Practices Needed

1. Technologies that work and are appealing
2. Sufficiently good user economy and social economy
3. Framework for wide replication of successes (national legislation, support etc.)
4. Integration in energy systems & use (small, large)

Solar technologies

Heating:

Vacuum tubes from China are taking over

More space heating

More district heating

New ground-breaking installations for solar cooling, industrial heat

CTC Solar China

Electricity:

Thin-film is back

High efficiency PV, concentrated PV

Solar thermal electric, Spain

La Florida, Spain

Solar district heating > 50%

Windpower

New technology is big windmills for offshore

And optimisation of smaller turbines

Enercon 7.5 MW

Vestas 7 MW

Biomass

Heating:

>100% efficiency for large, condensing boilers, very clean

Cleaner com**bustion,** less partic**les** for wood stoves & boilers

Aduro, Denmark

CHP: 20-50 MW plants with >100% total efficiency, Sweden

Wood gasifiers slowly coming for higher electric efficiency for small-scale (no breathrough)

Costs Continue Downwards

PV is reaching grid-parity, below 20 €-cent/kWh

Solar heating is getting cheaper with Chinese vacuum tubes

Windpower costs has come down after boom, and with new Chinese competition

Windfarm, China, picture by Chris Lim

Ups and Downs for RE 2010

New record PV installation in Germany and EU in 2010

Solar thermal slowly decreasing

Windpower boom from Germany & Spain to new EU countries, small overall decline. Windpower protests increase, local ownership in some countries

Biomass use increasing, mainly wood

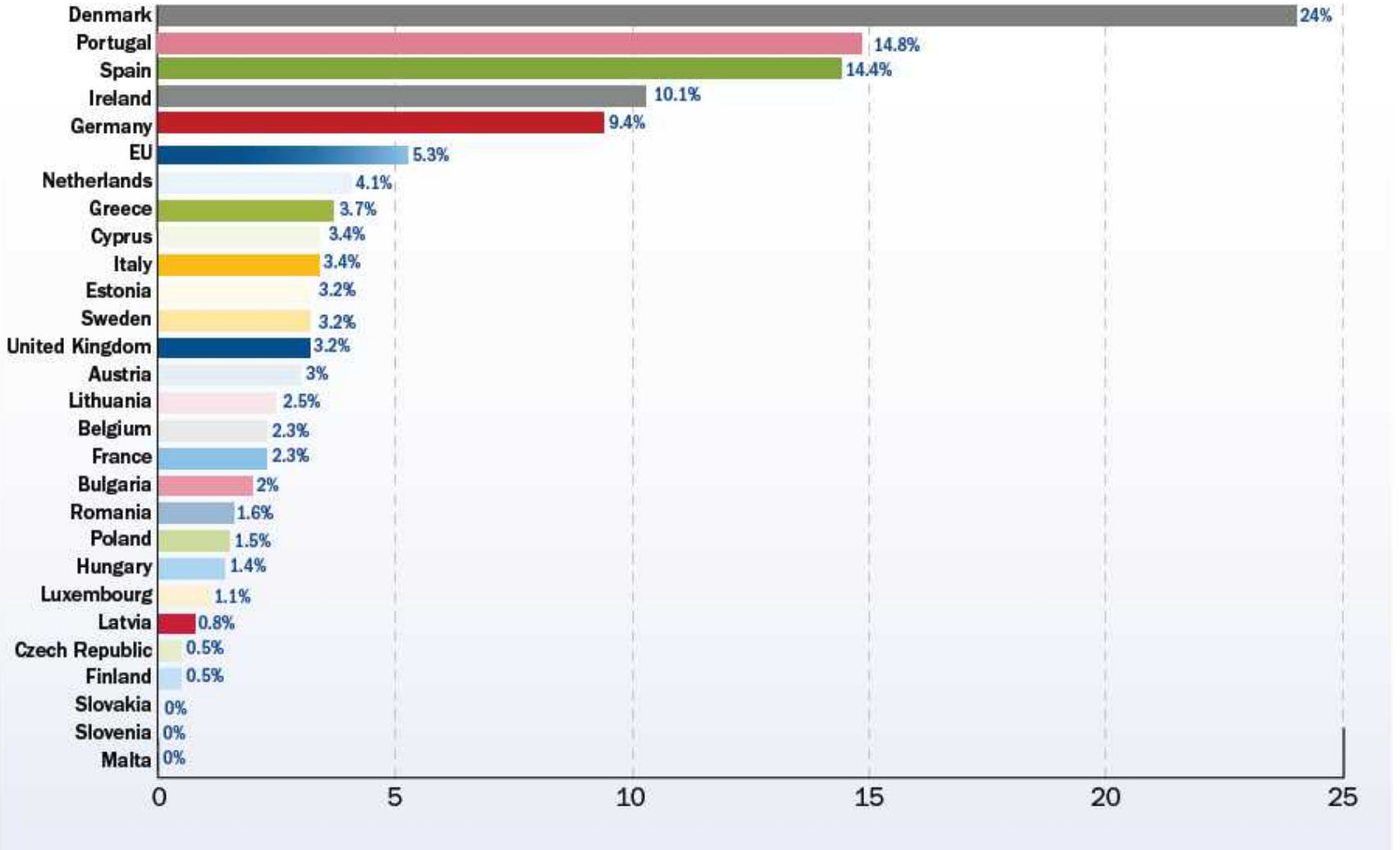
Biogas, geothermal on slow raise

Europe Leads

(so does China, Brazil etc.in other fields)

WIND SHARE OF TOTAL ELECTRICITY CONSUMPTION[7]

FIGURE 3.7

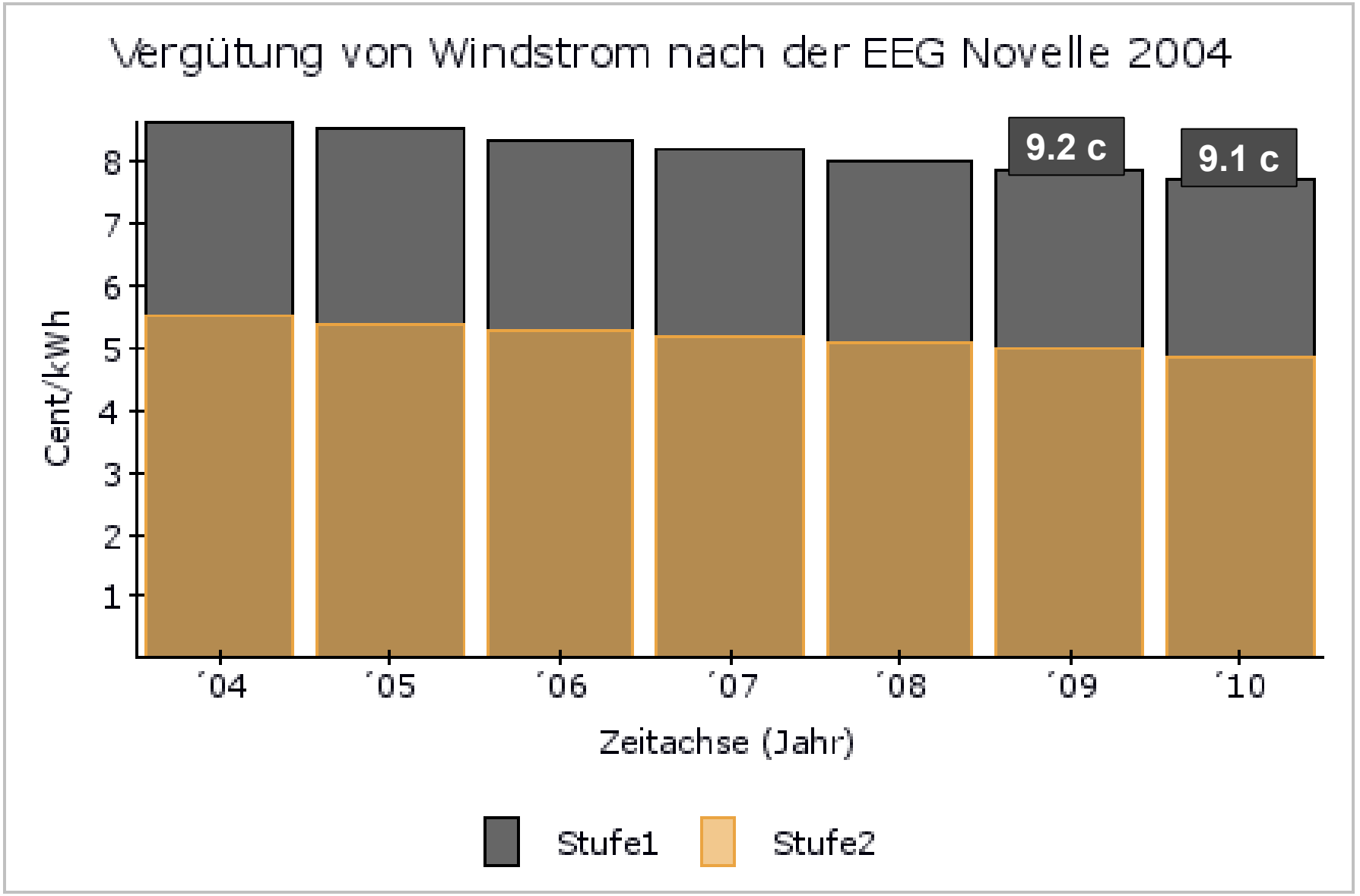


Danish /Swedish Windpower

Example: Windpower in Germany

- In June 2009, 3 new windturbines were added by Windwärts Energie GmbH to an existing German windpark
- Windwärts investment fund sell shares with 7% interest and binding until 2015 (interest can vary)
- minimum investment 1000 €

German Windpower



Austrian Renewable Energy Village

Güssing – a prime example

- Biomass District Heating 1995
- Mayor (and city council) set target of 100% RE
- Local wood CHP (steam and gasifiers, 2 plants)
- Biogas from silage and others
- Experimental production of gas /fuel from wood
- Actions to save energy, use RE in houses, etc.
- Made European Centre for Renewable Energy

Güssing – a RE Laboratory

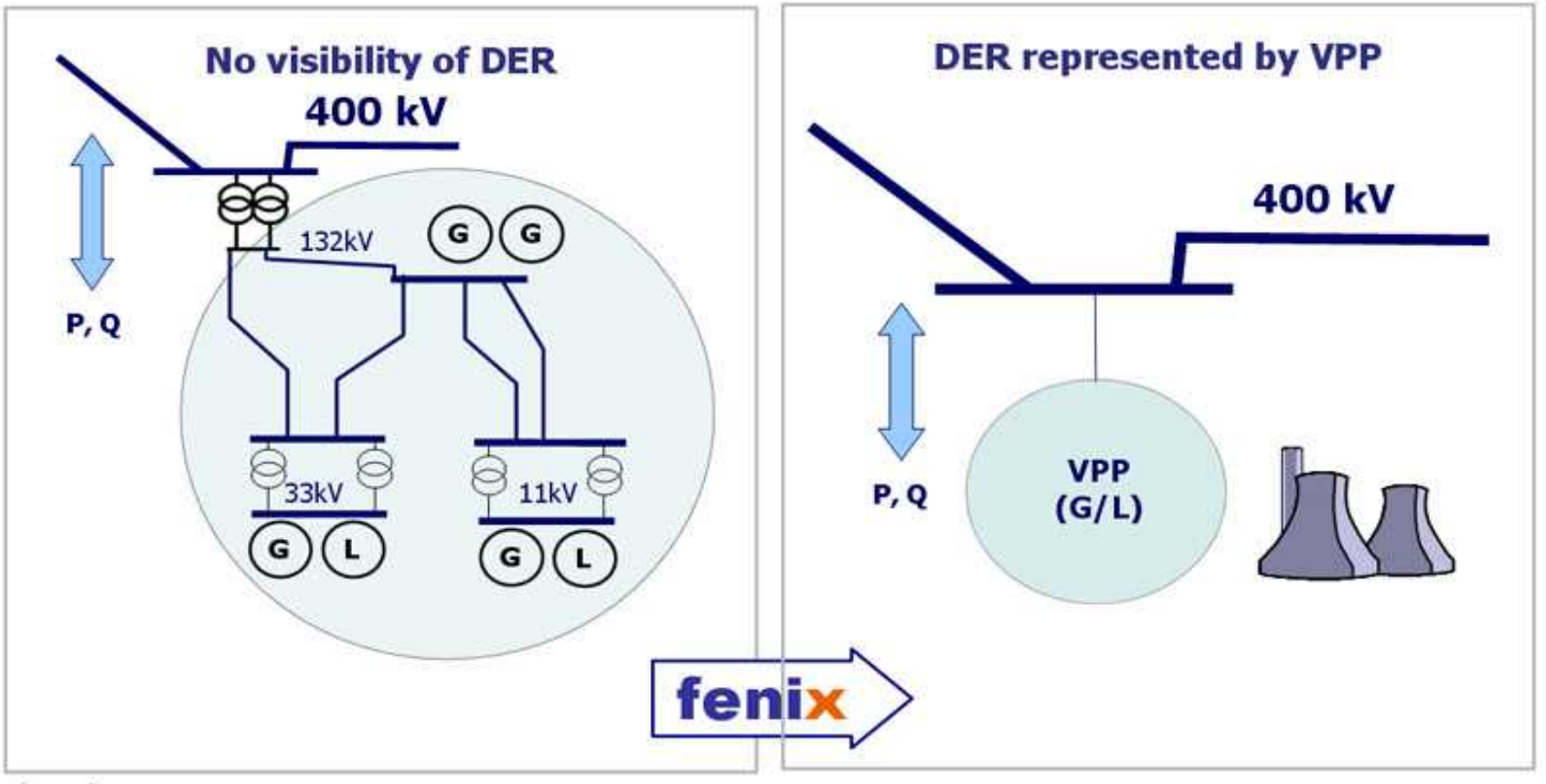
Ecovillage: low energy, solar, bio

Wood Chip Consumption per person				
	Energy	Wood chip	Land	Part of D
Heat	3500 kWh	1400 kg dry m	6a0t0	7 %
Electricity	800 kWh	160 kg dry m	1a0t0	1 %
Total	4300 kWh	1560 kg dry m	7a0t0	9 %
* If all Danes would live like this				

Andelssamfundet I Hjortshøj, Denmark

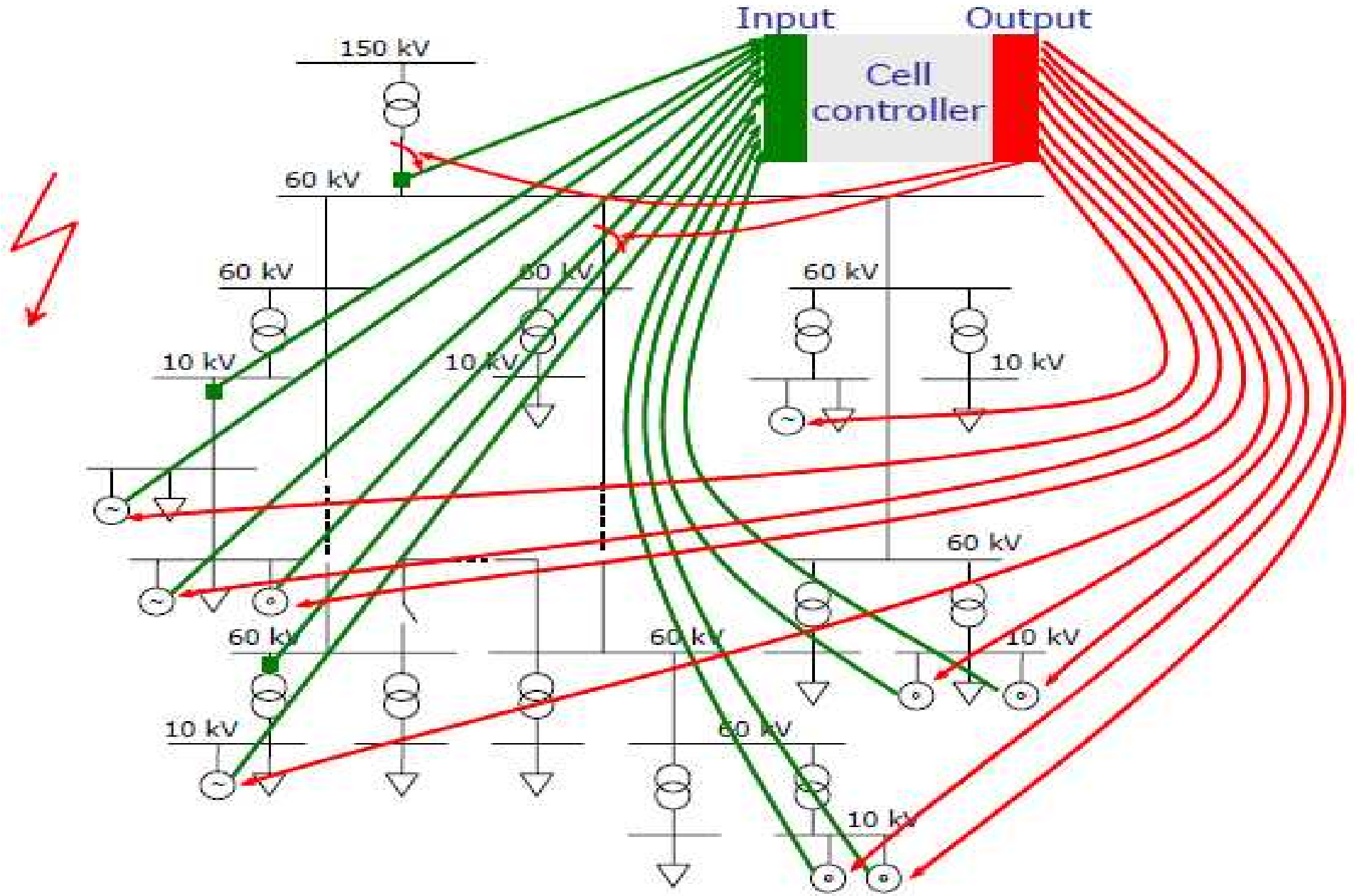
The virtual power plant (VPP)

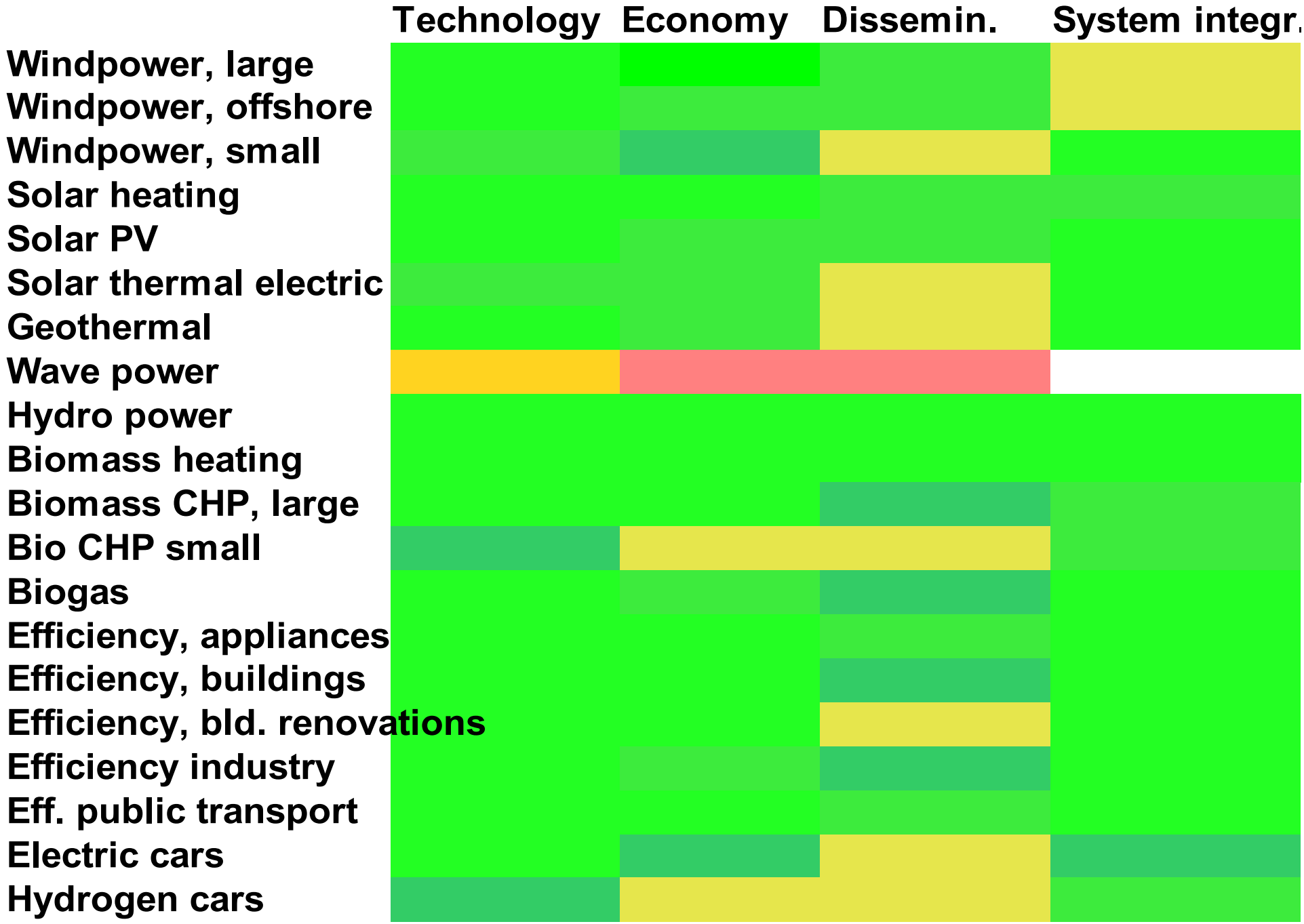
Make Distributed Energy Resources visible



fenix: EDF, Siemens, Hiderdrola Areva, Gamesa, and many others
E-Energy RegModHarz: Frauenhofer Institute IWES in Kassel, BMU, etc.
RegenerativKraftwerk 2050: Frauenhofer Institute IWES in Kassel, BMU

The cellular Power Grid, DK




Technology
Economy
Dissemin.
System integr.
Windpower, large
Windpower, offshore
Windpower, small
Solar heating
Solar PV
Solar thermal electric
Geothermal
Wave power
Hydro power
Biomass heating
Biomass CHP, large
Bio CHP small
Biogas
Efficiency, appliances
Efficiency, buildings
Efficiency, bld. renovations
Efficiency industry
Eff. public transport
Electric cars
Hydrogen cars