d·i·e

Deutsches Institut für Entwicklungspolitik | German Development Institute

Relevance of Green Economic Development for LAC with special emphasis on energy efficiency and climate change

IRENA - PTB Green Quality Dialogue

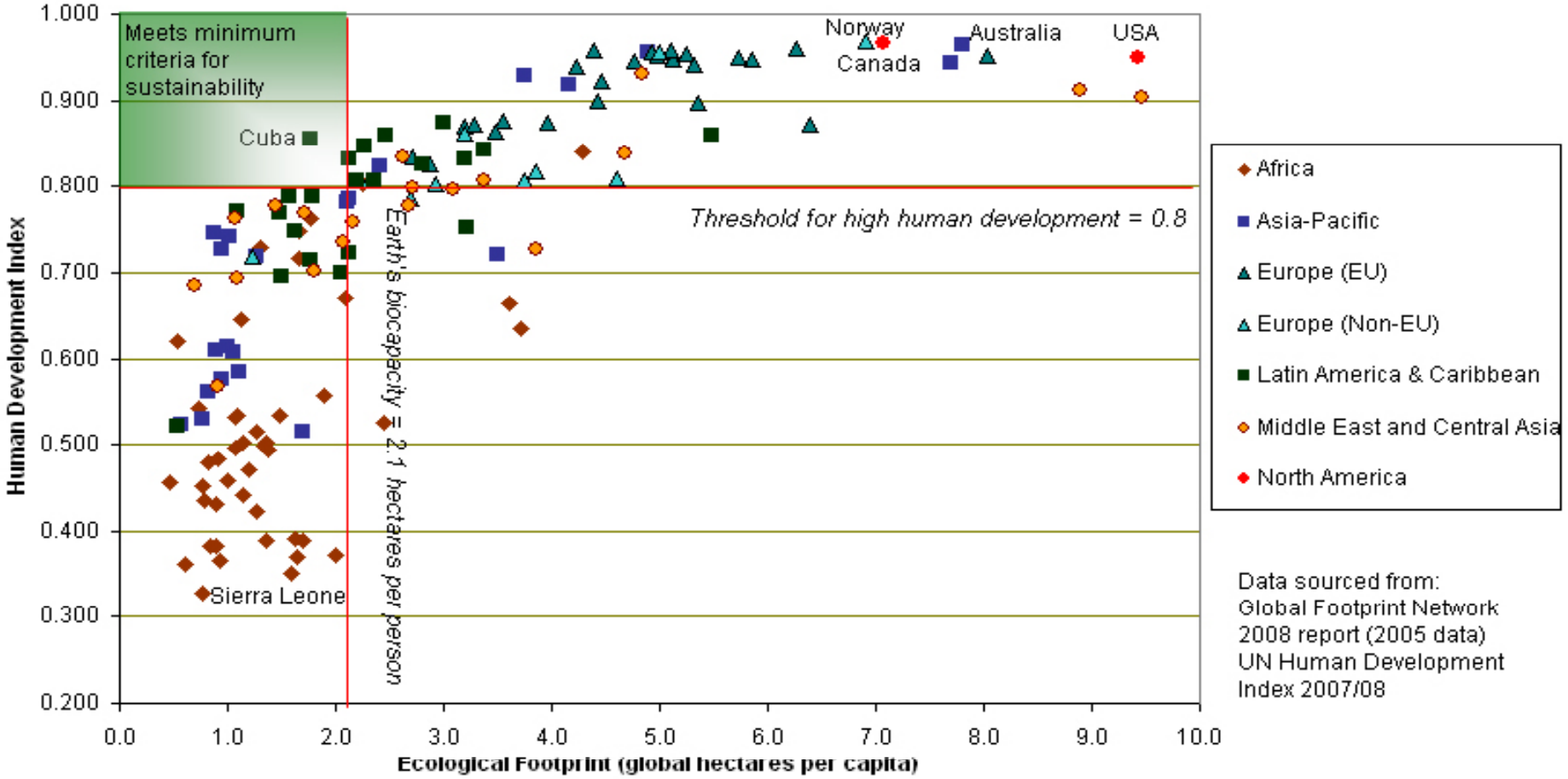
Bonn, 4th November, 2016

Tilman Altenburg, DIE

1. Green Economy challenges
2. Is the Green Economy relevant for LAC?
3. Green industrial policy
4. Implications for Quality Infrastructure

Green Economy challenges

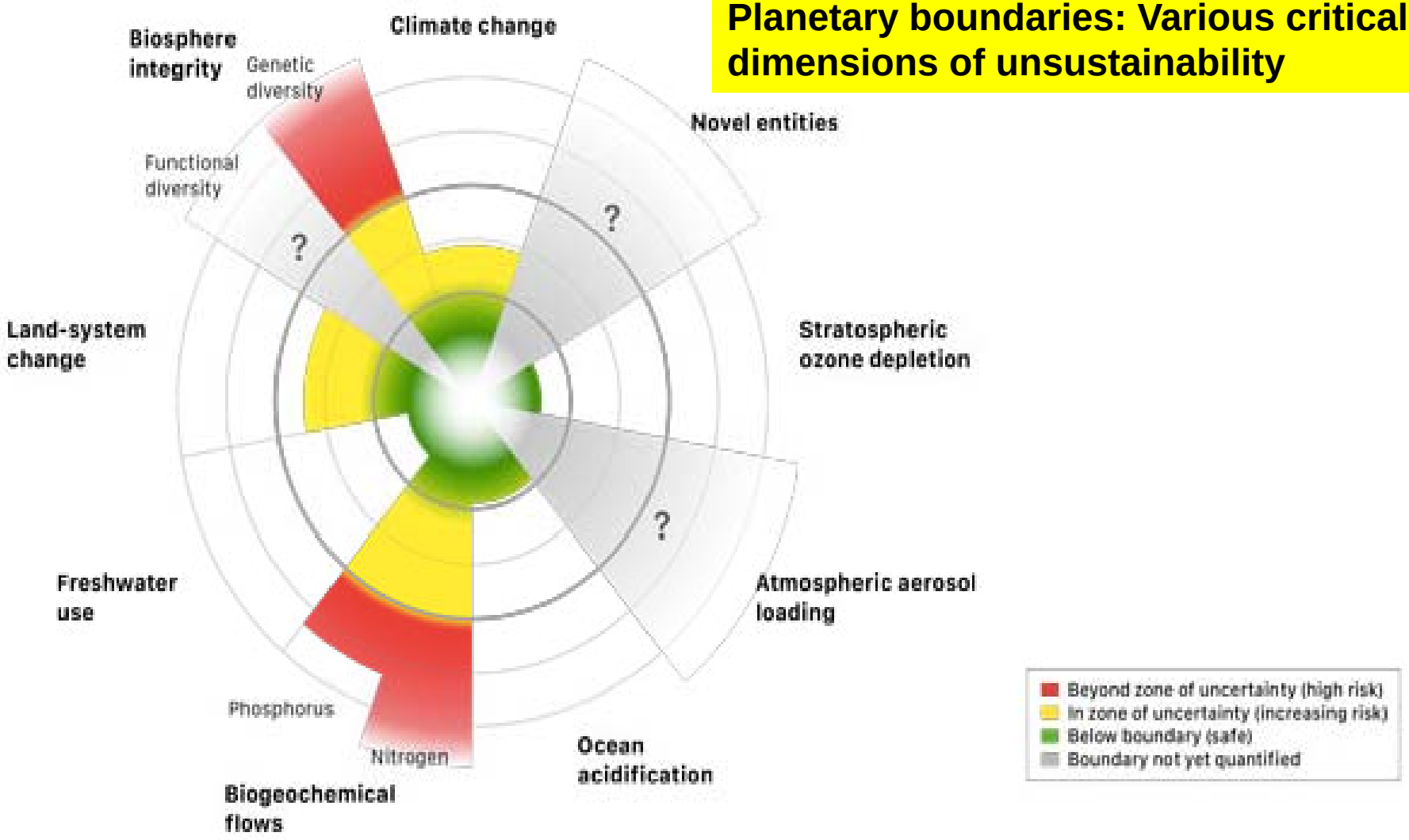
Current development pathways unsustainable – need to invent new models of human development with sustainable footprint



https://upload.wikimedia.org/wikipedia/commons/f/f1/Human_welfare_and_ecological_footprint_sustainability.jpg

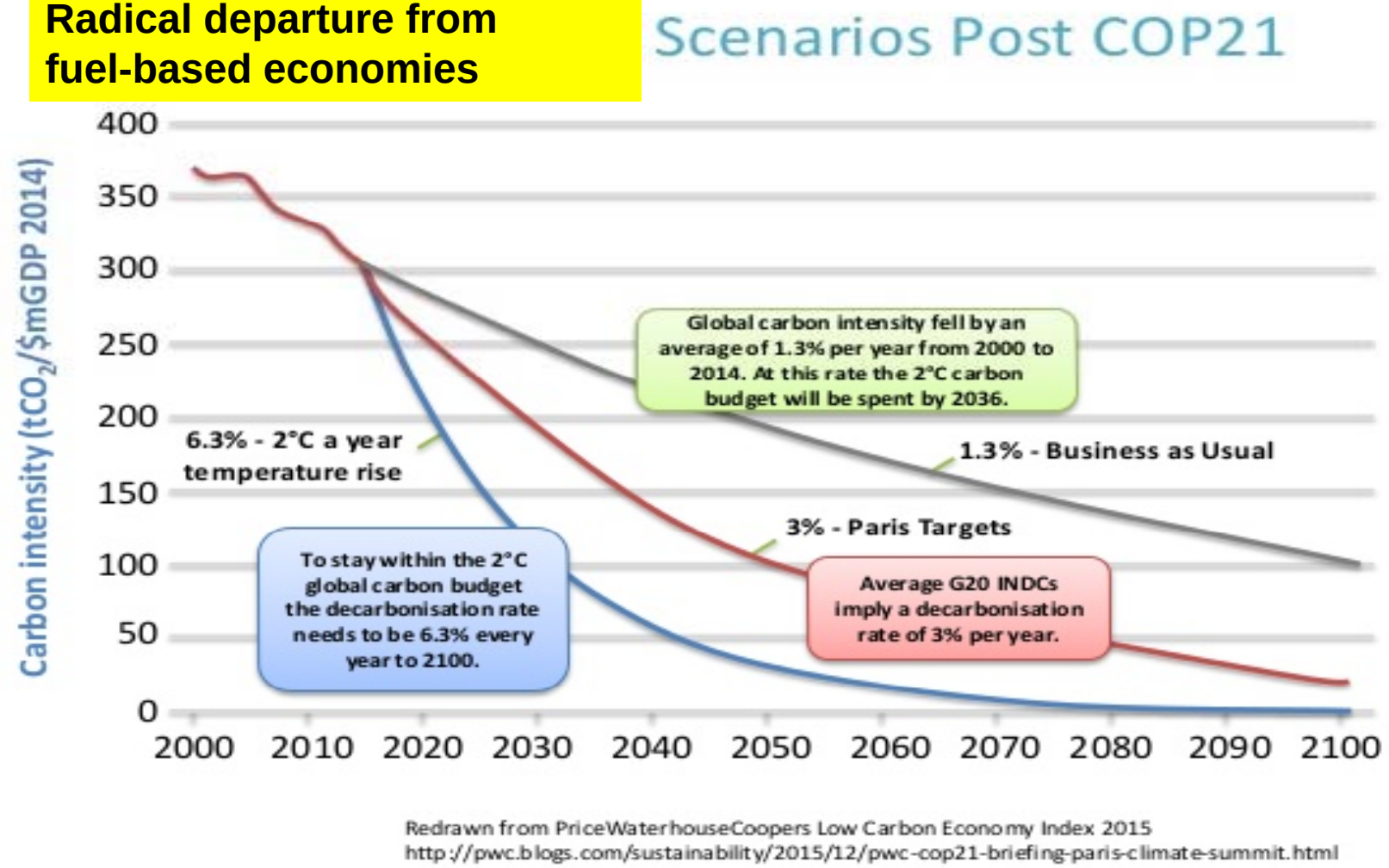
Green Economy challenges

Planetary boundaries: Various critical dimensions of unsustainability



Green Economy challenges

Decarbonisation:
Radical departure from fuel-based economies



Redrawn from PriceWaterhouseCoopers Low Carbon Economy Index 2015
http://pwc.blogs.com/sustainability/2015/12/pwc-cop21-briefing-paris-climate-summit.html

Green Economy challenges

Key elements of decarbonisation

Key aspects of decarbonization	Sectors (Expl.)
Power sector shift to renewables	Solar, wind, hydro, geothermal
Biofuels	Oilseeds, ethanol, second generation biomass
Energy storage	Lithium-ion batteries
Electrification of end-use equipment	Electric cars, heating
Leaps in energy/ resource efficiency	All productive sectors, housing
Carbon sinks	Forestry, agriculture, CCS

⇒ **New technologies, new standards across almost any industry!**

Green Economy – relevant for LAC?

Some LAC governments

… argue to “grow first, clean up later” …

… (rightly) question historical liability => “rich countries responsibility, let them go ahead”.

Green Economy – relevant for LAC?

… but many economic reasons for LAC to tackle Green Economy proactively:

1. Deterioration of environmental resources and services undermines potential for future growth
2. Investing in resource productivity enhances productivity, pays for itself
3. Reducing inefficient fuel incentives frees up resources for development
4. Renewable energy policies reduce vulnerability to oil price shocks
5. New competitive advantages in green goods
6. Keep up with global technological trends
7. Avoid lock-in, “stranded assets”: energy system and city development
8. Export opportunities thru compliance with green standards
9. Access to international Green Finance

Green Industrial Policy

We need policies for structural change towards a Green Economy: “Green Industrial Policy”

Compared to “business-as-usual” industrial policies, GIP need to cope with **additional challenges:**

1. Need to internalise environmental costs
2. Unprecedented urgency and scale of transformation
3. Systemic change => coordination and information failures
4. More complex objectives => trade-offs & political settlements

Green Industrial Policy

1. **Need to internalise environmental costs => politically defined second-best markets**
   - New policy instruments, from carbon cap-and-trade systems to green credit lines and environmental labels, carbon footprinting ...
   - Markets (ETS, RPO, CDM ...) “socially constructed”
   - best-fitting policy mix for each specific situation needs to be developed.

Green Industrial Policy

2. Unprecedented urgency and scale => speed up policies under uncertainty

- > 2° C global warming, industrialised countries need to reduce emissions by 80-95% in 2050 (relative to 1990)
- Delays make it more difficult & costly. Tipping points. Cost of current rate of global warming in 2050: 14% GDP (OECD 2012)
- Carbon neutrality by 2070

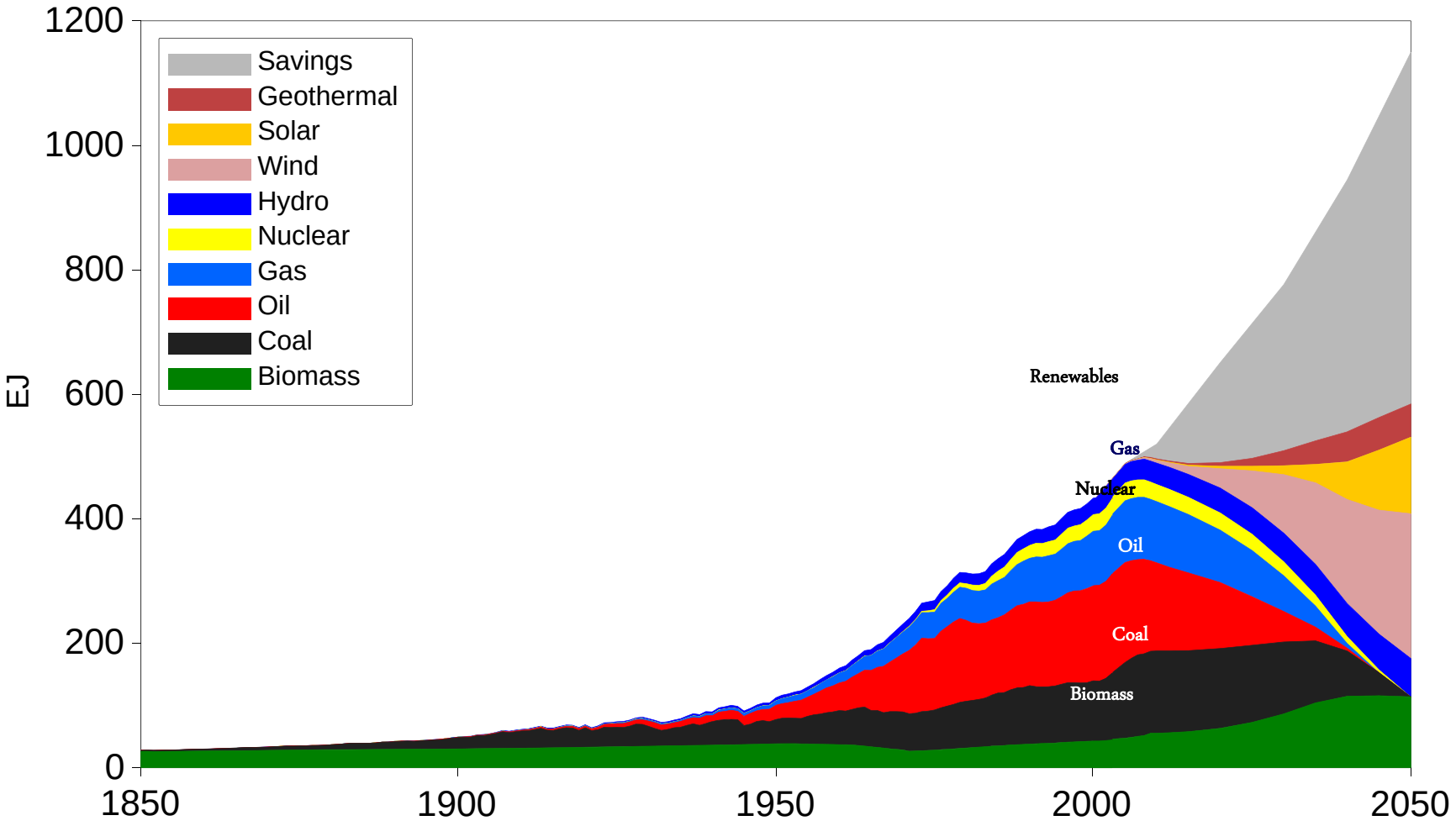
⇒ **Directed research,** readiness to assume risk

⇒ **Proactive phasing out** of unsustainable technologies

⇒ **Accelerated deployment** of clean alternatives

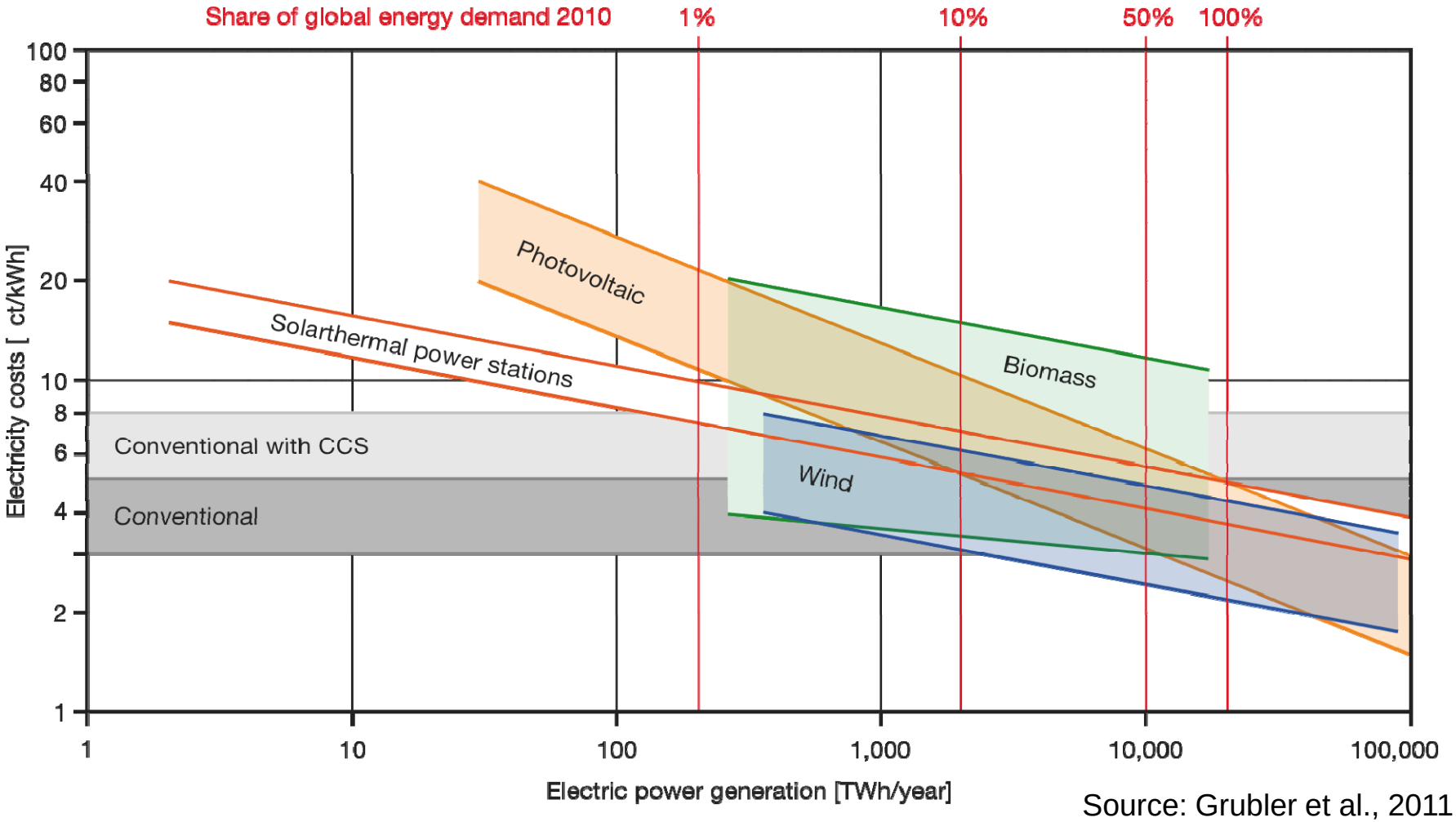
Green Industrial Policy

Urgency and scale: Energy system



Green Industrial Policy

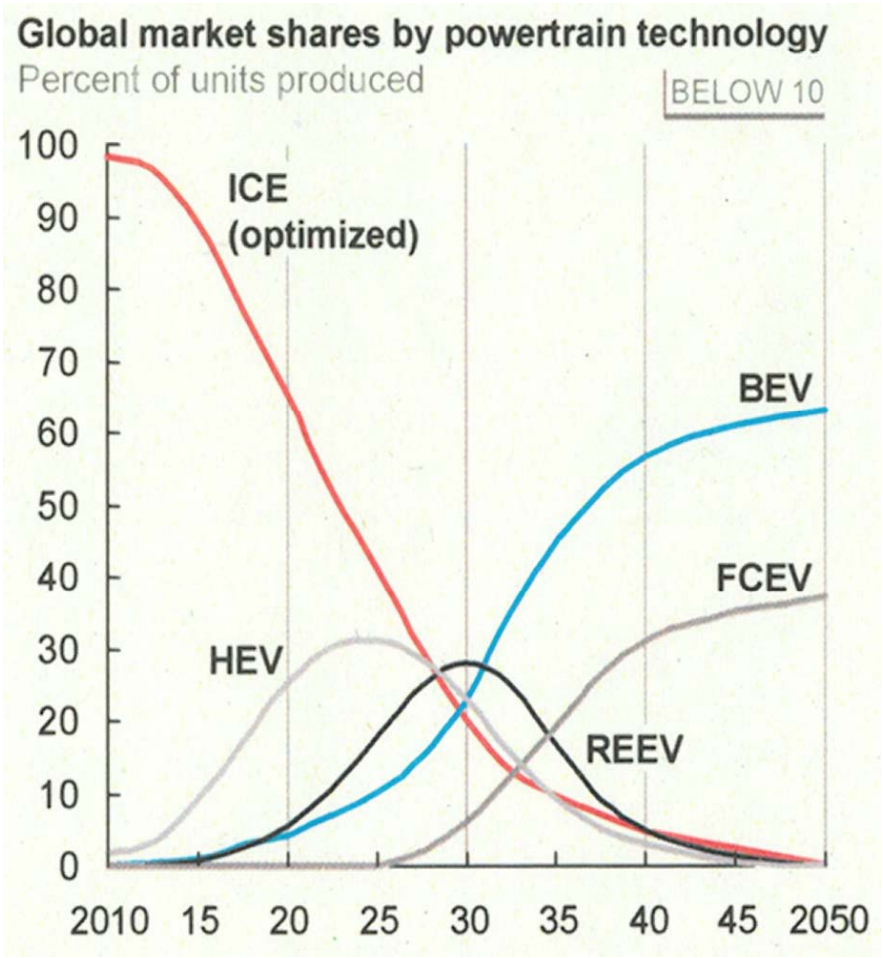
Potential of Cost Reductions for Electricity from Renewables

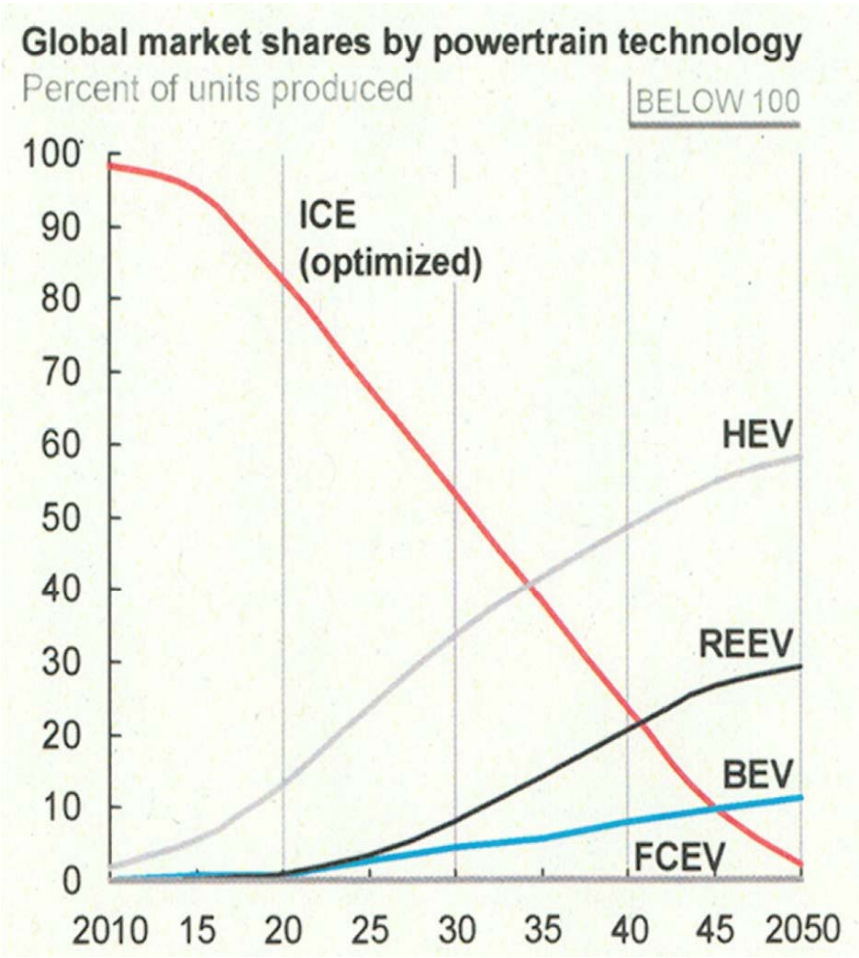


Source: Grubler et al., 2011

Green Industrial Policy

Regulatory standards (here: admissible fleet emissions) drive technology choice





McKinsey 2011: Boost. Transforming the powertrain. p. 7

Green Industrial Policy

3. Systemic change required => huge coordination and information failures

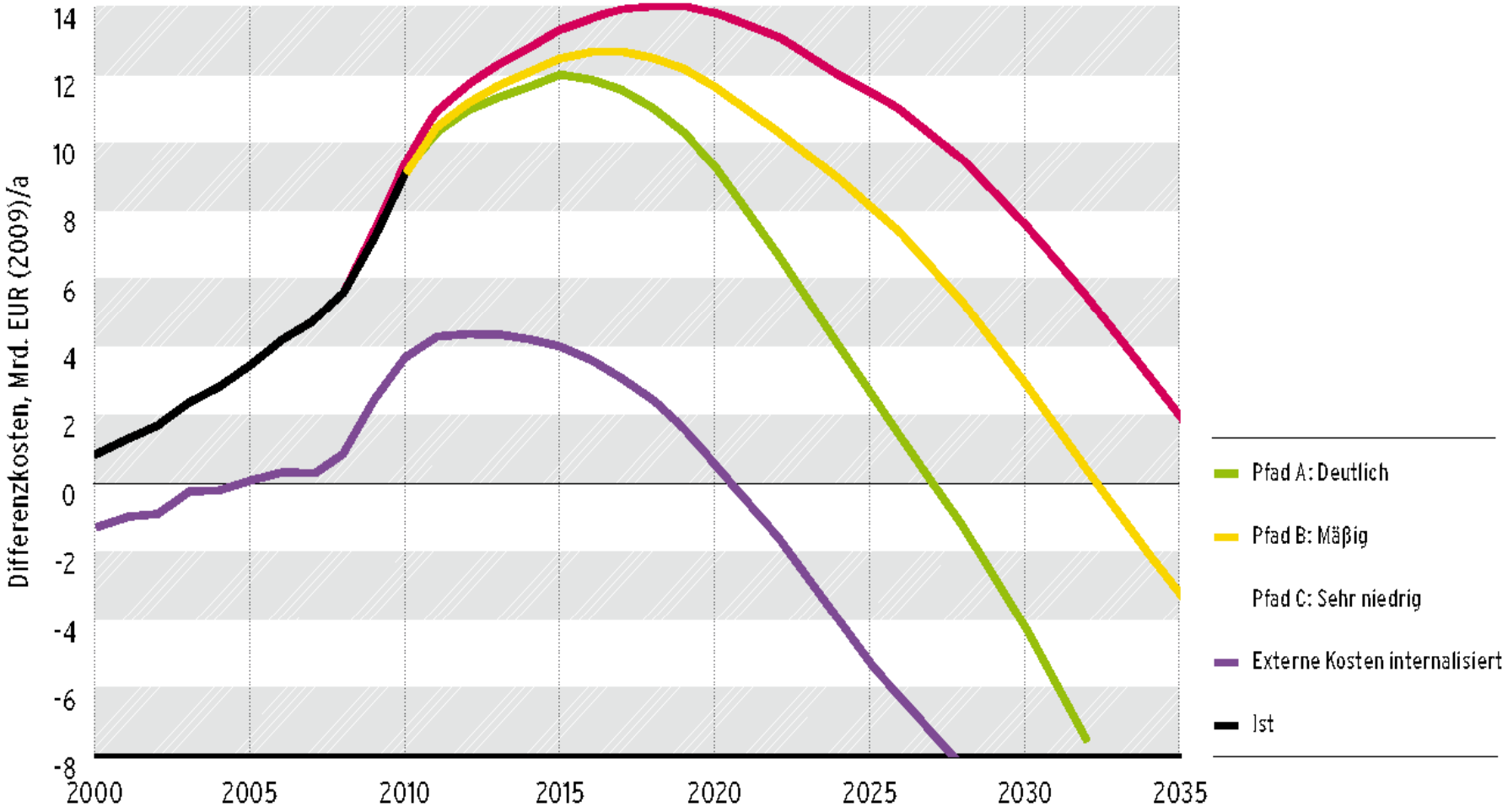
Example **“Energiewende”:**

- New power plants (wind, solar, ...)
- Second-generation biomass (=> land use changes),
- Energy storage
- Transmission lines
- Internationalization of grids (to balance fluctuations)
- Smart grid technologies
- Carbon sequestration technologies ...

⇒ **All interdependent, all to be developed in parallel**

Green Industrial Policy

Example Energiewende, financial market failure: Differential cost of electricity from renewable vs. fossil sources



Quelle: DLR/IWES/IFNE (2011). Die Differenzkosten basieren auf dem Szenario A.

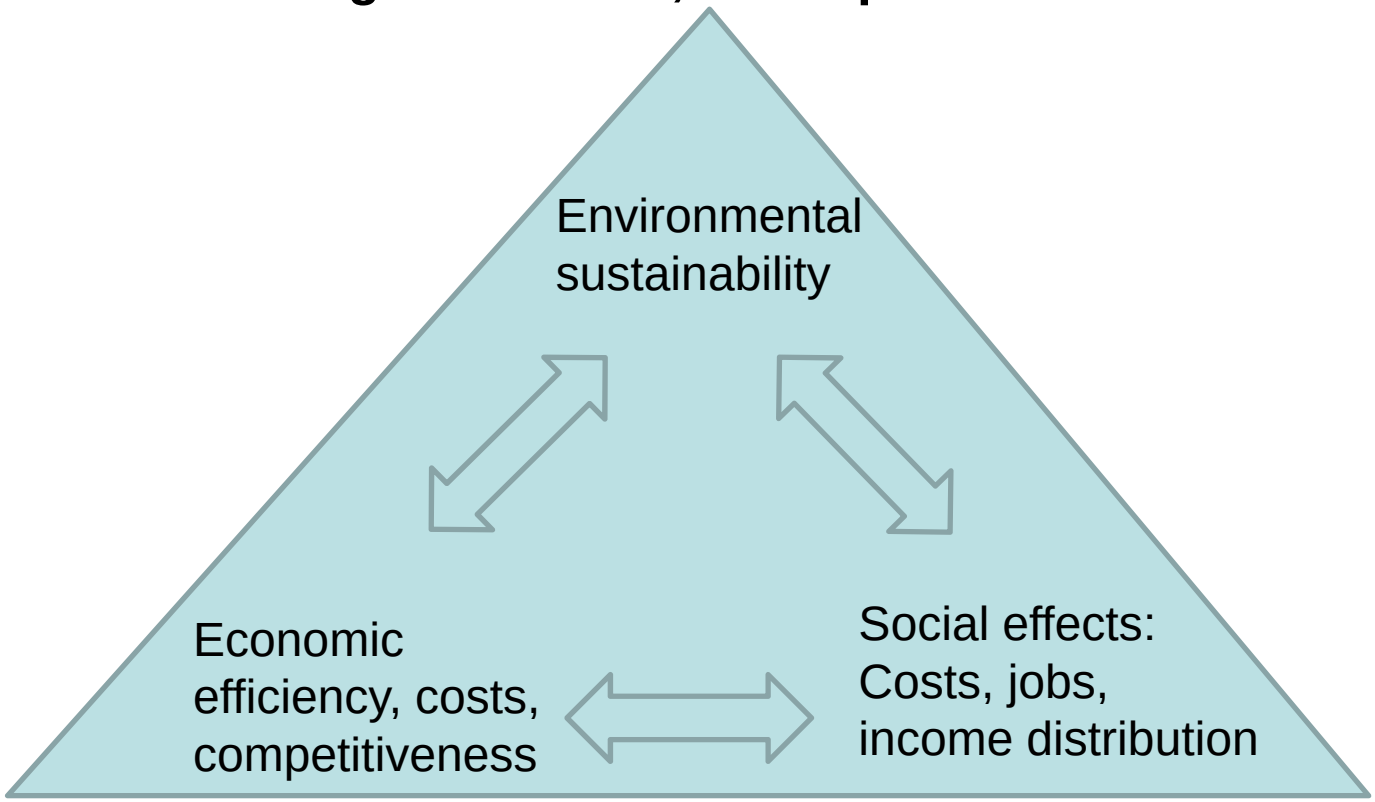
In: UBA 2012

Green Industrial Policy

4. More complex objectives

- Political legitimacy created via co-benefits (jobs, competitiveness, energy security, health)

⇒ **Need to manage trade-offs, reach political settlements**



Implications for Quality Infrastructure

⇒ **More active guidance of market, risk-taking to develop & accelerate sustainable alternatives**

⇒ **New QI requirements across all sectors, examples:**

Key aspects of decarbonization	Sectors (Expl.)	Quality infrastructure (Expl.)
Power sector shift to renewables	Solar, wind, hydro, geothermal	Testing and certification of PV modules
Biofuels	Oilseeds, ethanol, second generation biomass	Measurement and certification of environmental footprints, traceability systems
Energy storage	Lithium-ion batteries	Battery standards, life-cycle assessments
Electrification of end-use equipment	Electric cars	Car emission standards, industrial metrology new materials
Leaps in energy/ resource efficiency	All productive sectors, housing	Building codes, implementation of labeling systems and energy performance standards
Carbon sinks	Forestry, agriculture, CCS	Verification /accreditation of forests as carbon sinks, testing of CCS equipment

Thank you for your attention !