TRANSITION THROUGH INNOVATION

Accelerating the development of green affordable innovations

OECD – 2 rue André Pascal, Paris
18/06/15

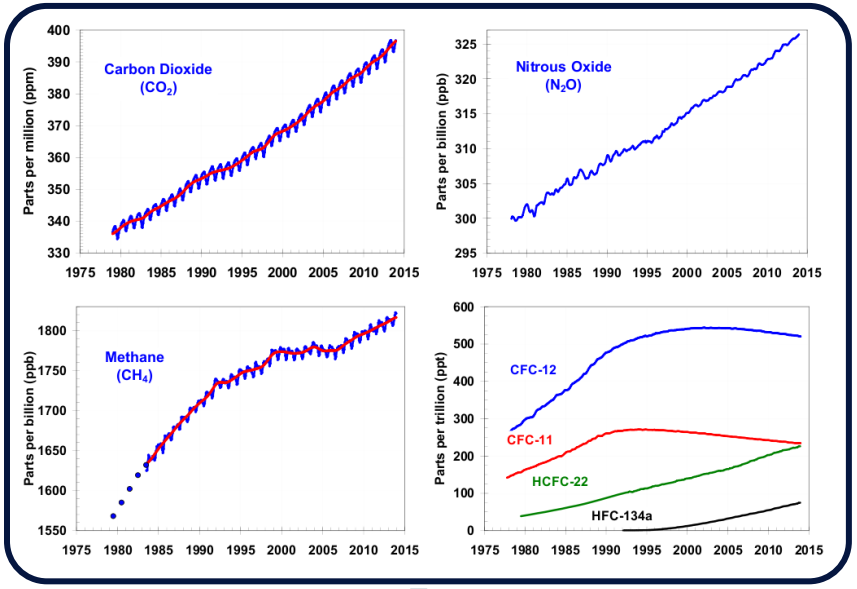
Available online:
http://report.tti.alliance.org

Agenda

1. Transition Through Innovation – Vincent Champain, *Observatoire du long terme*
2. Gas mobility – Vincent Rousseau, *GRTgaz*
3. Wind industry innovation - Olivier Perot, *Senvion*
4. Discussion

1. Transition Through Innovation

The climate reality and how much it will cost



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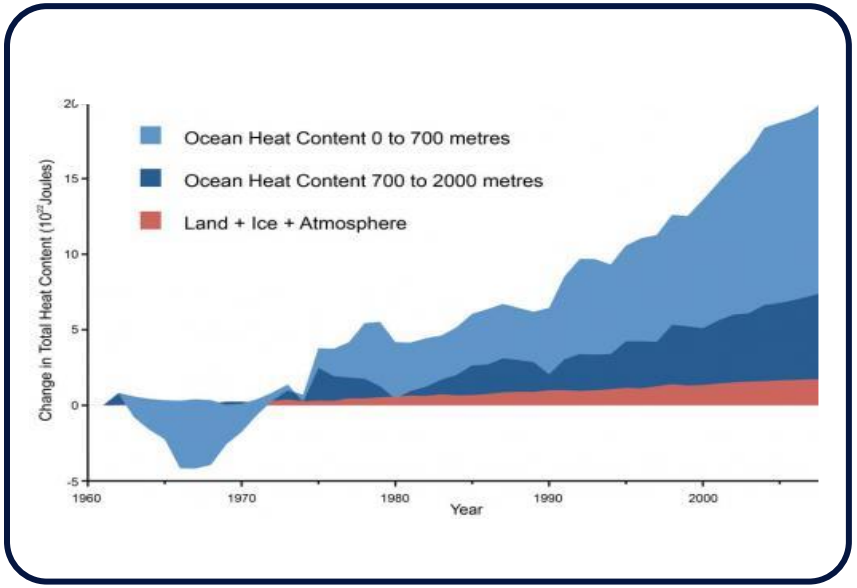

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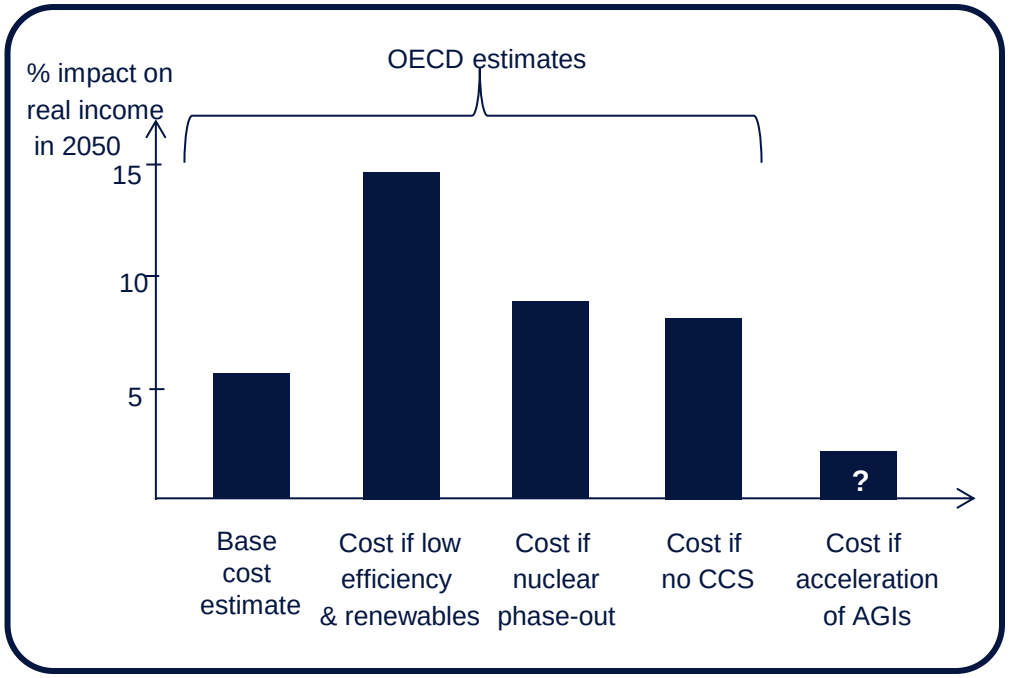
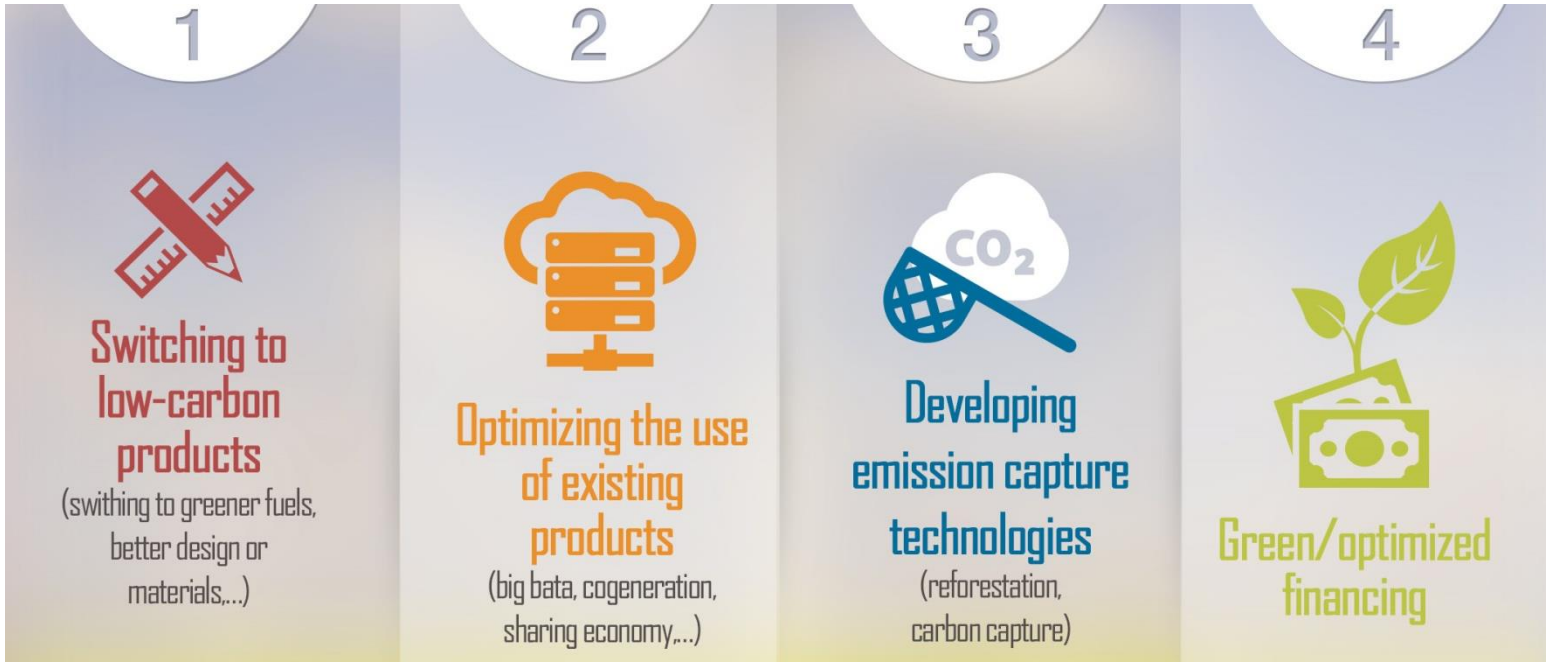
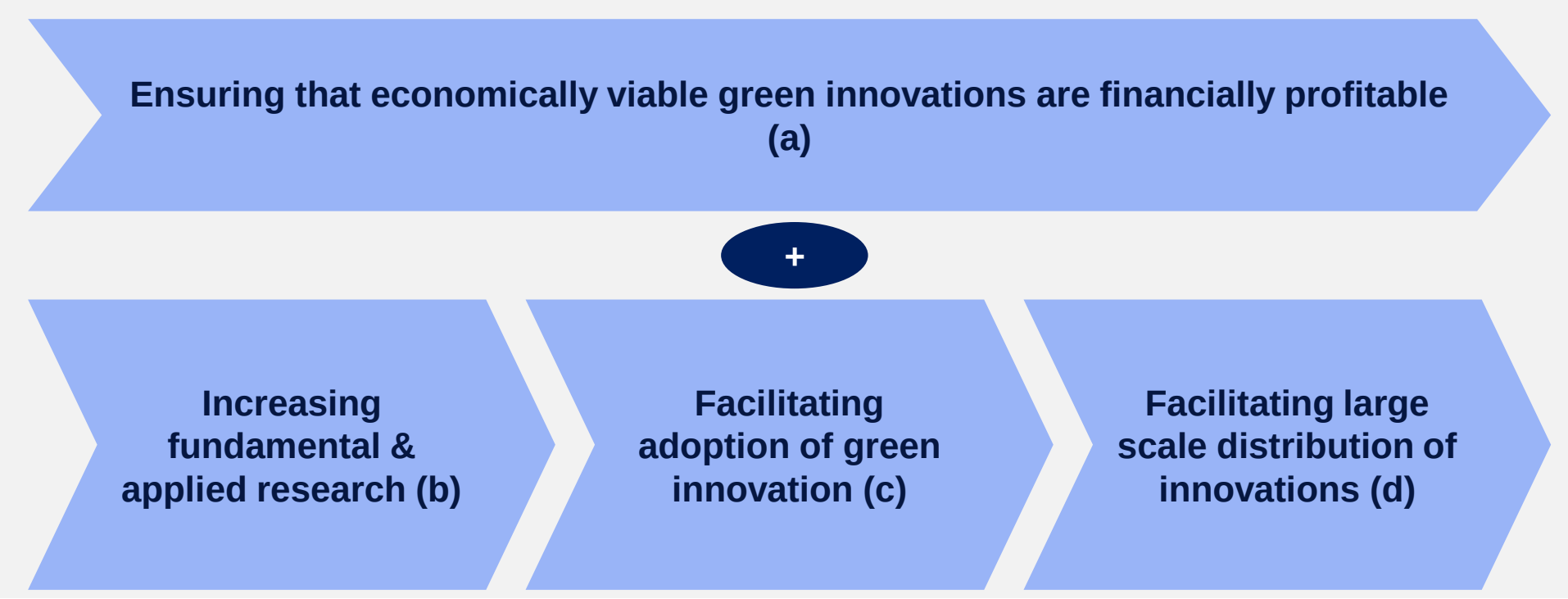


Affordable Green Innovations: a key concept



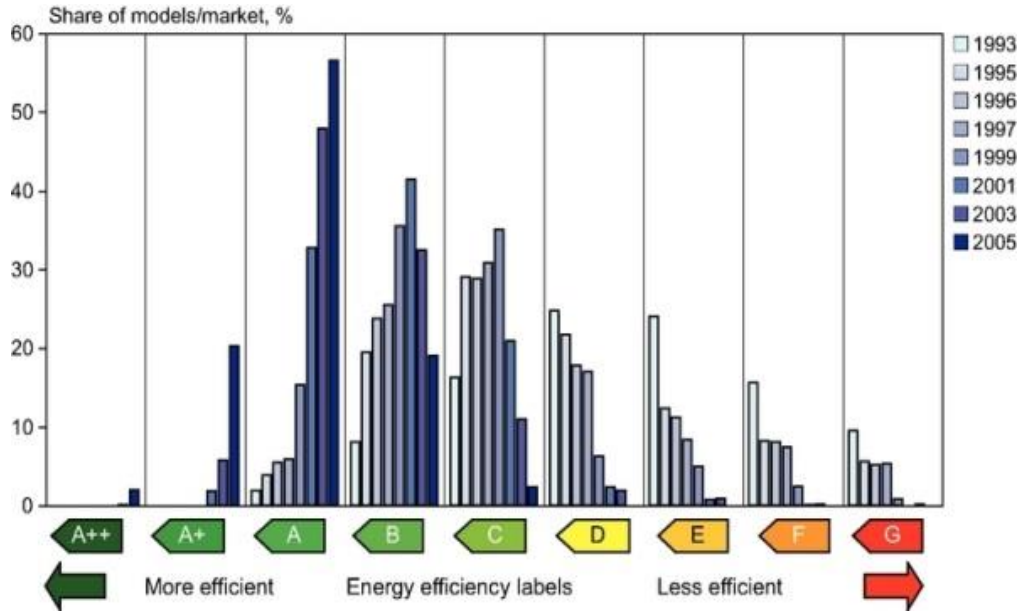
Recommendations: acting at each step of the innovation process



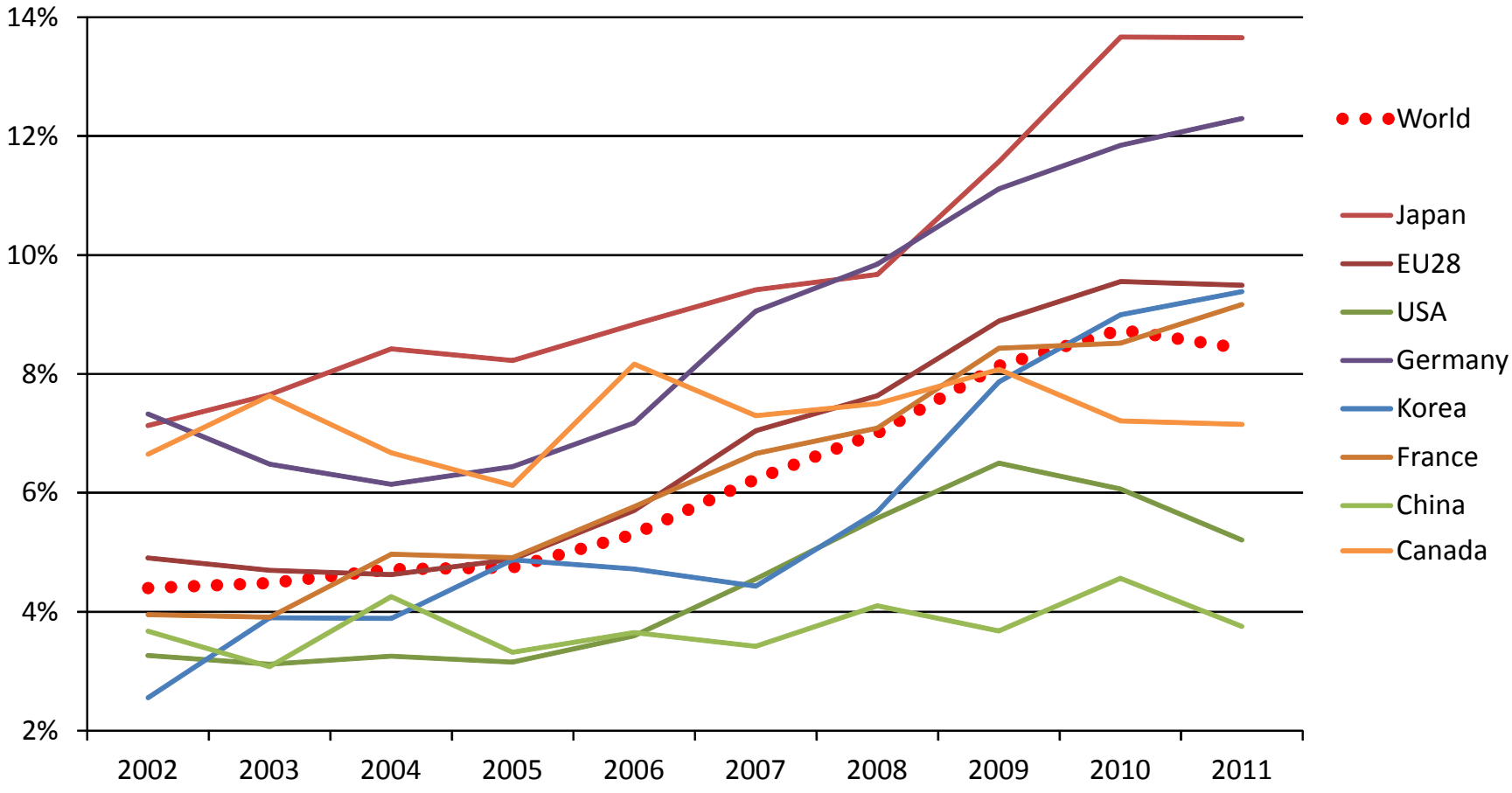
(a) Long-term reference carbon

- OECD or IPCC launch initiative
- Commonly accepted order of magnitude
- carbon reference ≠ carbon price (“forward guidance”)
- Innovators quickly estimate if idea makes economic sense
- E.g. 50 $/ton of CO2 as acceptable

The Impact of the EU Appliance Label on the Market of Cold Appliances in EU-25



(b) Climate's share of patent decreasing



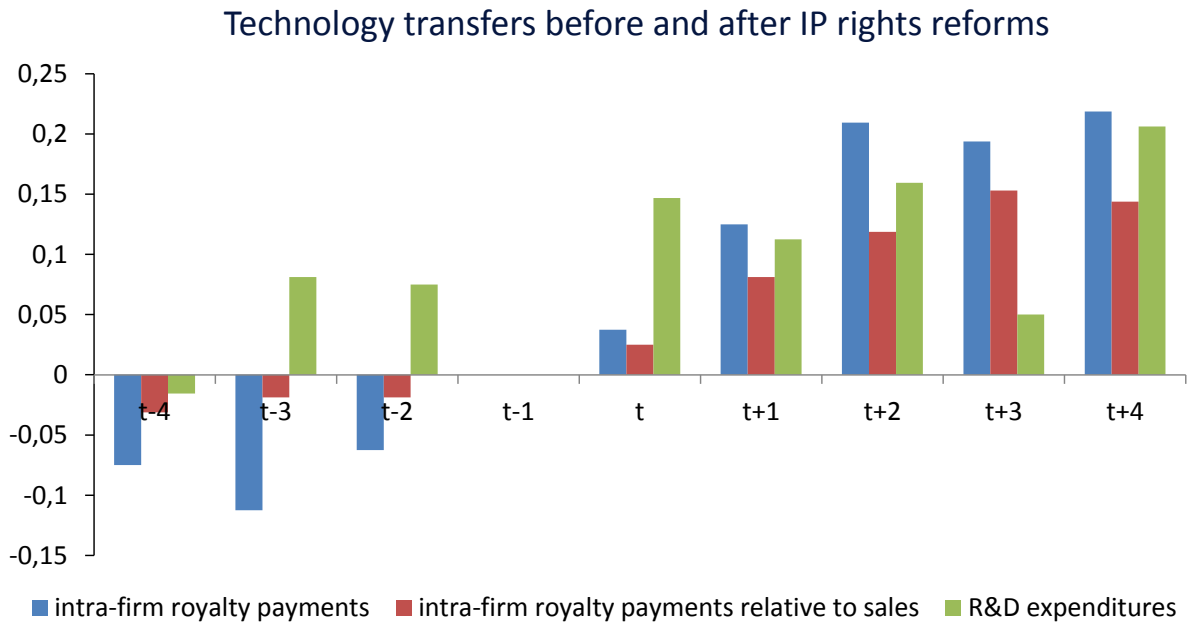
(c) Facilitating adoption of green innovation

NON-EXHAUSTIVE

- Increasing customer information on technologies
- Encouraging long term approaches for public procurement
- Improving information on benefits, risks and risks mitigation options
- Adopting plans based on technology roadmaps

(d) Environmental Goods Agreements (EGAs)

- Negotiations launched in 2014 by 14 WTO members (US, EU, Japan, Aus, NZ, Singapore, etc.)
- Eliminates tariff and non-tariff barriers on environmental technologies like wind turbines and water treatment filters
- Helps manufacturers spread R&D investments on larger scale and expand their business models internationally to increase profits

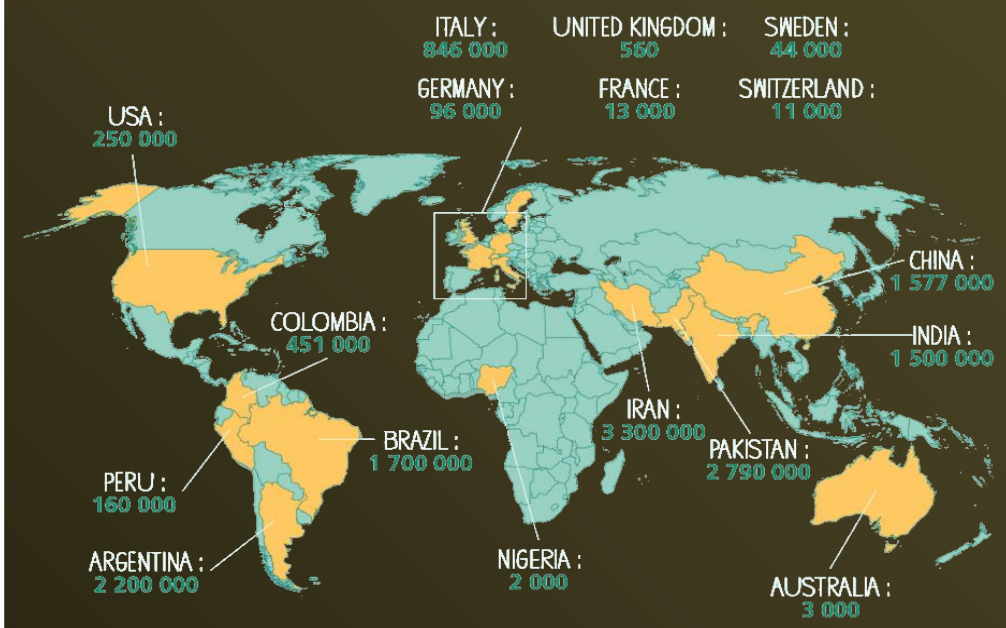


2. Gas mobility

GAS, AN ALTERNATIVE FUEL

that contributes to the diversity of the energy mix and to reduced dependency on petroleum products

WHERE DO WE RUN ON GAS ?



WHY RUN ON GAS ?

ECONOMY

FOR 10 REFILL

PETROL	100 km
DIESEL	150 km
GAS	200 km

ENVIRONMENT

- **- 25%** CO_2 vs. petrol
- **- 60%** NOx
- **- 50%** of noise
- **- 95%** PM

Possible impacts in terms of reduction of carbon emissions by 2025 :

-115 Million tCO_2

In the next few years, gas as a fuel **can rely on** :

- **Good performances of gas compared to gasoline and gasoil**

- A **European directive** to promote alternative fuels infrastructure.

- **Current profitable business cases** : gas price < oil price and gas vehicle price downwards, **but limited by the lack of public stations**.

… but it's necessary **to support the trend** by :

- **Tax incentive mechanisms** on gas as a fuel, gas vehicle or gas fuelling station to balance the Total Cost of Ownerships.

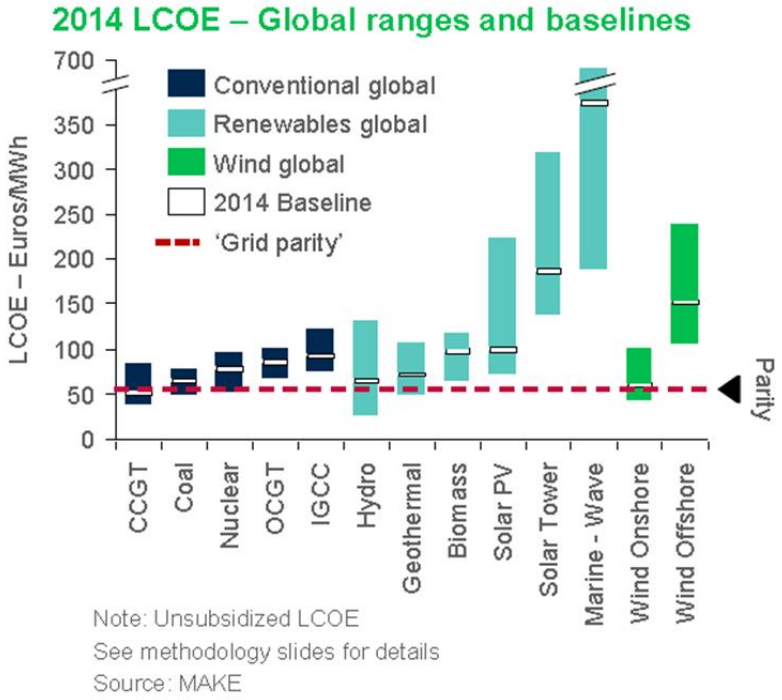
- A **strong support of National Authorities** to create a climate of confidence about this fuel

- An **involvement of cars and trucks manufacturers** to display a wide range of gas vehicles

- An **effective communication plan** to promote the availability of gas as fuel and its advantages.

3. Wind industry innovation

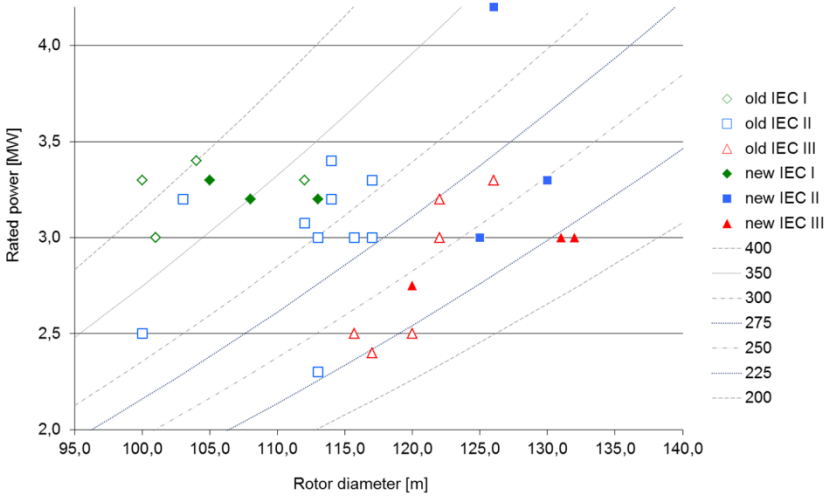
Wind Industry today : still young and already cost-effective

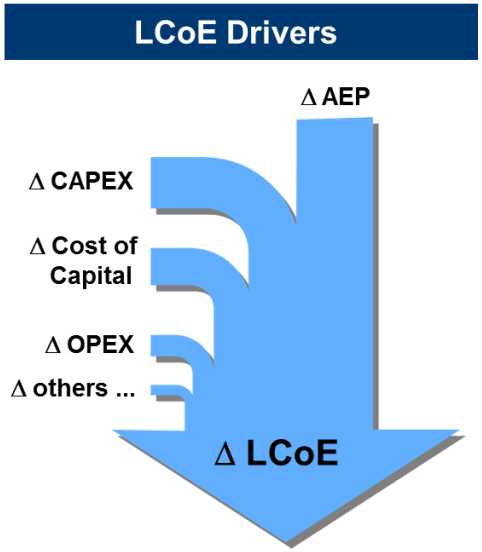


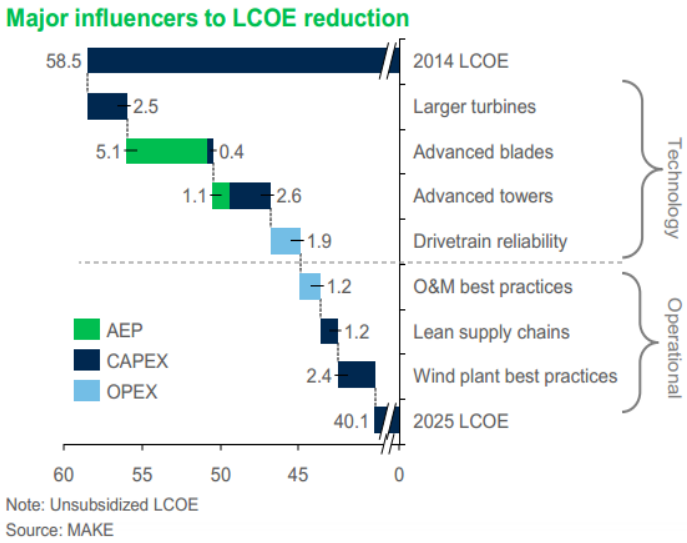
- Since the 80's, constant innovations have allowed Wind Industry reducing cost of MWh
  - Rated power, rotor size, hub height
  - Efficiency of energy transformation
  - Reliability & safety
  - Longer production series
- Wind is today a Best-in class renewable energy serving climate needs and energy independence

Wind Industry has the potential to continue driving cost down

Sample of new turbines being developed – 3MW class







- Industry still investing into new technologies
- Target : decrease LCoE by a further 25/30% until 2025, reaching the 40 €/MWh range
- Sane development of the wind industry requires
  - long-term visibility on regulation
  - smooth transition periods country per country
  - bankability of the new schemes, for all players

4. Discussion

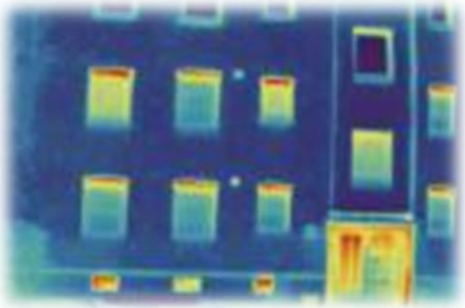
Report available online with much more to find out:
http://report.tti.alliance.org

Backup

A balanced panel of contributors to the initiative, in terms of economic sectors and size of companies

Some of the innovations from our panel (1/2)

Higher performance insulants



More renewables with Furtive wind turbines

Free & green heating using smart data centers

Using a pipeline instead of trains

Fuel savings thanks to lighter and stronger steel

Low GHG fire protection

Some of the innovations from our panel (2/2)

Optimized airplane fuel consumption

Higher performance solar panels that repeal dust

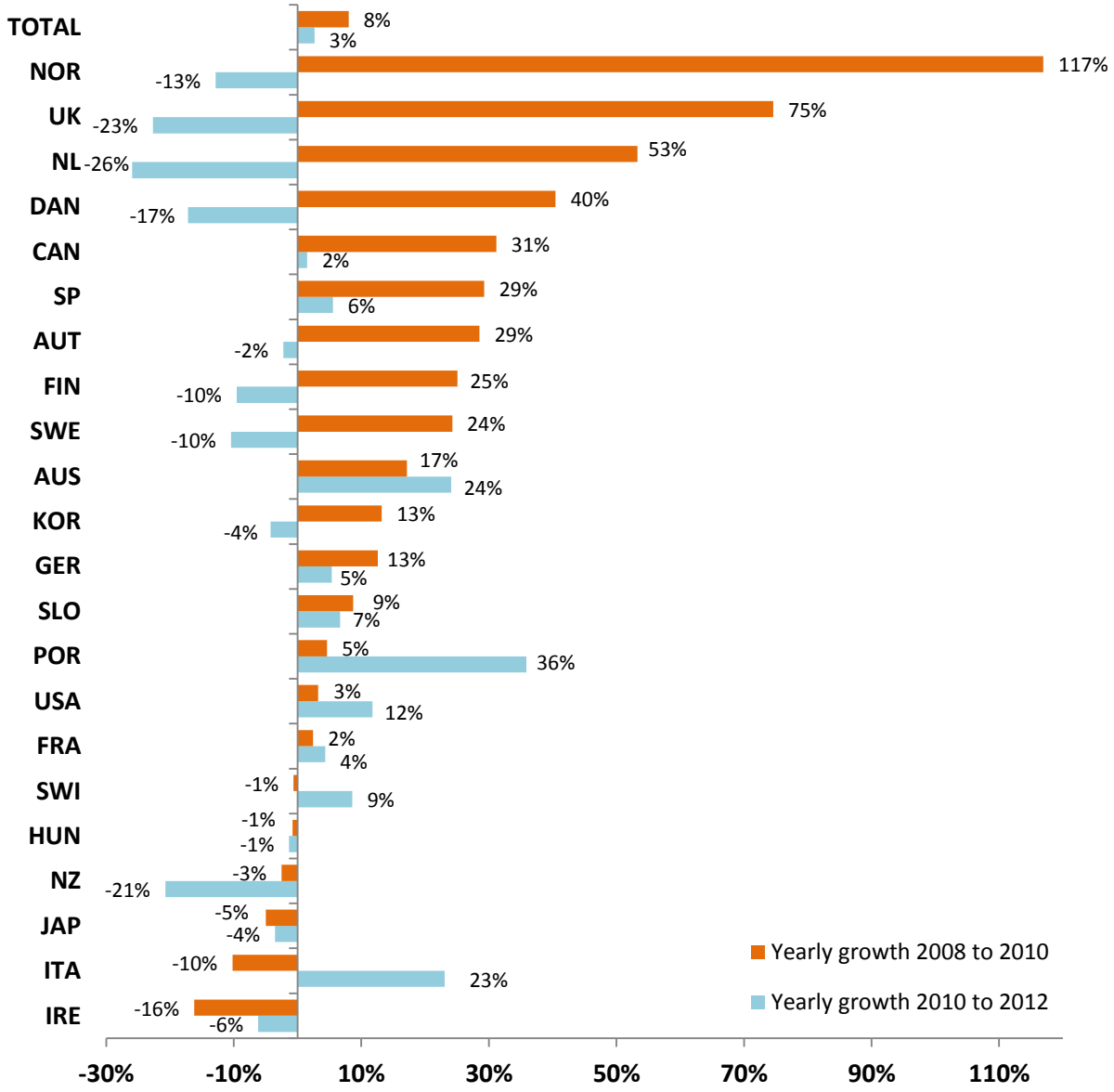
Carbon absorption by planting trees

Higher torque, zero emissions

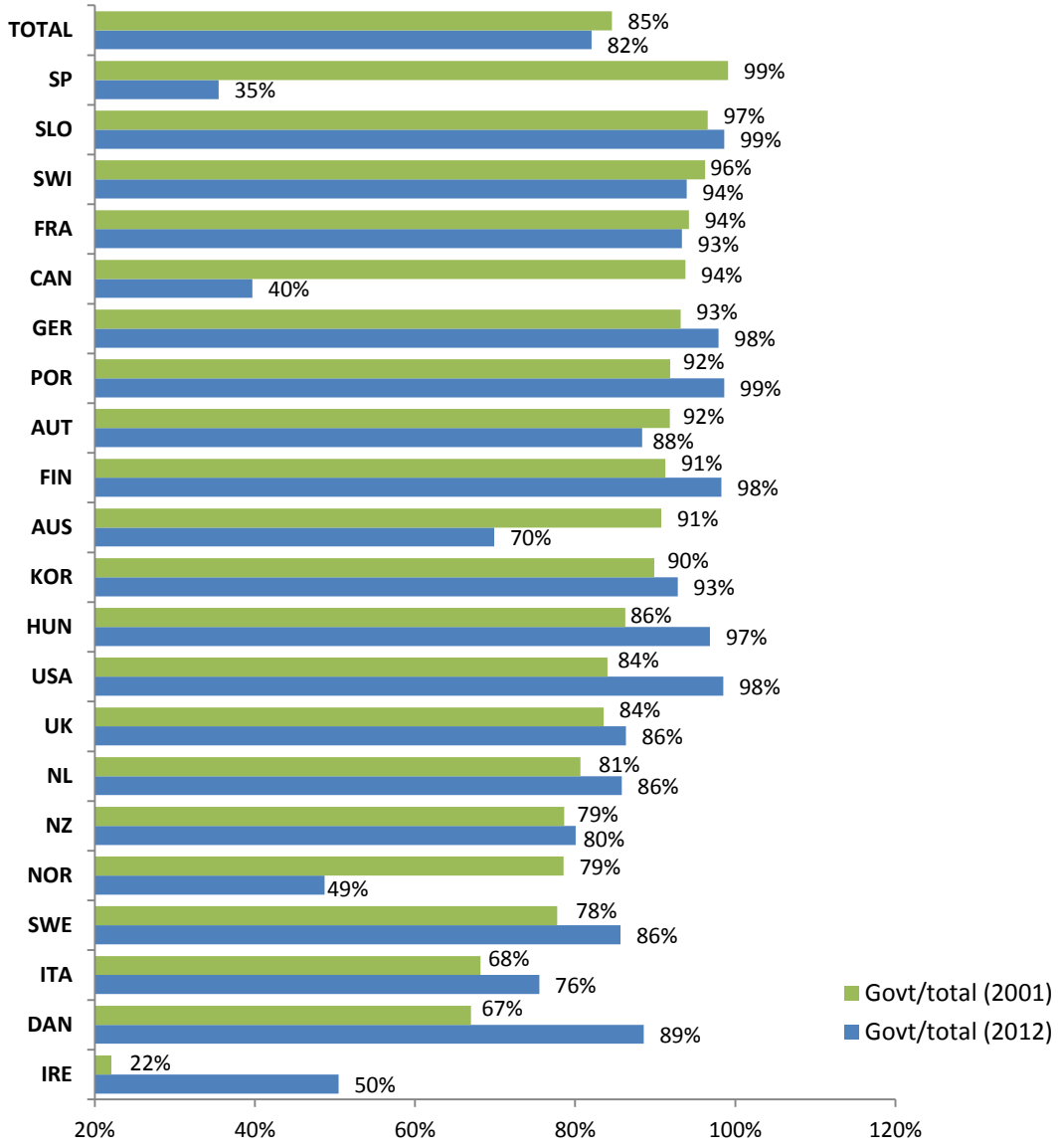
Reduced traffic: saving time while being green

Optimized home monitoring

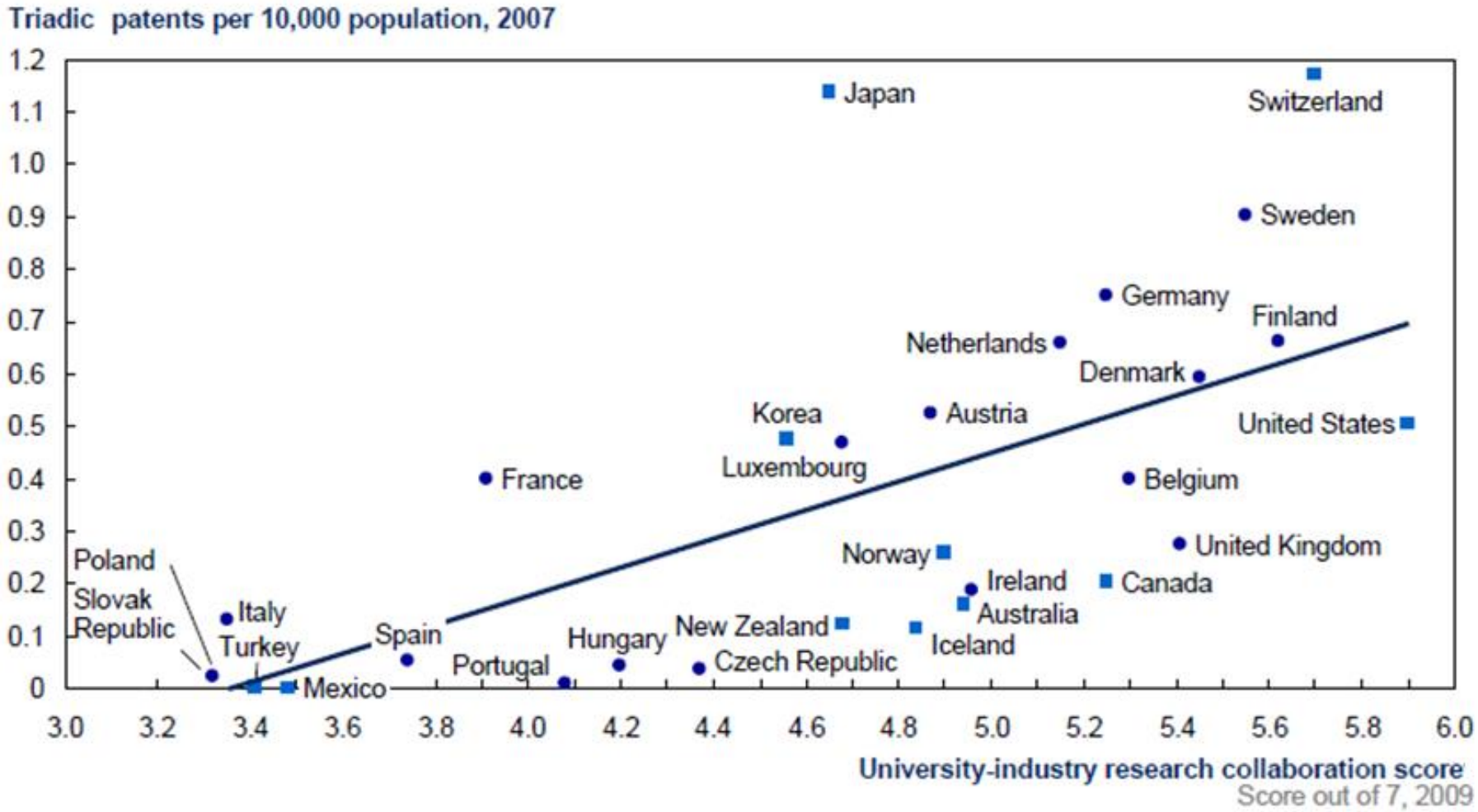
Lower R&D in energy



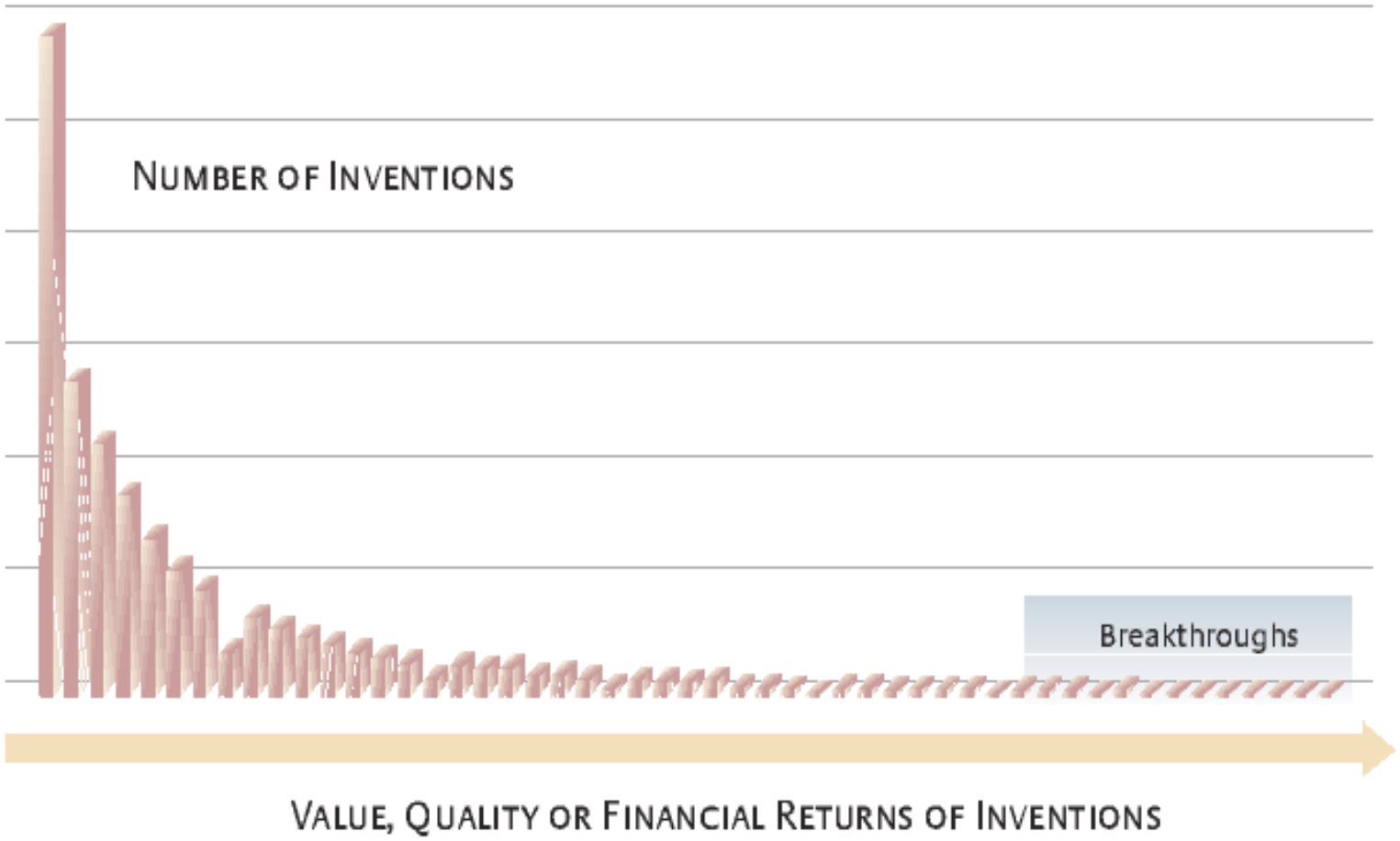
Global decrease of governmental share in R&D budgets



Impact on innovation of university-industry collaboration



Typical distribution of invention returns



Which technology should be supported ?