

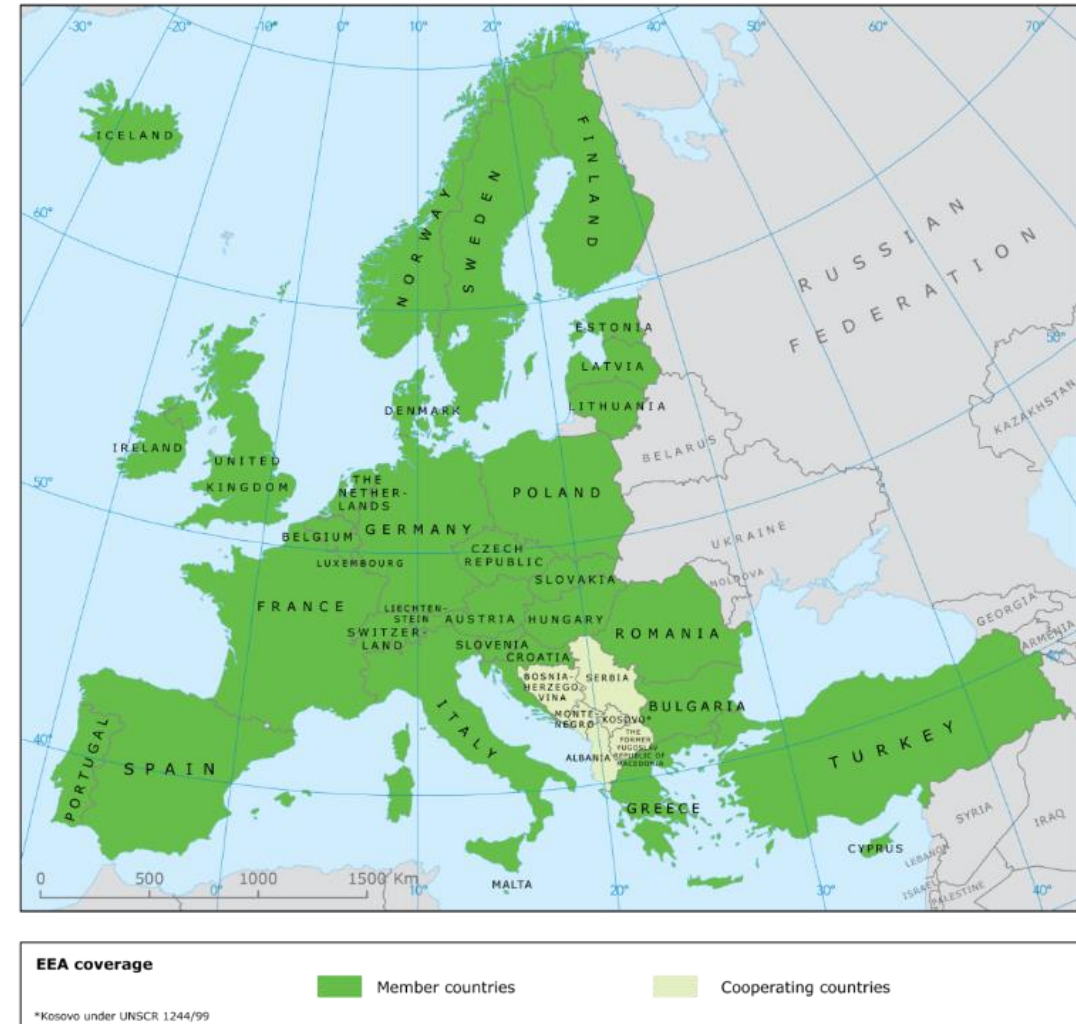
Managing the climate transition in cities and regions



**Jock Martin, Head of Programme – Integrated Environmental Assessment
European Environment Agency**

The European Environment Agency

- European Environment Agency: an EU agency working at the science-policy interface
- Network organisation: Eionet includes more than 300 institutions in 39 European countries
- EEA work is targeted at EU institutions, EEA member countries, civil society organisations and the general public



Key messages from our latest 5-year report in 2015

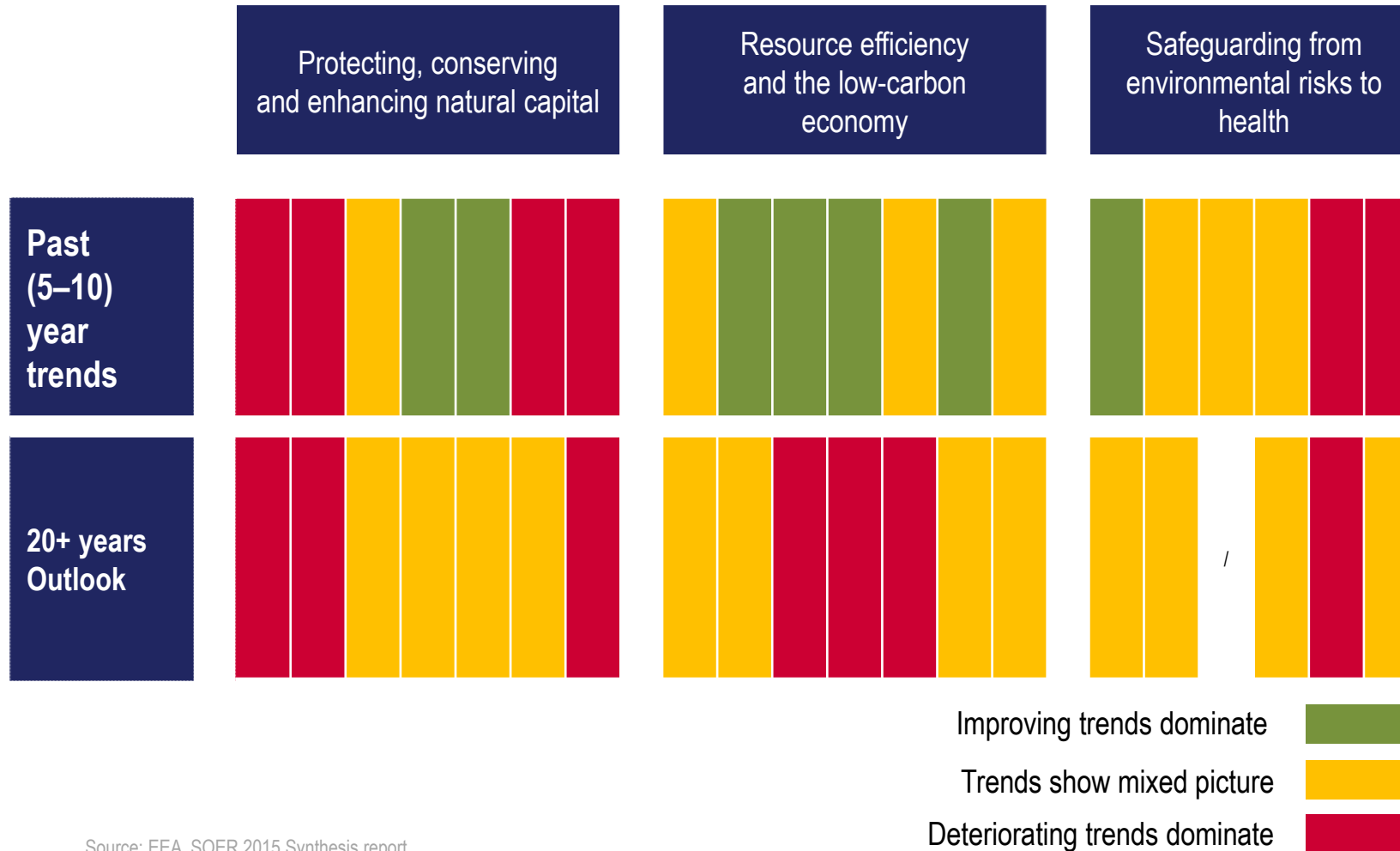


SOER 2015 concluded that the outlook for Europe's environment in coming decades is worrying.

Achieving the EU's 2050 vision of “living well within environmental limits”, will require **“fundamental transitions**, in key systems of production and consumption, most notably, **food, energy, mobility and housing as well as fiscal and finance systems** that drive them.”

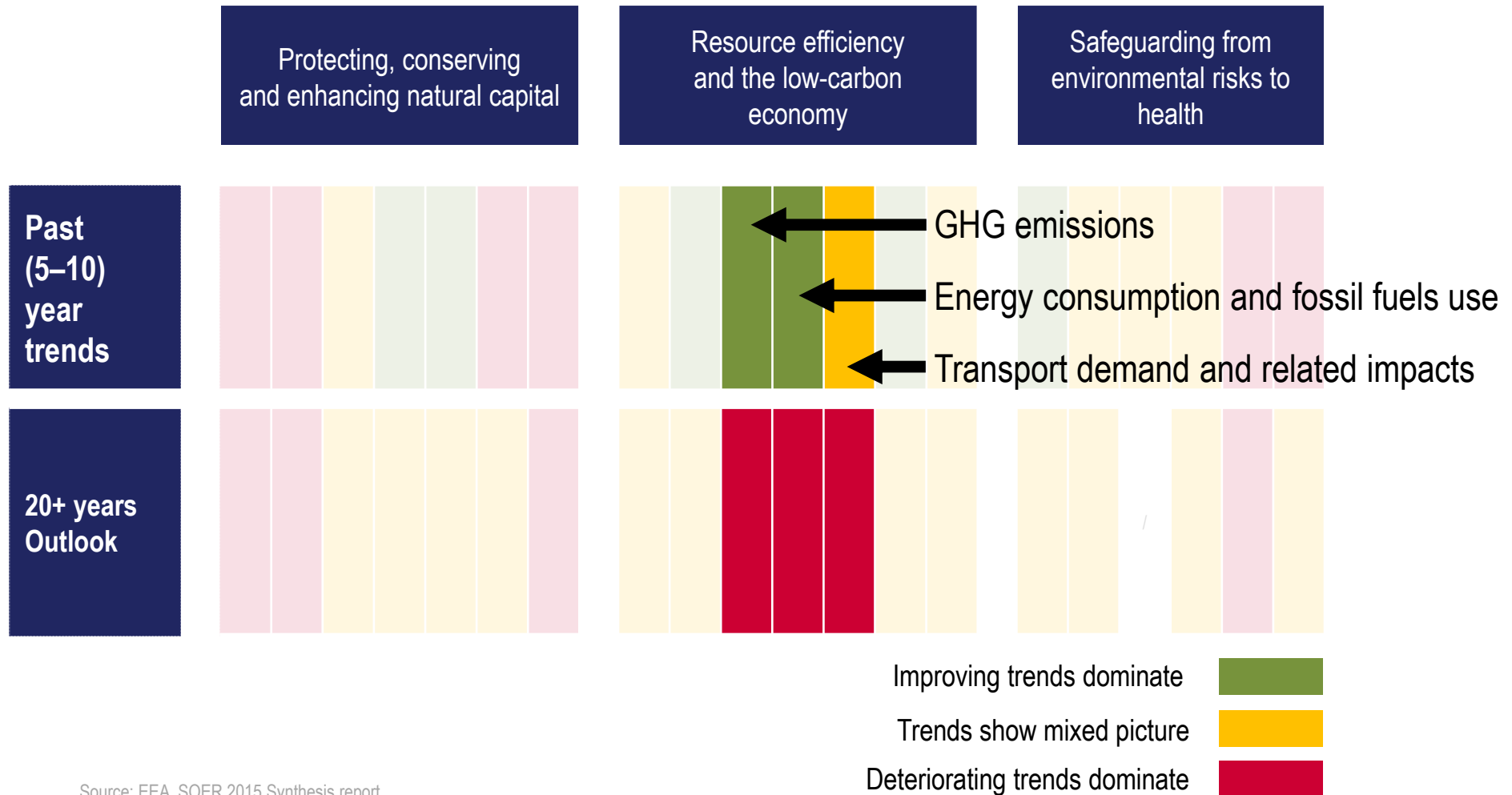
SOER 2015 conclusions

Efficiency improvements have not secured long-term resilience and the long-term outlook is worrying

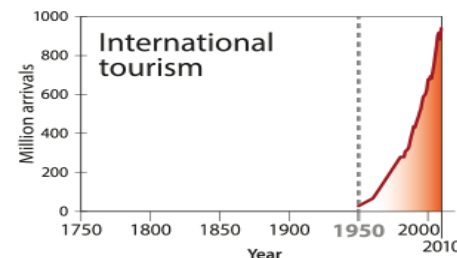
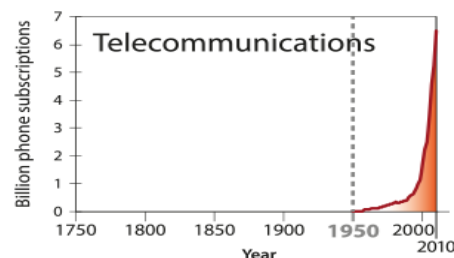
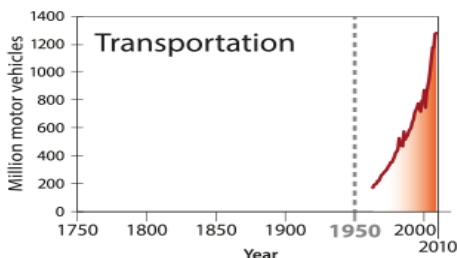
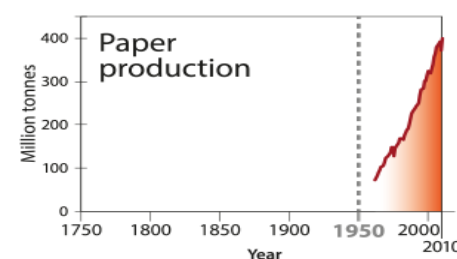
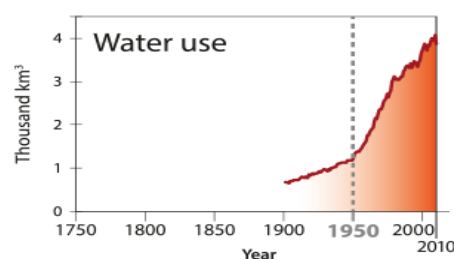
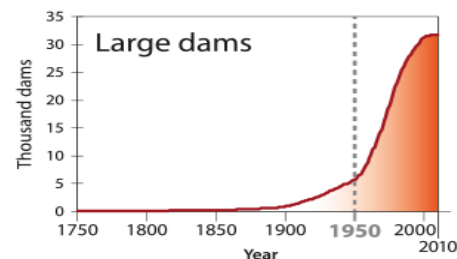
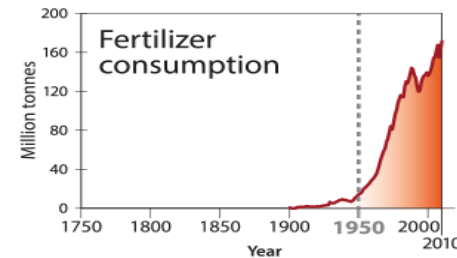
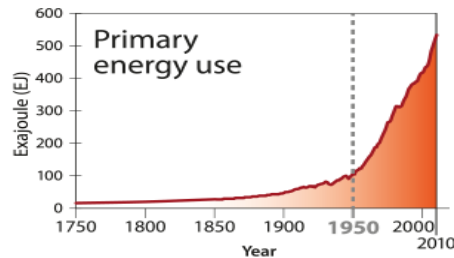
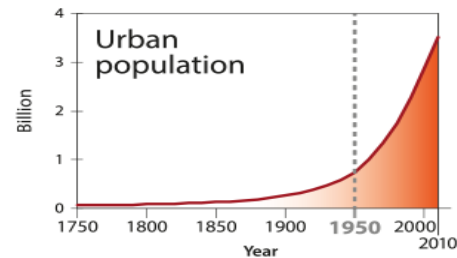
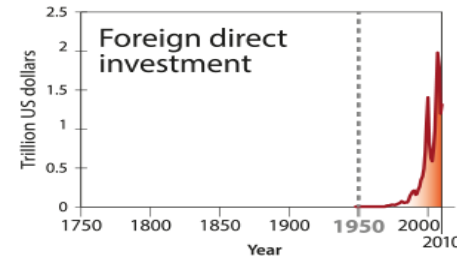
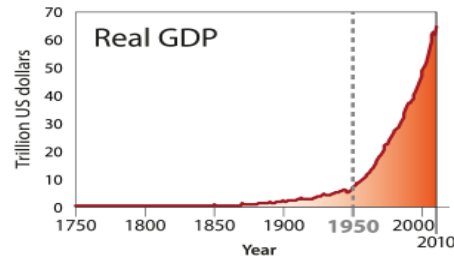
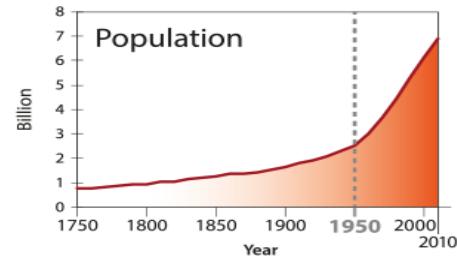


SOER 2015 conclusions

Efficiency improvements have not secured long-term resilience and the long-term outlook is worrying

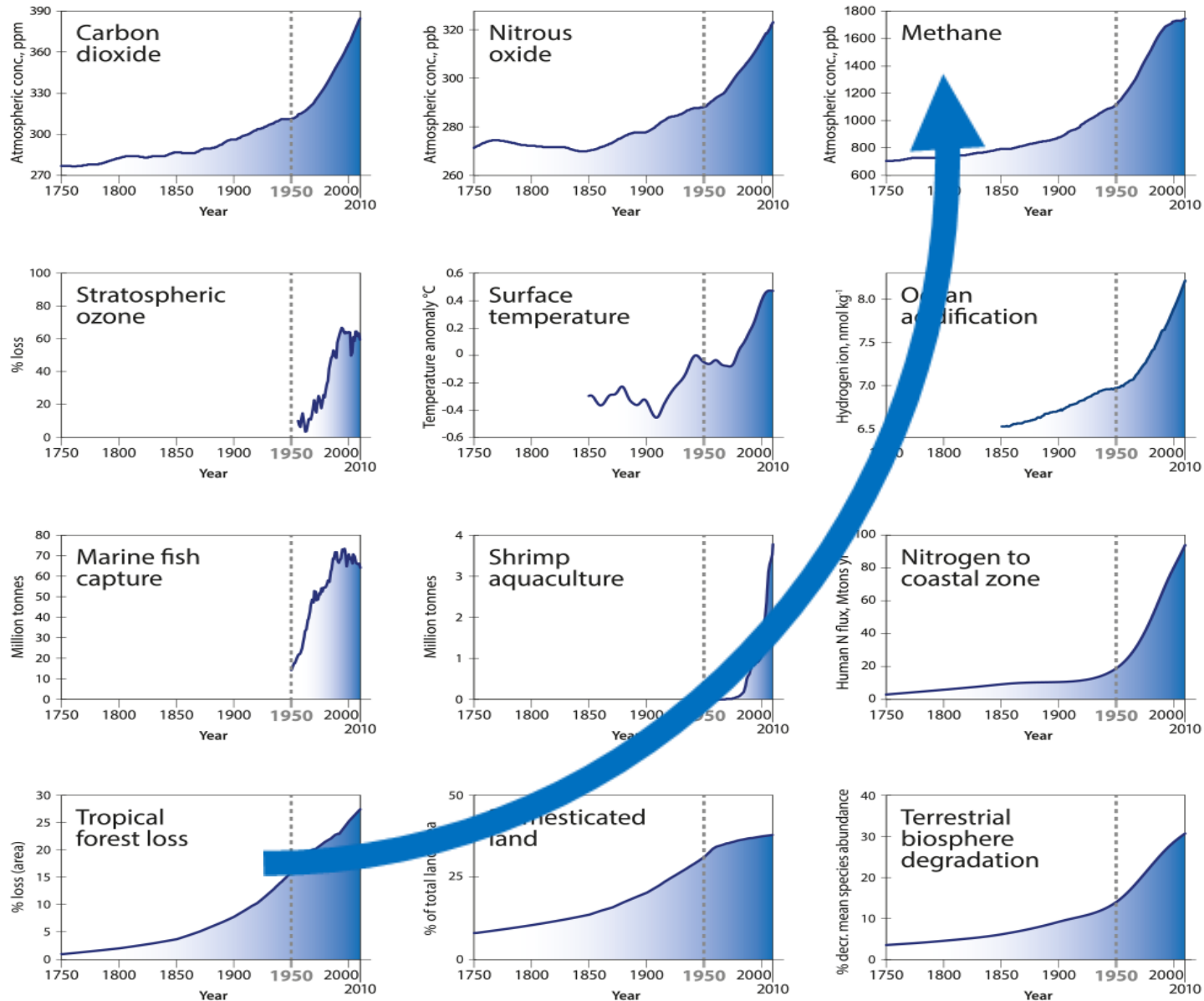


Global socio-economic trends



Globalisation
of unsustainable
systems of
production and
consumption

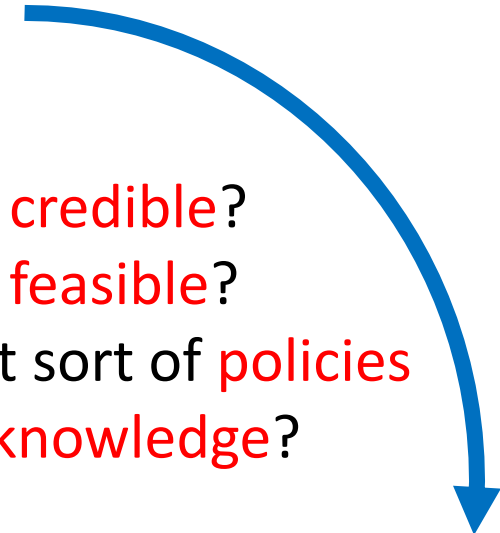
Earth system trends



Expectations /
policy promises



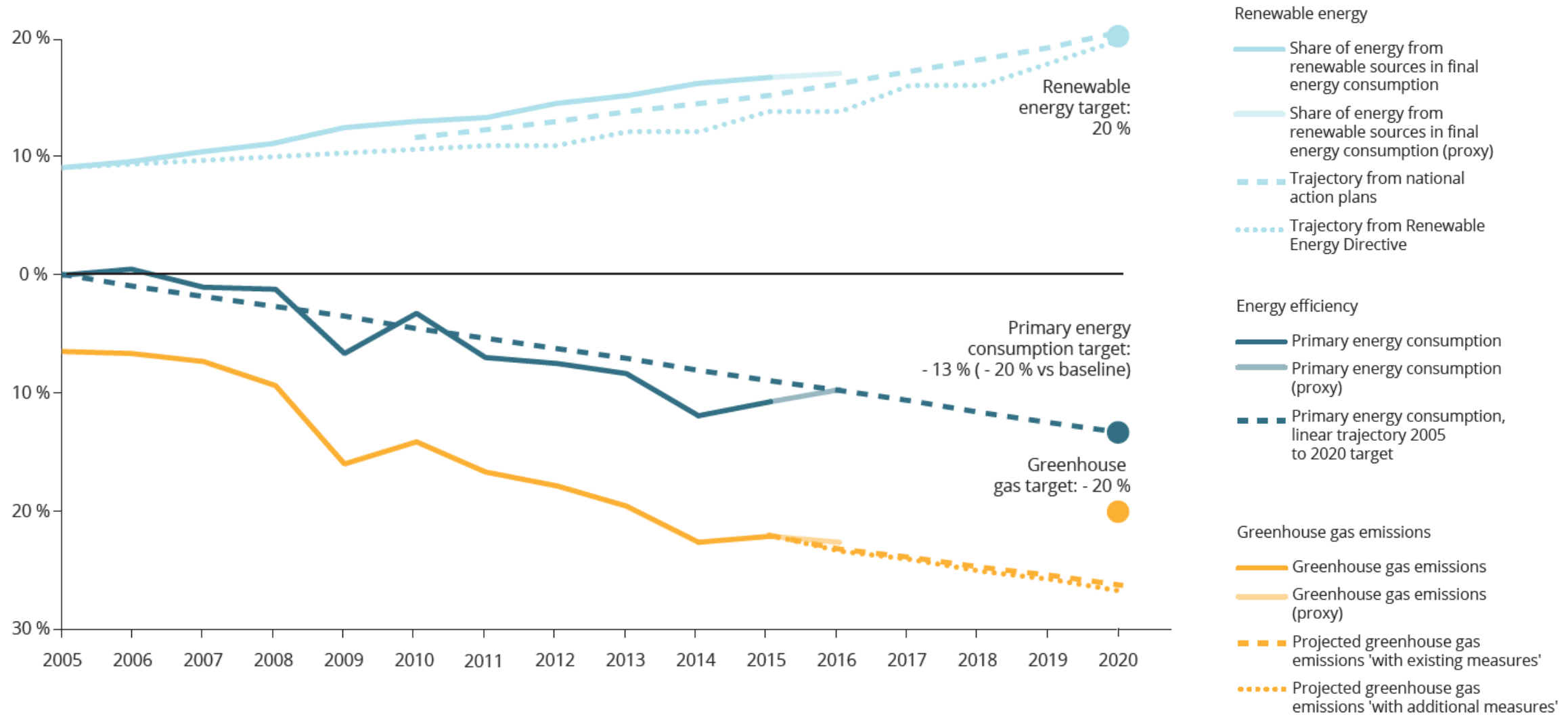
OR



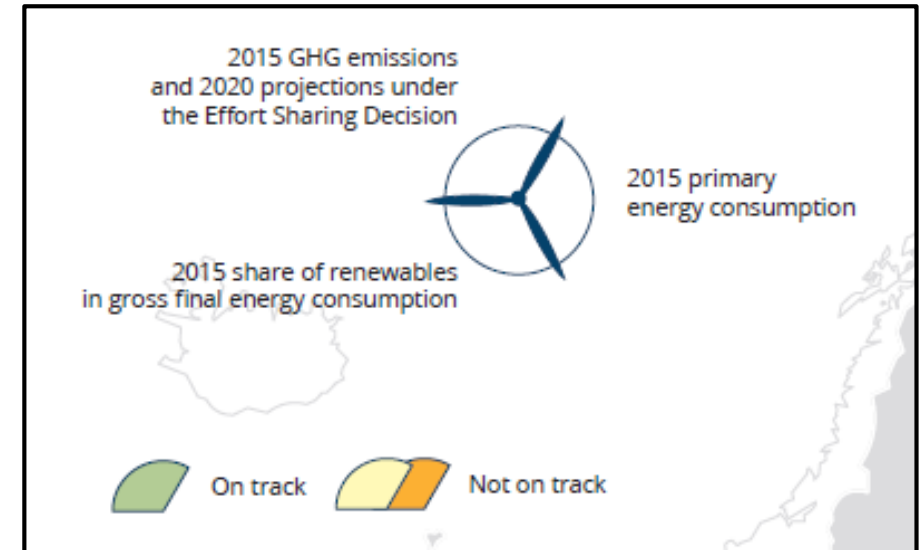
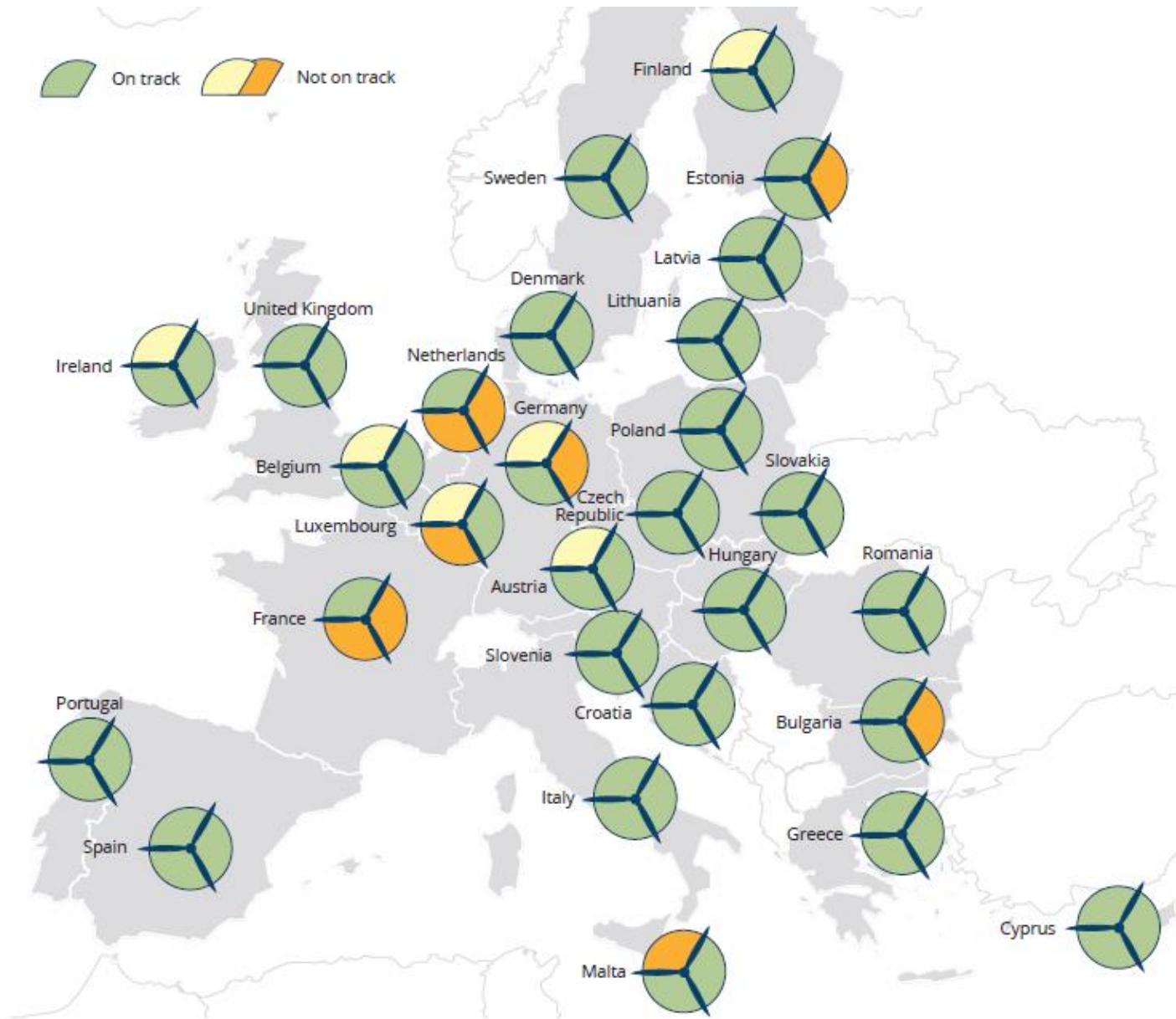
How **credible**?
How **feasible**?
What sort of **policies**
and **knowledge**?



We are broadly on course to achieve the 2020 targets

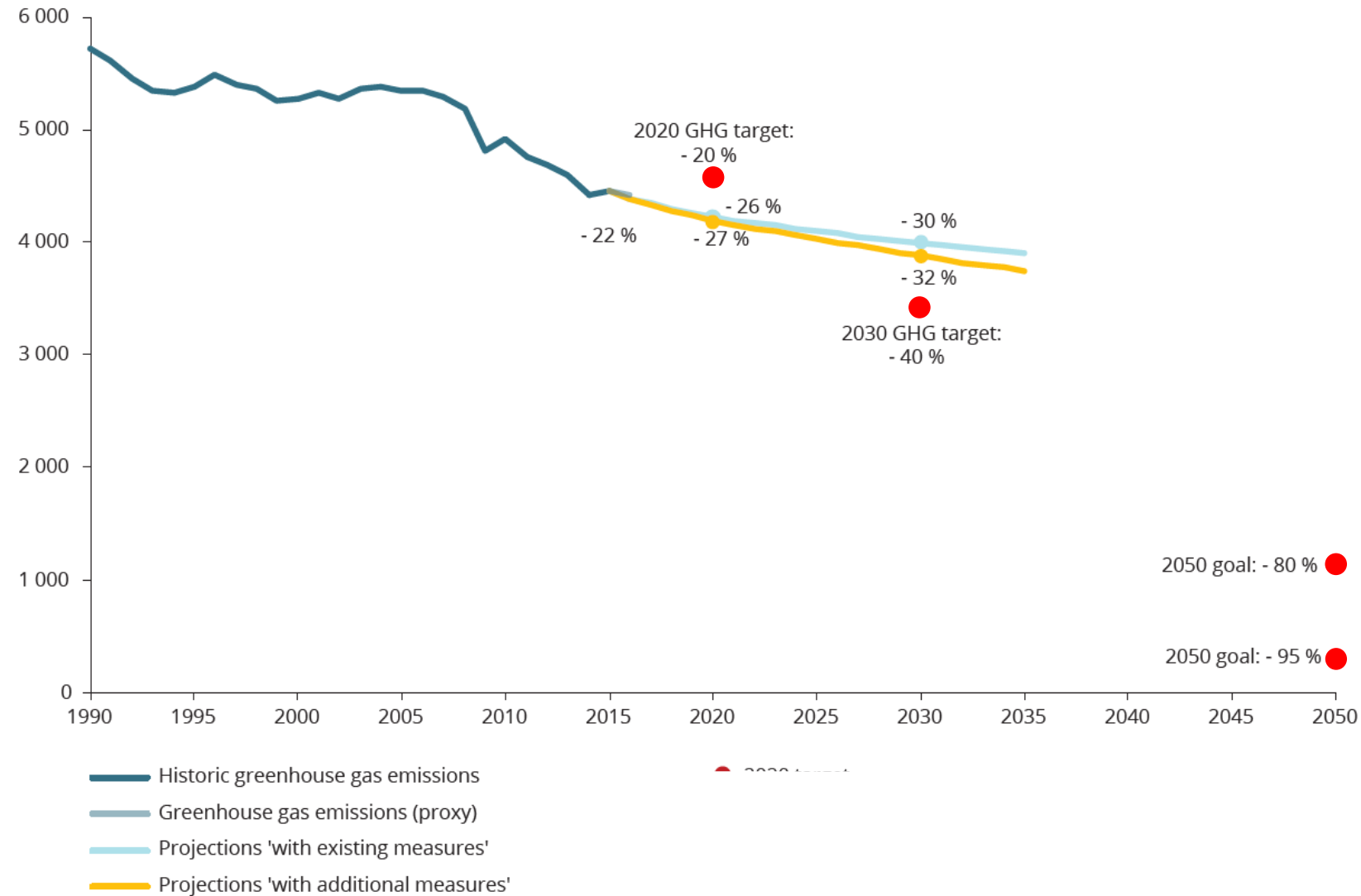


We are broadly on course to achieve the 2020 targets



Achieving the 2050 goals remains a major challenge

Million tonnes of CO₂ equivalent (MtCO₂e)



What role for the power sector?

Vision for 2050 implies a fundamental transformation

The power sector is at the heart of all decarbonisation plans, requires steep sectoral GHG emission reductions:

- by 48–66% by 2030
- by 90–98% by 2050 (compared to 2005)

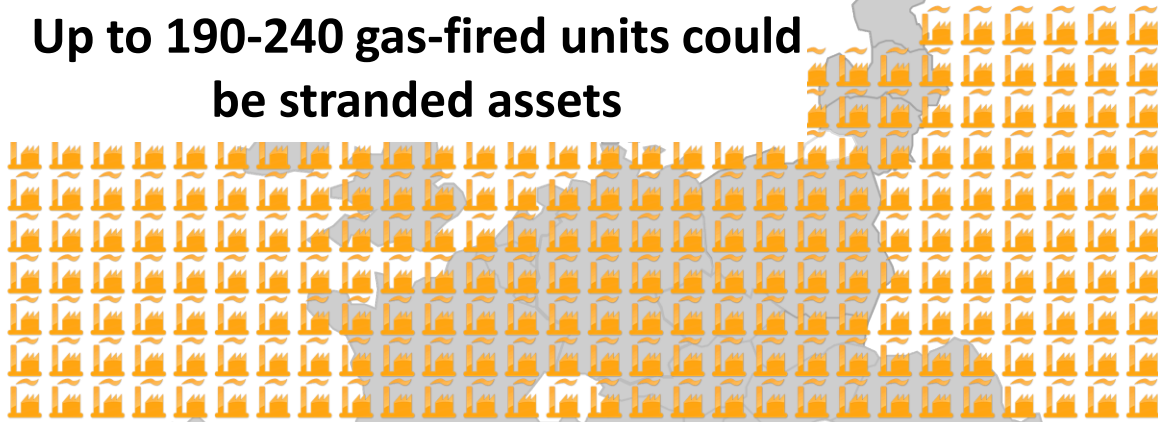
The **Energy Union** fosters the progressive integration of energy infrastructures and markets to support decarbonisation, but ...

... long lifetimes of power plants and tied up capital

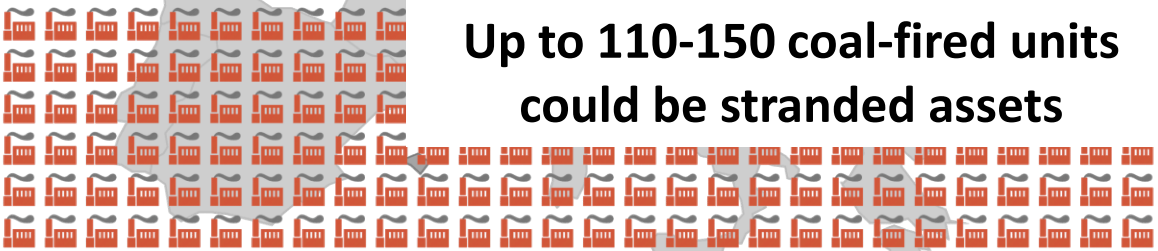
We face significant lock-ins to established systems

**Total overcapacity: 278 – 347 units
(56 – 69 GWe)**

**Up to 190-240 gas-fired units could
be stranded assets**



**Up to 110-150 coal-fired units
could be stranded assets**



Gas-fired



Coal-fired

If existing and planned units were operated according to extended lifetimes...

1/3 of the capacity of all coal-fired and gas-fired units, respectively, would be in excess in 2030, and thus at risk of becoming stranded

1 Unit = 200 MWe

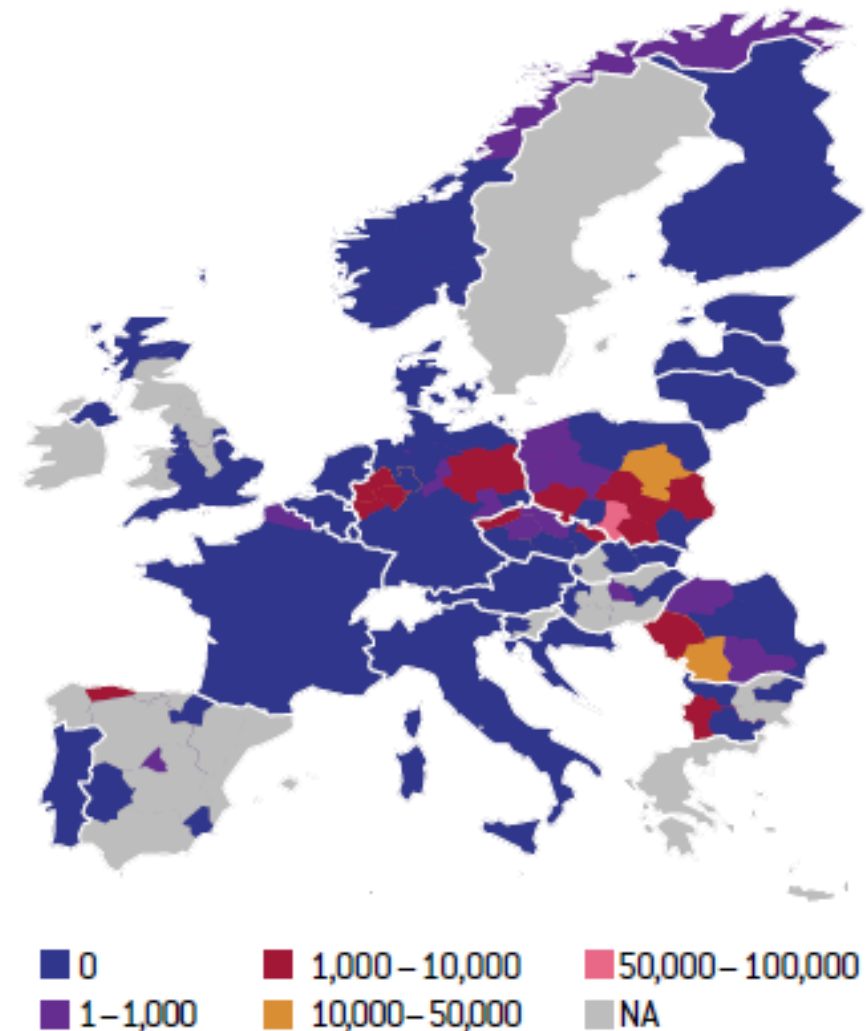


Transitions impact livelihoods and communities

*“Taking into account the imperatives of a **just transition** of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities”*

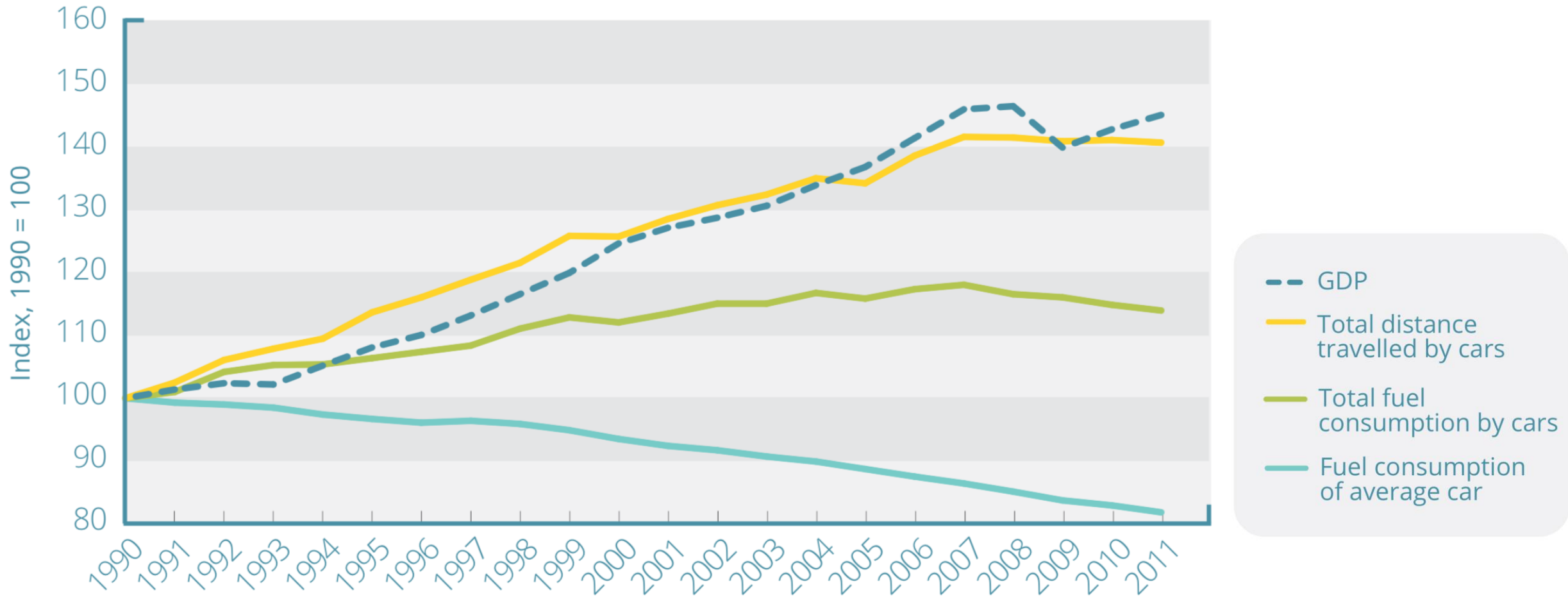
Paris Agreement, 2015

Coal mining employment in EU countries and regions



Source: Bruegel based on Eurostat (2017).

Rebound effects limit the impact of efficiency gains



Source: EEA (based on Odyssee)

Challenges for established governance approaches

IEA/IRENA, 2017: CO₂ prices in the 66% 2°C scenario (USD/tonne CO₂)

| | 2020 | 2030 | 2040 | 2050 | Annual % increase 2020-2030 | Annual % increase 2020-2050 |
|-----------------------|------|------|------|------|-----------------------------|-----------------------------|
| OECD countries | 20 | 120 | 170 | 190 | 19.6 | 7.8 |
| Major emerging econ's | 10 | 90 | 150 | 170 | 24.6 | 9.9 |
| Other regions | 5 | 30 | 60 | 80 | 19.6 | 9.7 |

Rockström et al. (2017) estimate the need for \$400 /tonne CO₂ by mid-century

Political reality

- Highest annualised growth rate in diesel tax rates in EU-15 (1995-2015): Sweden 2.5%
- Highest annualised growth rate in petrol tax rates in EU-15 (1995-2015): Greece <1%

Transitions

= **fundamental shifts in the systems** that fulfil societal needs, through profound changes in *dominant* structures, practices, technologies, policies, lifestyles, thinking ...

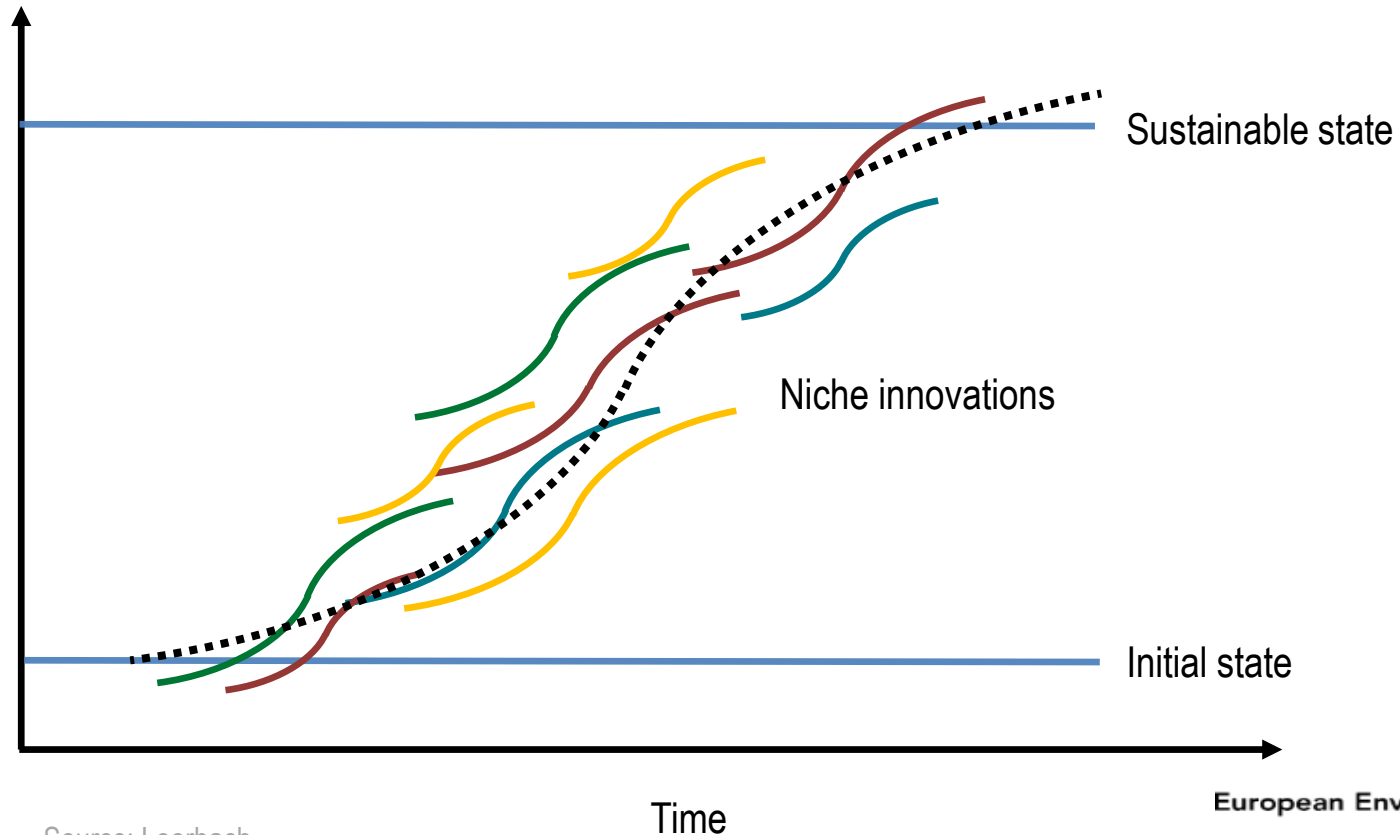
... in line with the sustainable development ambitions and objectives embedded in the **Sustainable Development Goals**

Rethinking how we meet societal needs

Systemic change involves multiple innovations – entailing a fundamental rethinking of how to perform societal functions



Environmental performance



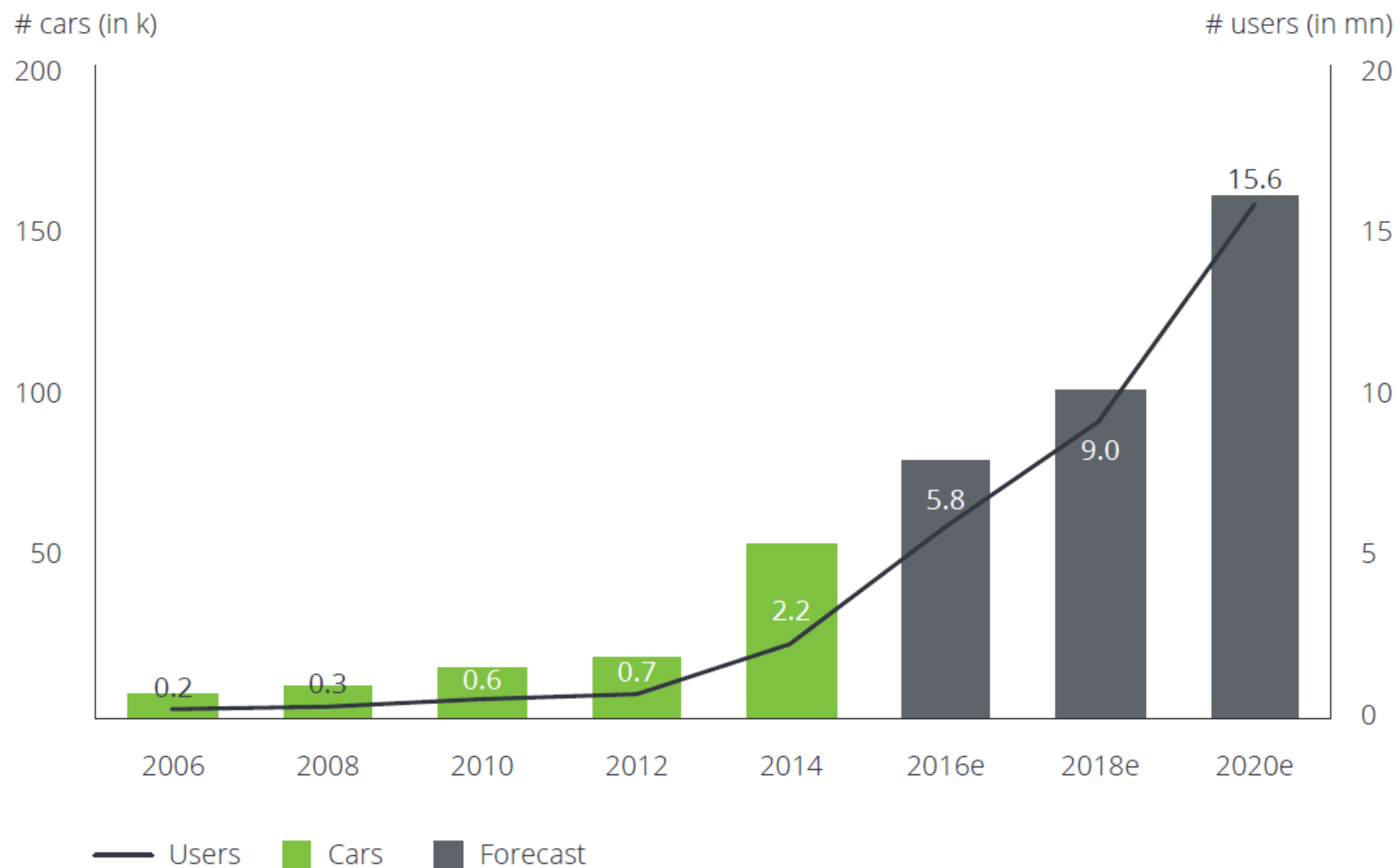
Source: Loorbach

European Environment Agency



Niches and policies that can create change

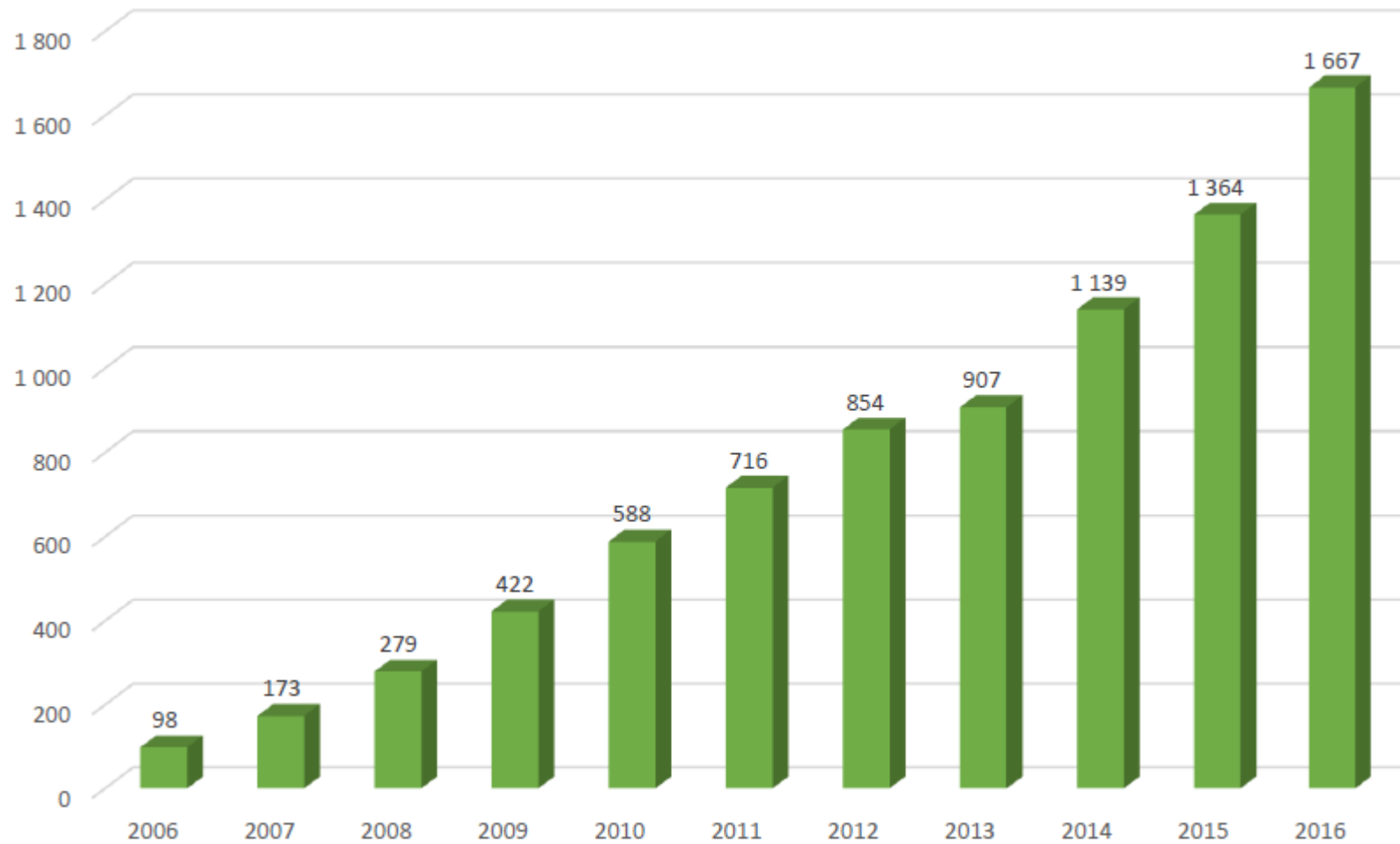
Car sharing market development in Europe (2006–2020)



Source: Monitor Deloitte

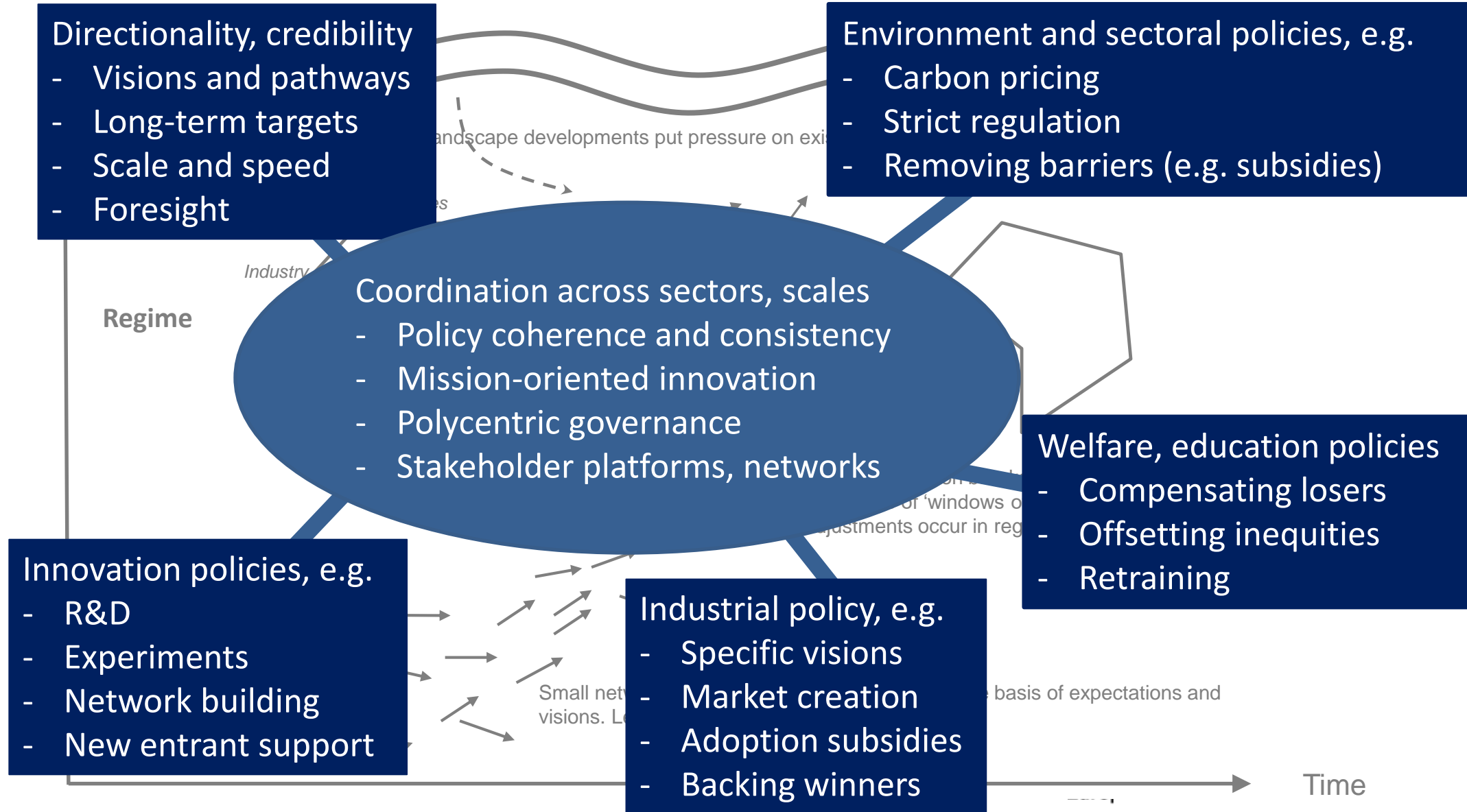
Niches and policies that can create change

EU-28 electric bike sales (2006–2016)



Source: Monitor Deloitte

Policy mixes for systemic change



Opportunities for polycentric governance

- Polycentric governance is proliferating, notably in climate governance
- COP15, Paris Agreement and the US withdrawal

Immediately after Trump's announcement, 900 American businesses, 300 mayors and numerous universities announced that they were 'still in' the Agreement and willing to do what it takes to ensure the US delivers on its pledge, at least on emissions if not finance.

Jordan et al., 2018

Polycentric governance depends on:

- overarching rules – goals, visions, targets, etc.
- monitoring and evaluation for trust, learning and credibility