

Ecolnn Danube

Eco-innovatively connected Danube Region

Innovation Environments in Danube Region Countries



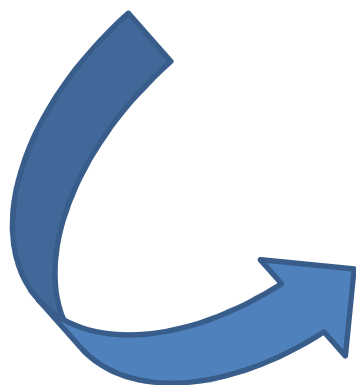
Background:

National reports

- Innovation
- Energy
- Environmental Protection
- Economy and Demography



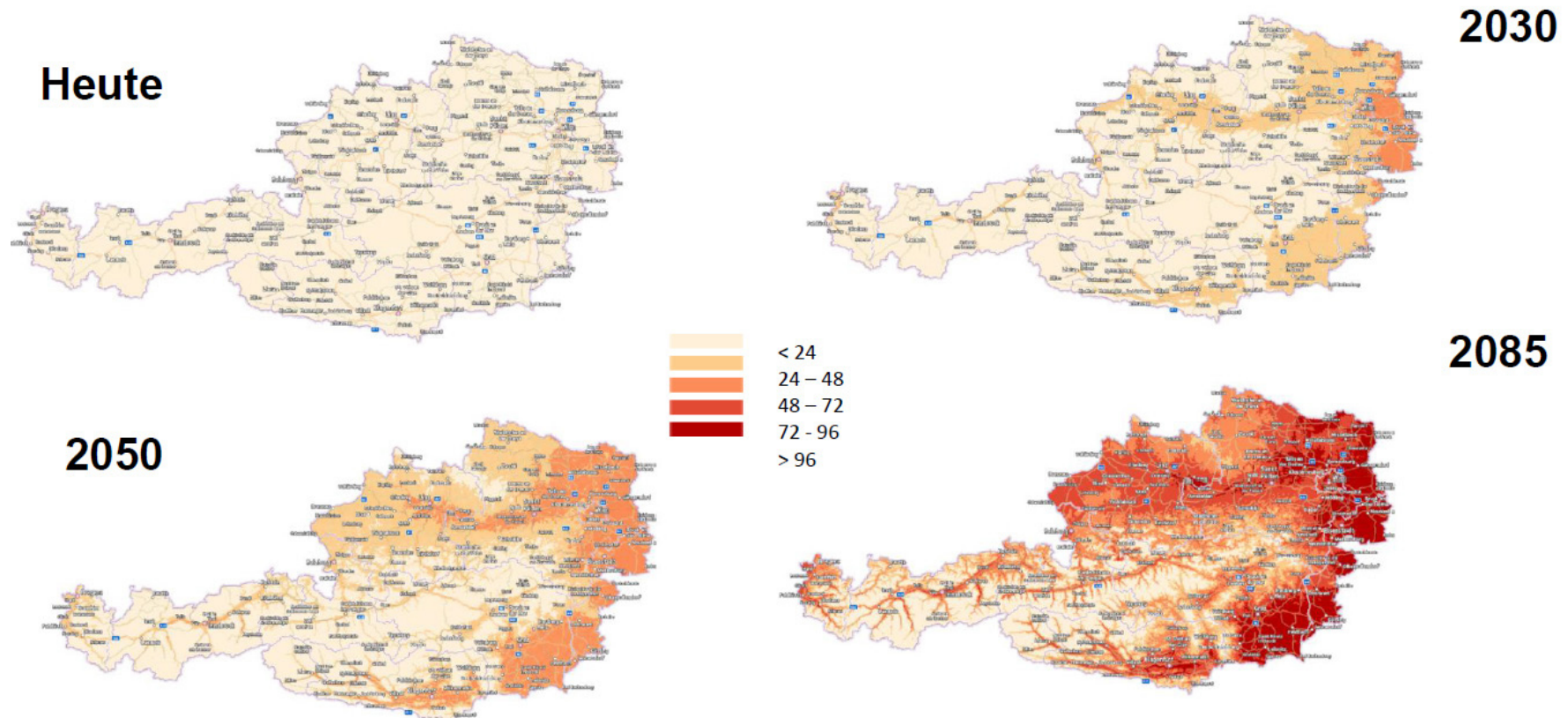
Data sources: Eurostat, Europ. Innovation Observatory, nat. databases



- Similarities
- National specifics
- Bottlenecks & Highlights
- Potential for concerted action
- Discovering and using synergies

Creeping threats – underestimated

climate change



Umweltschutzbericht Österreich/Formayer2016
, Umweltbundesamt

Worst-case-szenario, number of hot days per year

Drastic events – a chance?



Fukushima 2009

All countries potentially affected, but not all react.

Carbon dioxide (CO₂) emissions from hard coal power plants in Germany

date selection

year:

<< >>

lignite
 hard coal

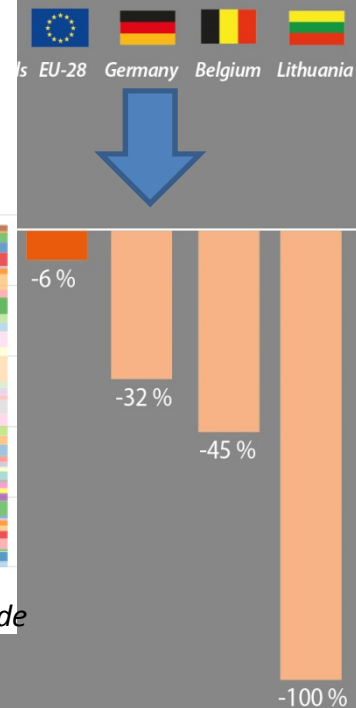
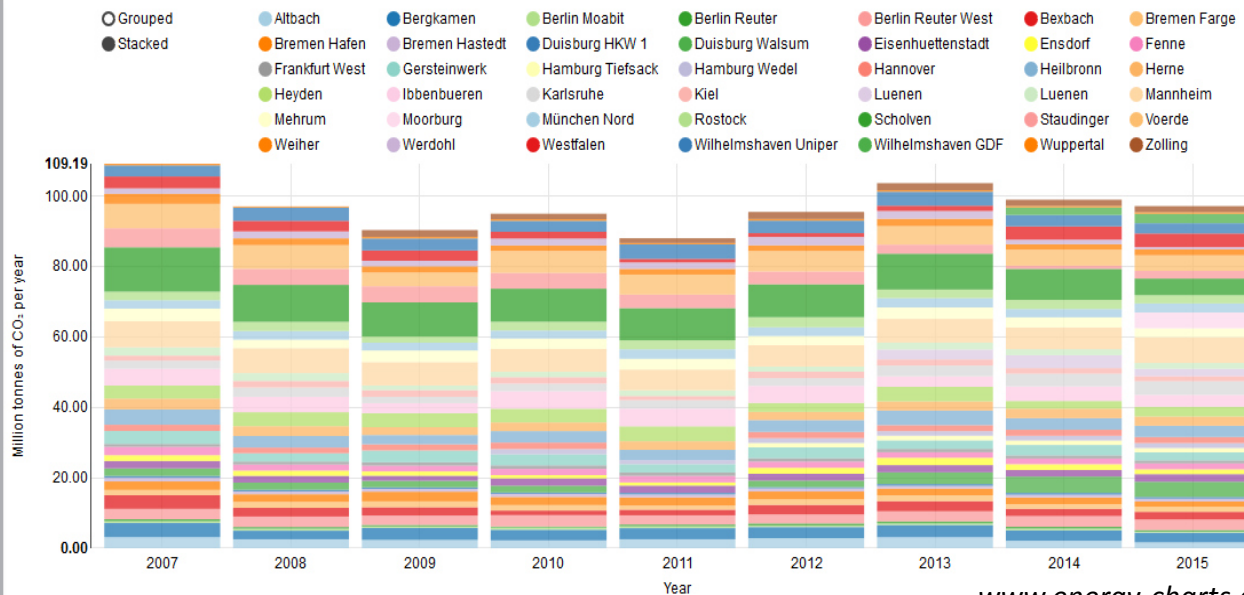
absolute
 specific

greenhouse gases

Nitrous oxide
 Carbon dioxide
 Methane

heavy metals

Arsenic
 Lead
 Cadmium
 Chromium
 Copper
 Nickel



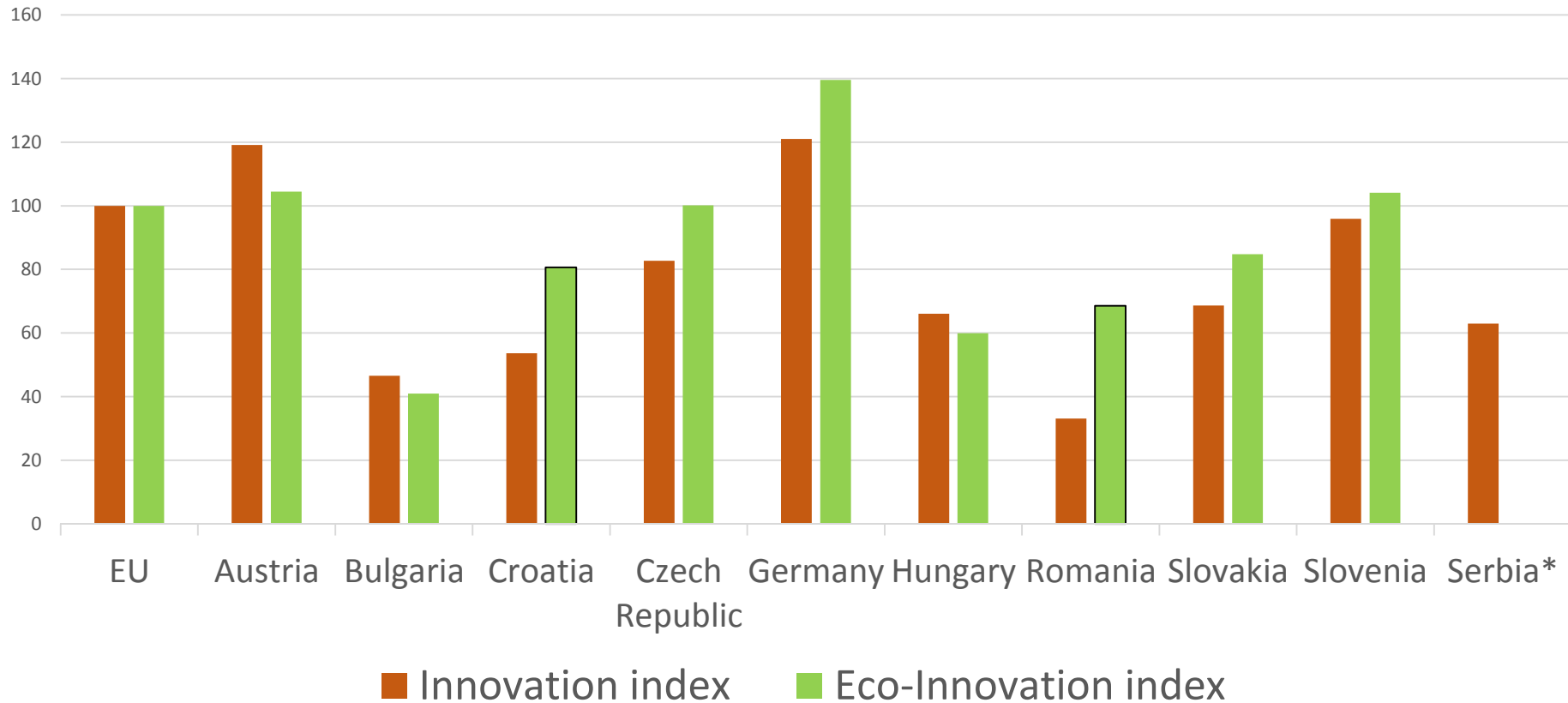
Latvia, Lithuania (since 2010), Luxembourg, Malta, Austria, Poland, Portugal.

ktce (thousand tonnes of oil equivalent)

www.energy-charts.de

For detailed information, see: <http://europa.eu/!UV49PX>

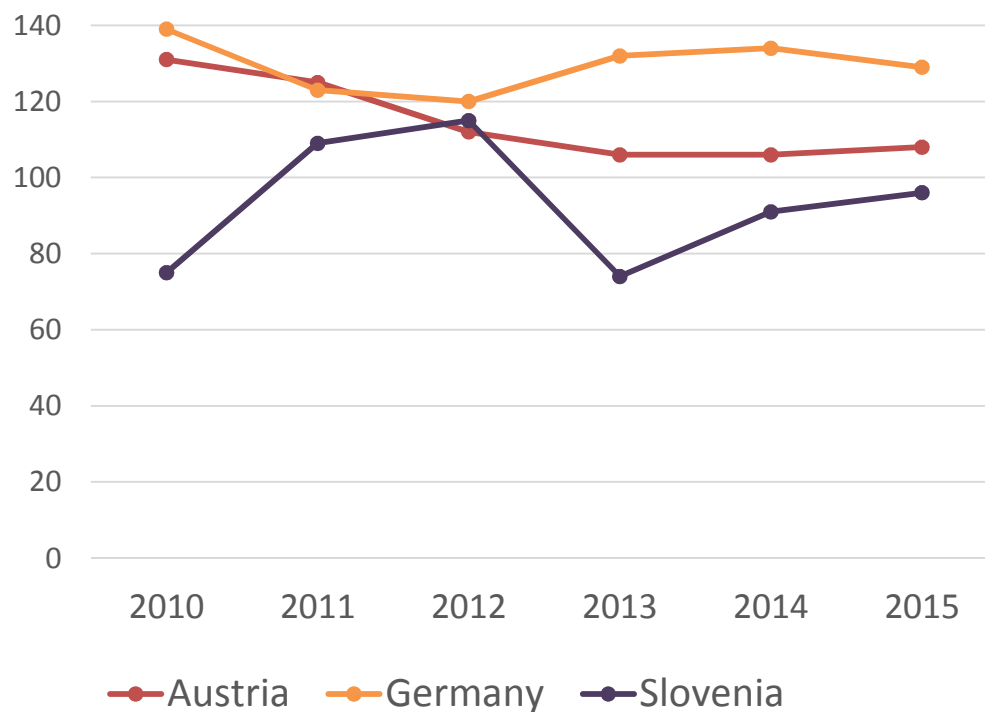
Innovation vs. Eco-Innovation



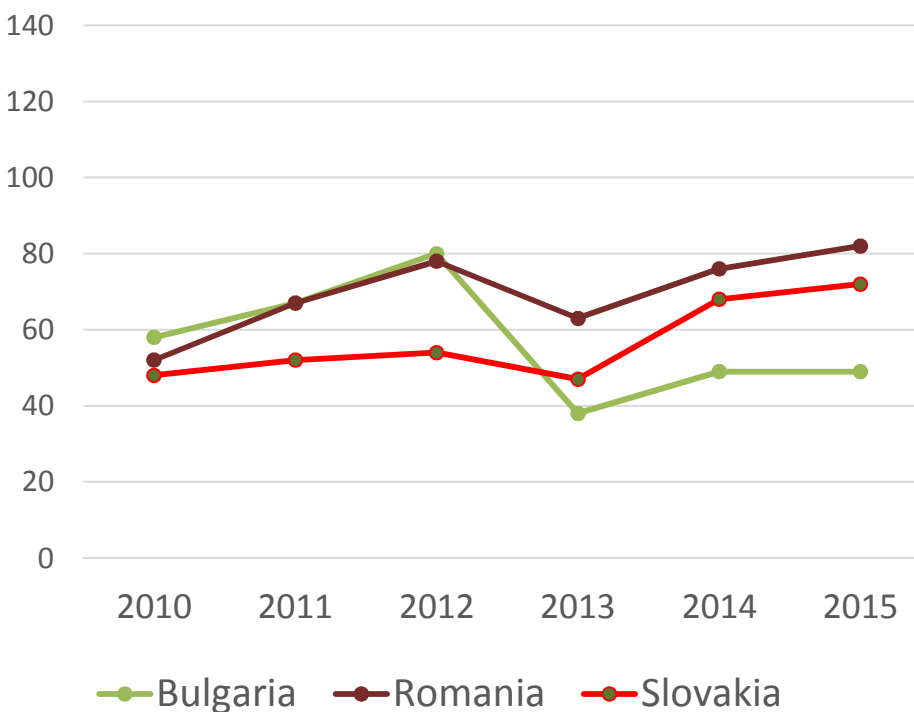
Relative performance as compared to EU in 2016

Eco-Innovation index development

Eco-Innovation Index 2010-2015



Eco-Innovation Index 2010-2015



Data : ecoinnovation scoreboard
http://ec.europa.eu/environment/ecoap/scoreboard_e

Eco-Innovation Inputs

- Governments environmental and energy R&D appropriations and outlays
- Total R&D personnel and researchers
- Total value of green early stage investments

Eco-Innovation Activities

- Enterprises that introduced an innovation with environmental benefits
- obtained within the enterprise / -obtained by the end user
- ISO 14001 registered organisations

Eco-Innovation Outputs

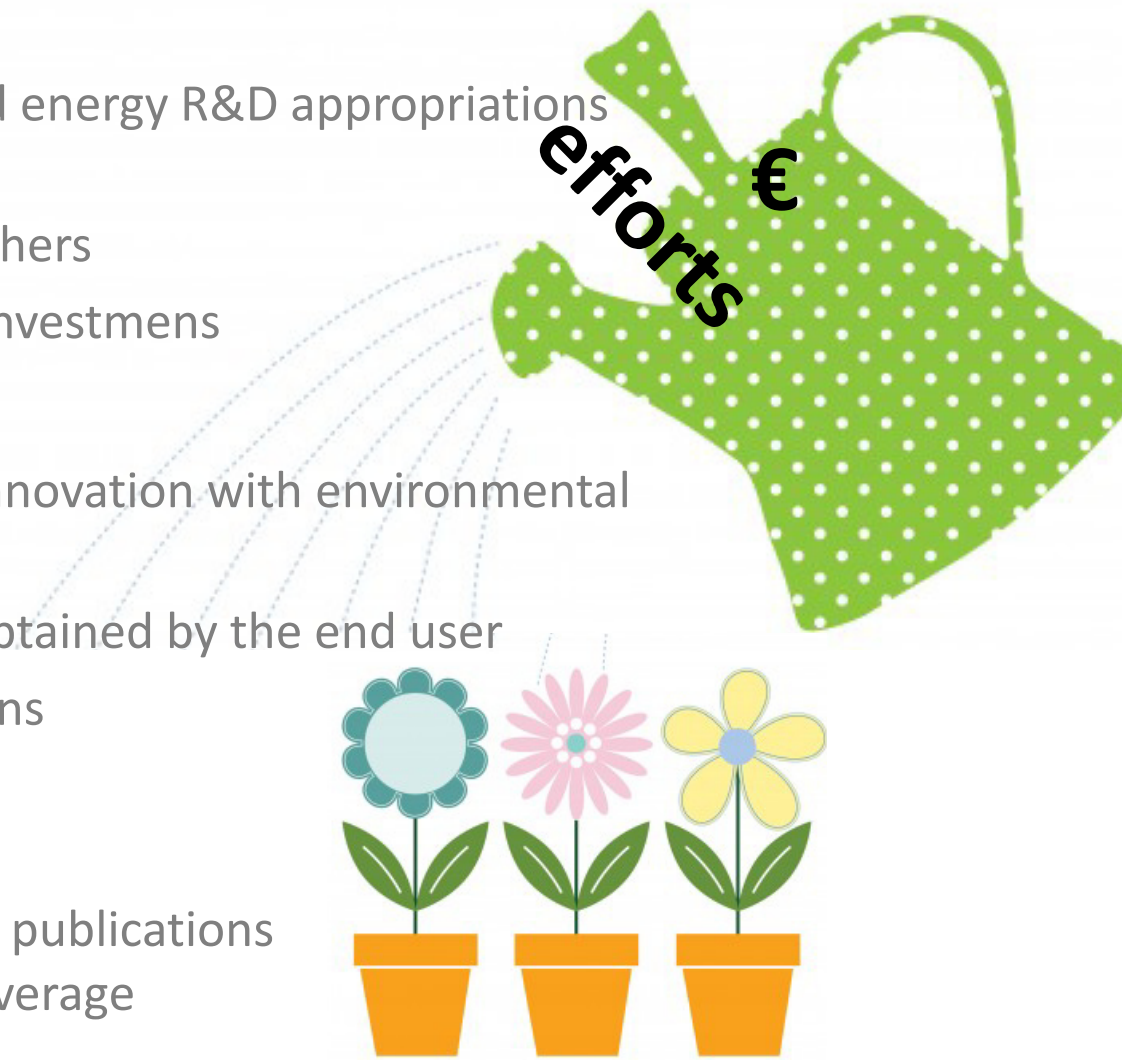
- Eco-innovation related patents
- Eco-innovation related academic publications
- Eco-innovation related media coverage

Resource Efficiency Outcomes

- Material productivity
- Water productivity
- Energy productivity
- GHG emissions intensity

Socio-economic Outcomes

- Exports of products from eco-Industries
- Employment in eco-industries and circular economy
- Revenue in eco-industries and circular economy

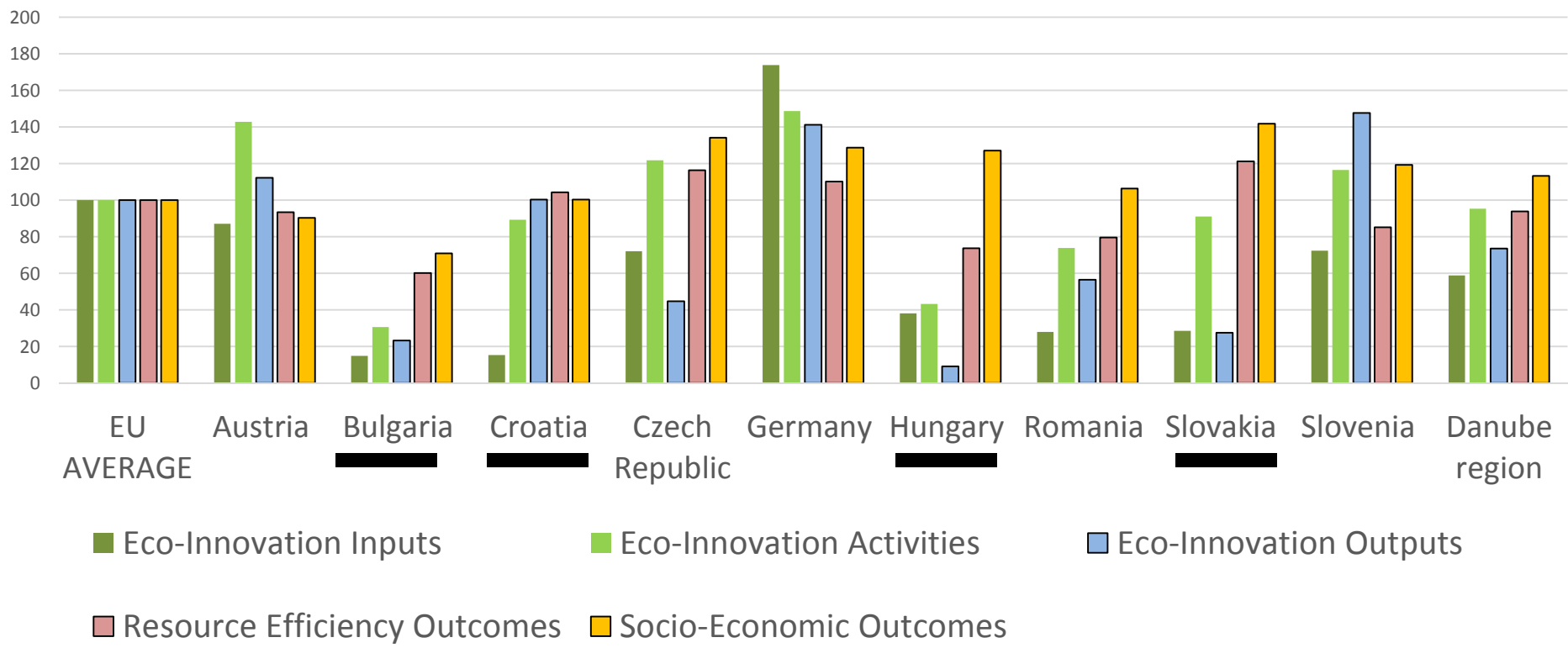




Input - Output



Eco-Innovation Indicators



input and activities <-> outputs, outcomes
 Bulgaria, Croatia, Hungary, Slovakia - „good converters“? or „just“ EU funding effect

Breaking with clichés

Environmental awareness in

Austria, Germany vs. *Serbia, Bulgaria, Romania*

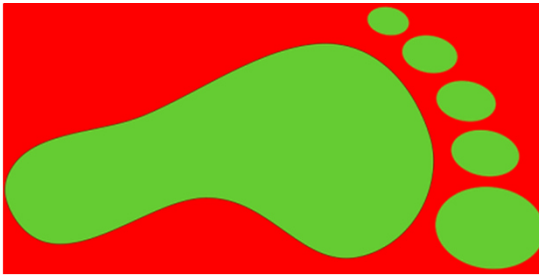


Recycling rate of e-waste, %	2008	2009	2010	2011	2012	2013	2014	2015
Austria	46	36,1	35,7	37,1	38,2	37,6	39,1	40,7
<u>Bulgaria</u>	:	:	40,8	49,4	62,4	60,2	68,3	96,5

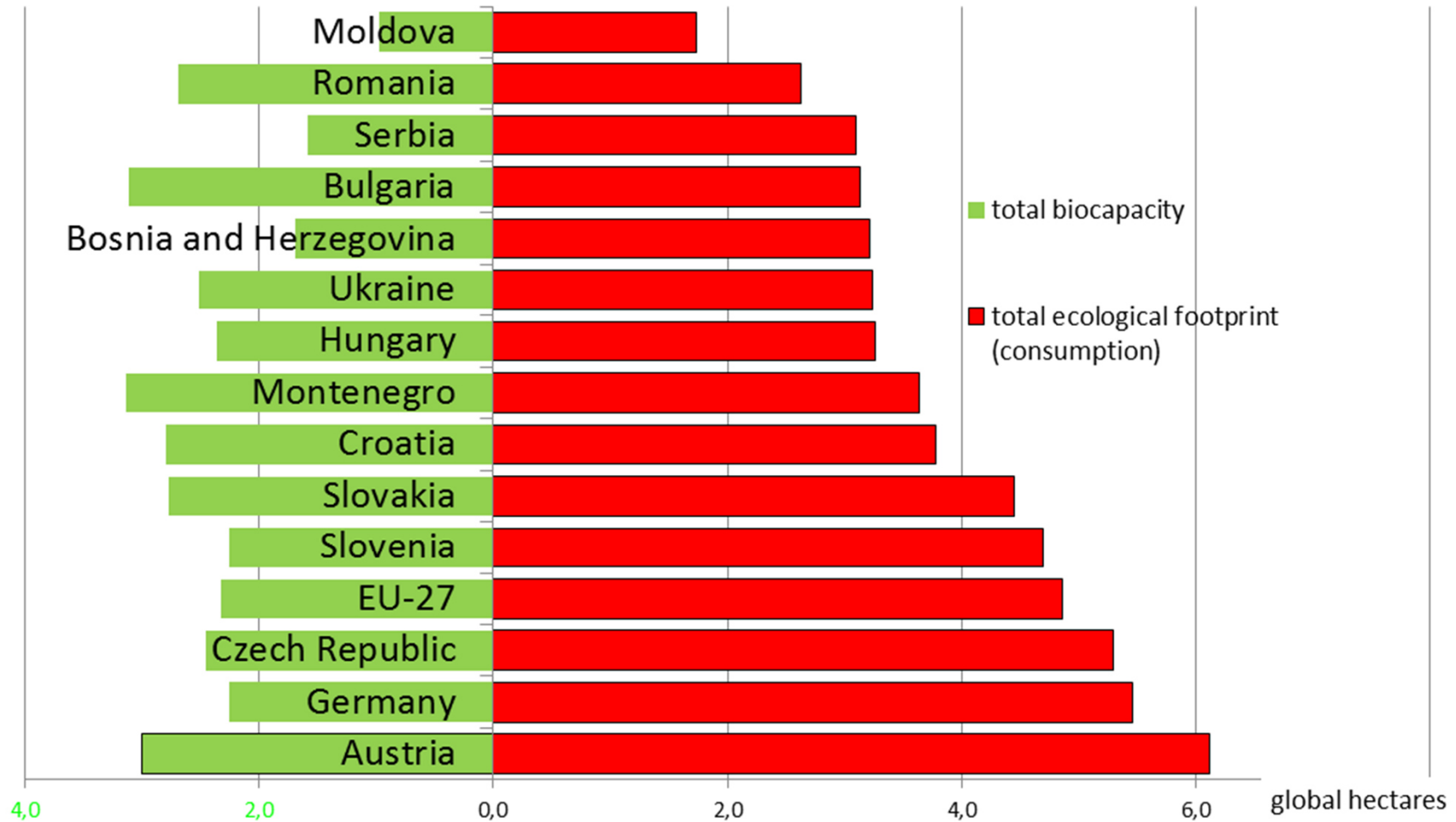
Table 4: Recycling rates of e-waste in Austria and the best-performing DR country Bulgaria (source: Eurostat)

lethargy

dynamics

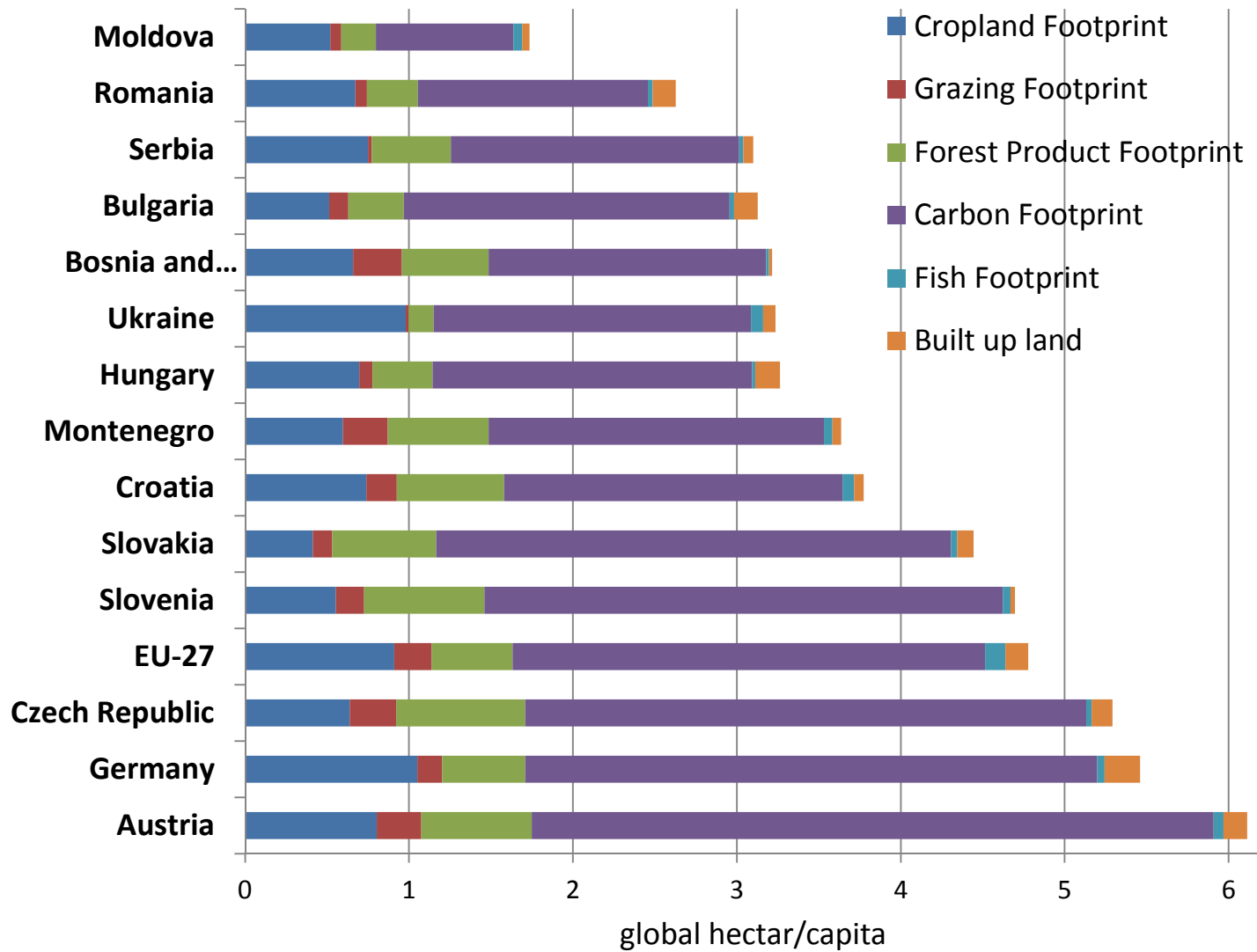


The **Ecological Footprint** is a measure of the biologically productive surface a population or human activity requires to produce **(biocapacity)** all the resources it consumes and to absorb the waste it generates, using prevailing technology and resource management practices.



Per-capita ecological footprint vs. biocapacity in selected countries, 2013
(data source: Global Footprint Network)

Carbon footprint, the chief culprit



ecological footprint composition in Danube region countries, 2013
 (data source: Global Footprint Network)

Eco-innovations require a complex framework of support

- High R&D **investments** infutile, if insufficient **education**
- Eco-innovative SMEs unsuccessful if entrapped in **regulations**
- Eco-innovative products & services in vain if no **consumer** demand

Each country has its own bottleneck



Hungary



- Increasing **corruption**
- Decreasing education investments
- Labour shortage, esp. of educated R&D staff

- ✓ Strong venture capital
- ✓ Low labour costs
- ✓ Good performance in eco-industries (remediation, env. monitoring, nature protection)

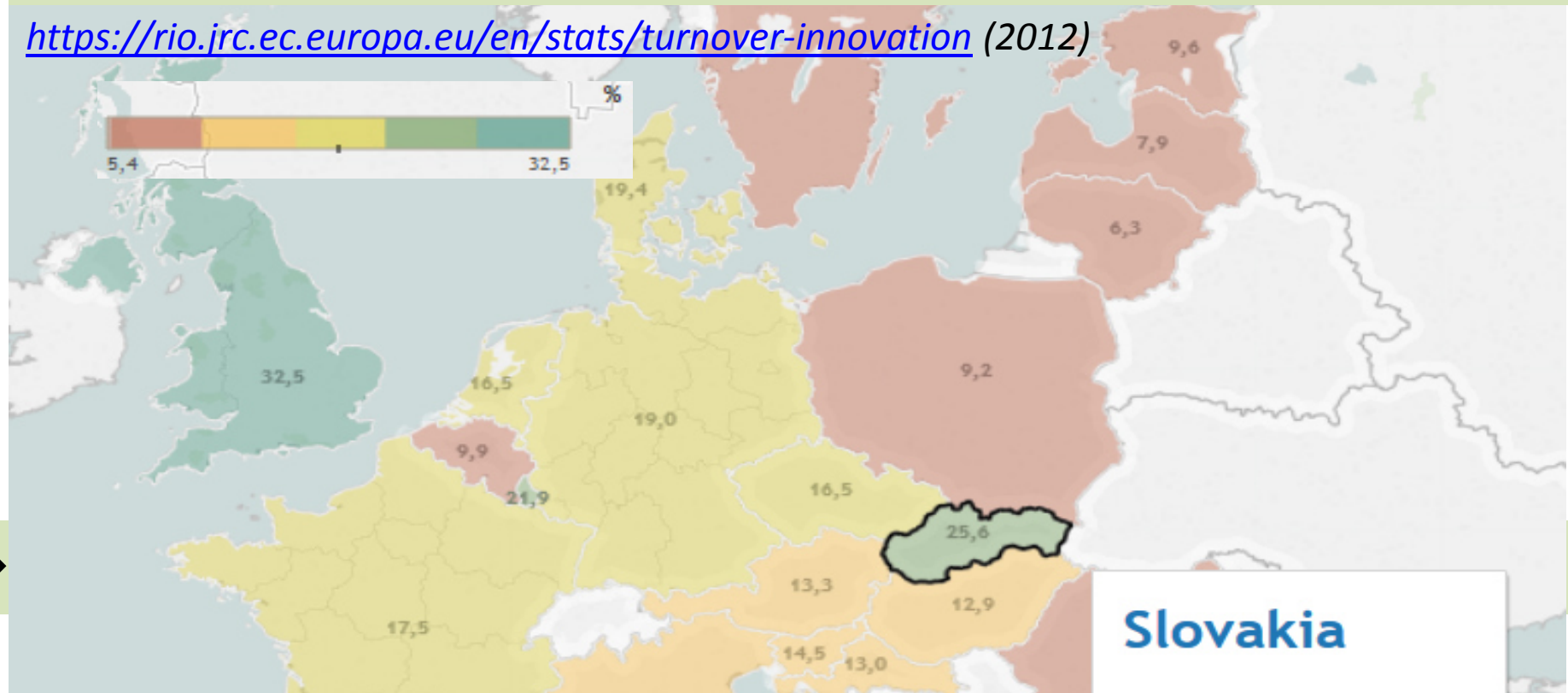
Slovakia



✓ progressive improvement of air/water quality

✓ Turnover from innovation (% of total turnover; industry)

• <https://rio.jrc.ec.europa.eu/en/stats/turnover-innovation> (2012)

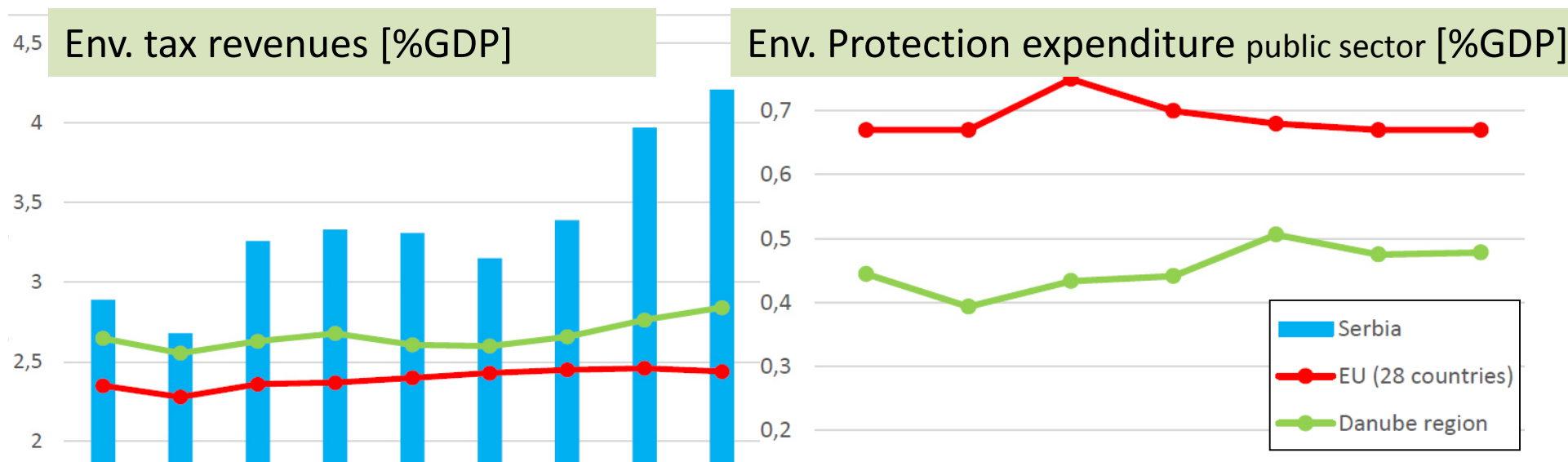


-
- foster international cooperation on science and technology,
 - direct support for higher education/research on eco-innovation

Serbia



- Low GDP → limited budget
- Low awareness for environmental issues
- Population decline



- need for improvements in almost any issue
- ✓ good share in renewable energies
 - ✓ high potential for hydro power

Difficult Framework Conditions

Croatia:



- high **youth unemployment** rate
- lack of highly **educated staff** (science & engineering)
- budget constraints, recent budget cuts
- environmental protection = „luxury“
- **low R&D** funding → low R&D intensity
- Similar situation in e.g. Bulgaria, Hungary, Romania

Opportunities

- local authorities should take responsibility (rather than state)
- municipal utility companies, renewable energy local solutions → **decentralise** renewable energy supply!

Generally good framework conditions

Austria:



- ✓ Financial support for R&D
 - ✓ Education (incl. technical/environmental science)
 - ✓ Patents, publications
- = brains, money, creativity, but: poor implementation

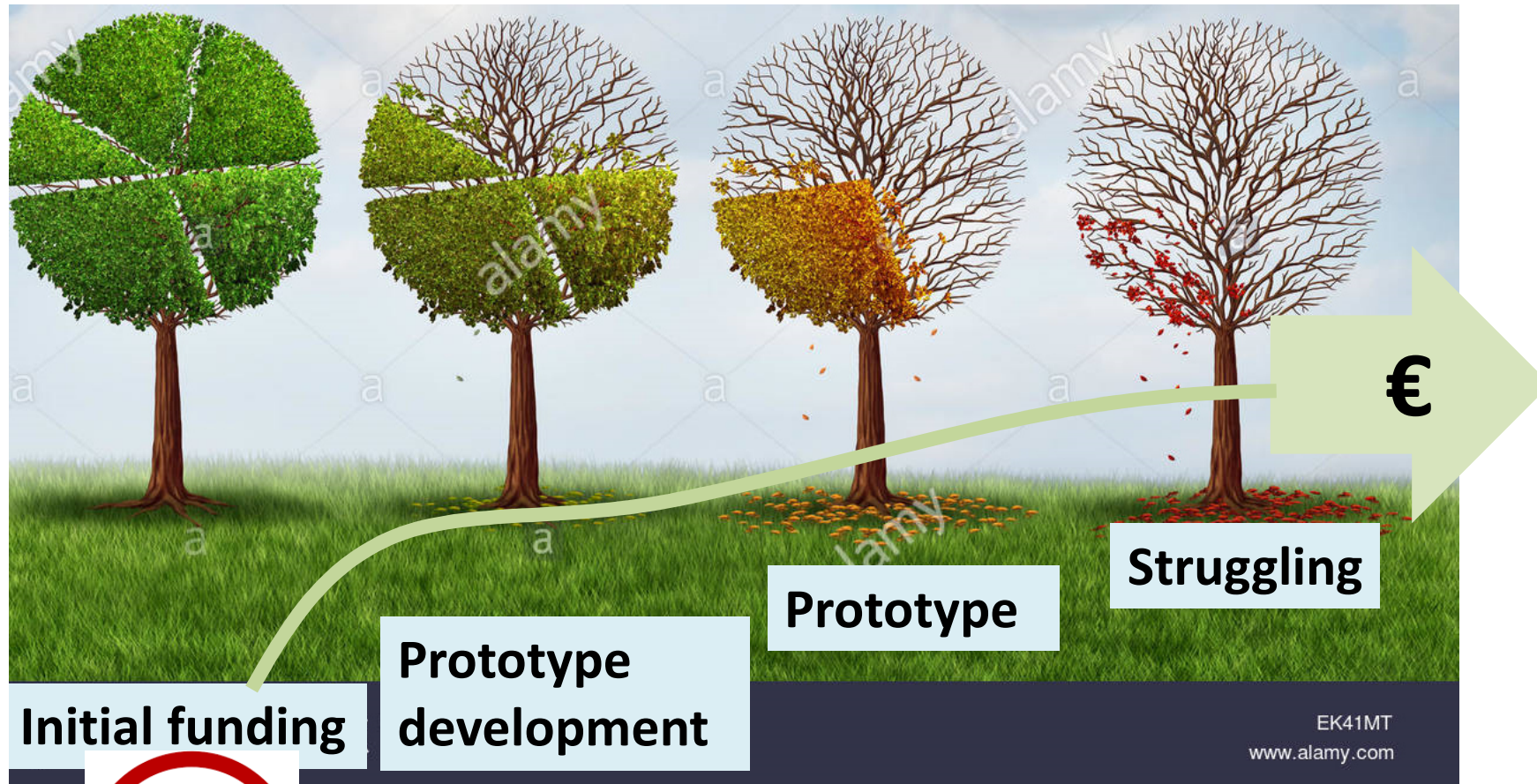
R&D support for
Environment,
Energy
Resource efficiency

...



R&D support

Austria's funding environment



Croatia, Bulgaria,
Hungary, Romania

Venture capital

Hu

**Education/env.
awareness**

AT,D Bu,Ro

**Company's
flexibility**

large small



Cheap energy

Throw-away mentality

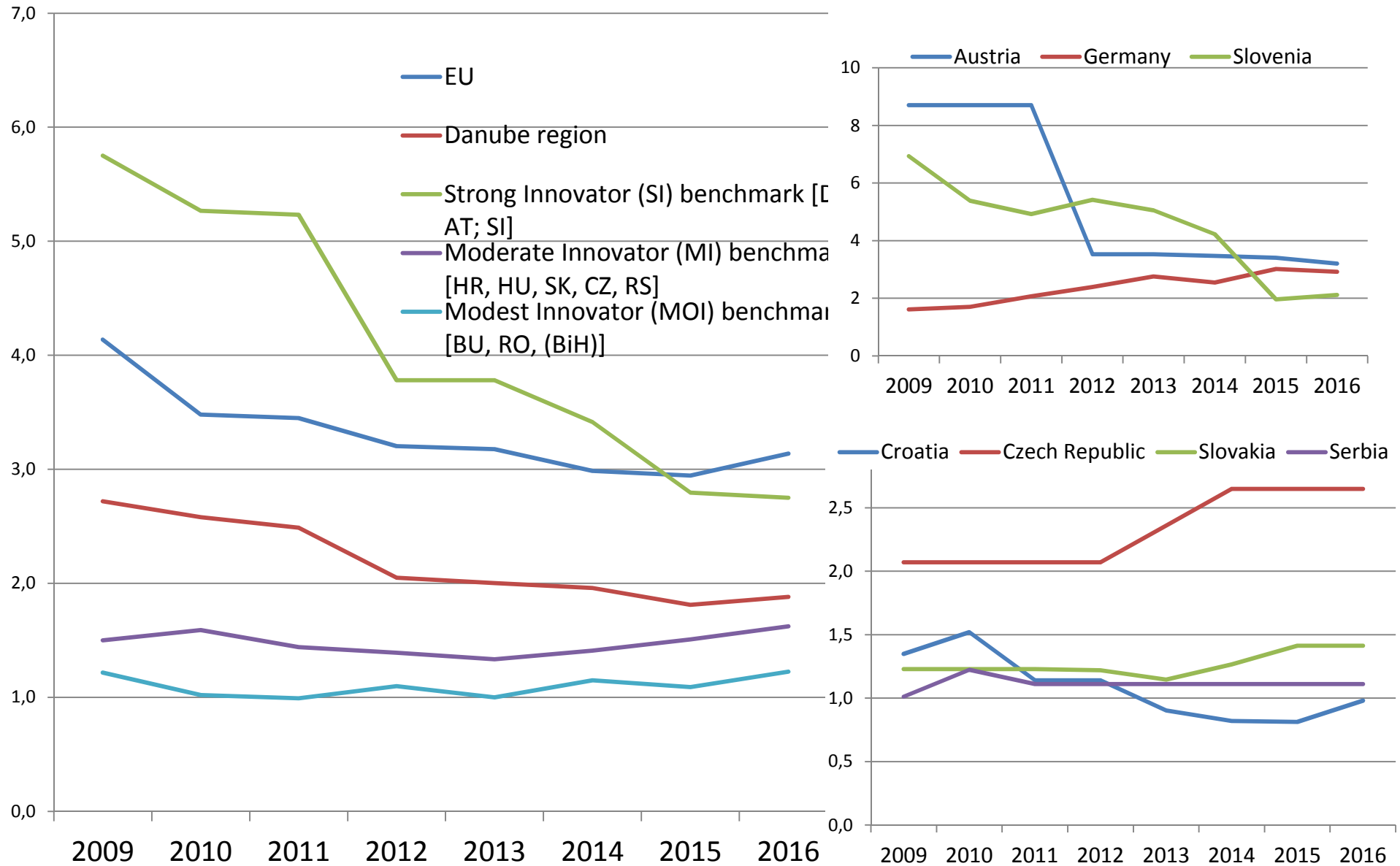
Resting on laurels

**Bureaucracy, complex
policy**

**Allow/accept failure
Learn from mistakes**

Opportunity-driven entrepreneurship

[Motivational index] – since 2009



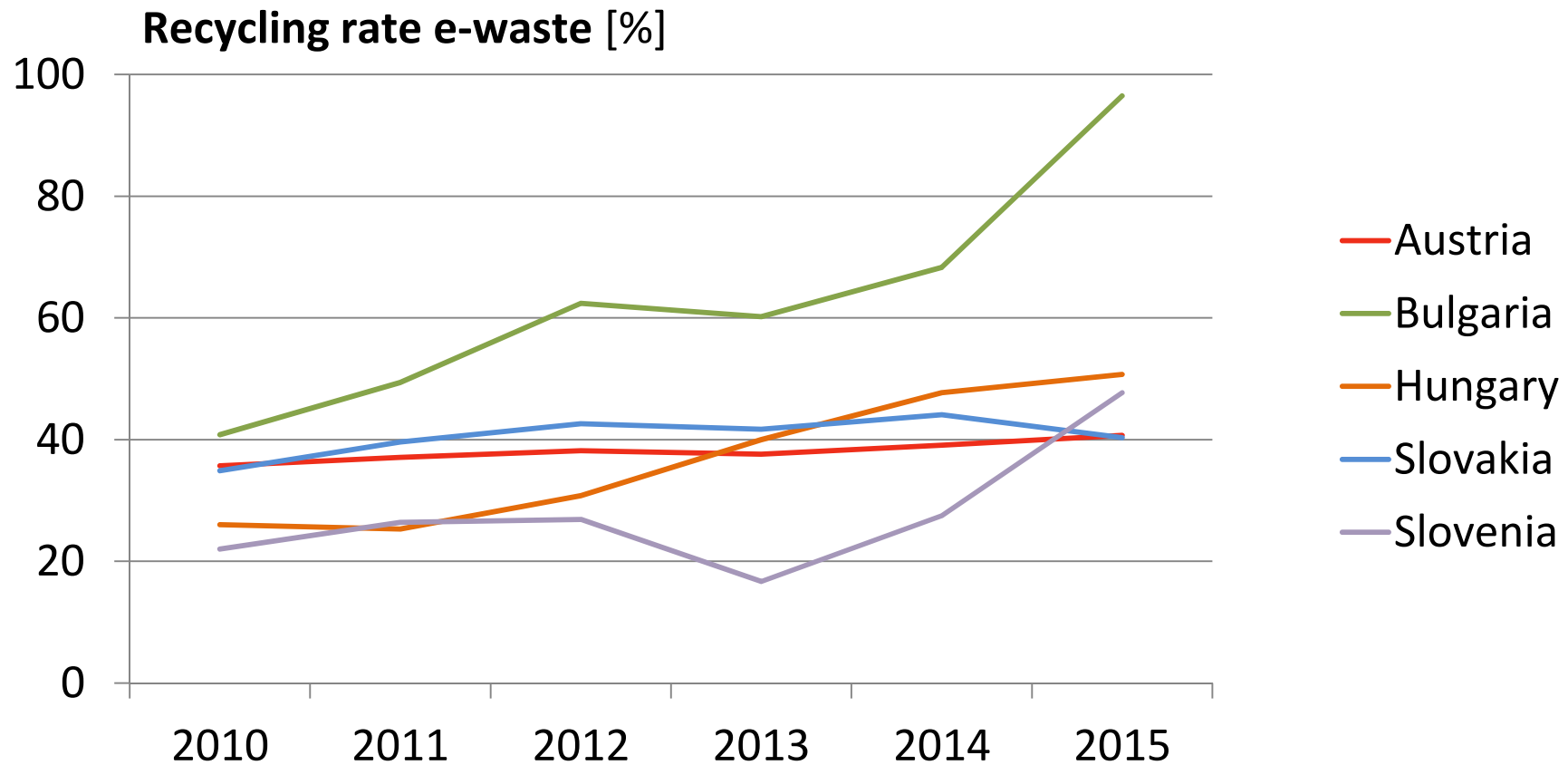
No incentives → business-as-usual or stand-still



fotocommunity

Necessity is the mother of invention

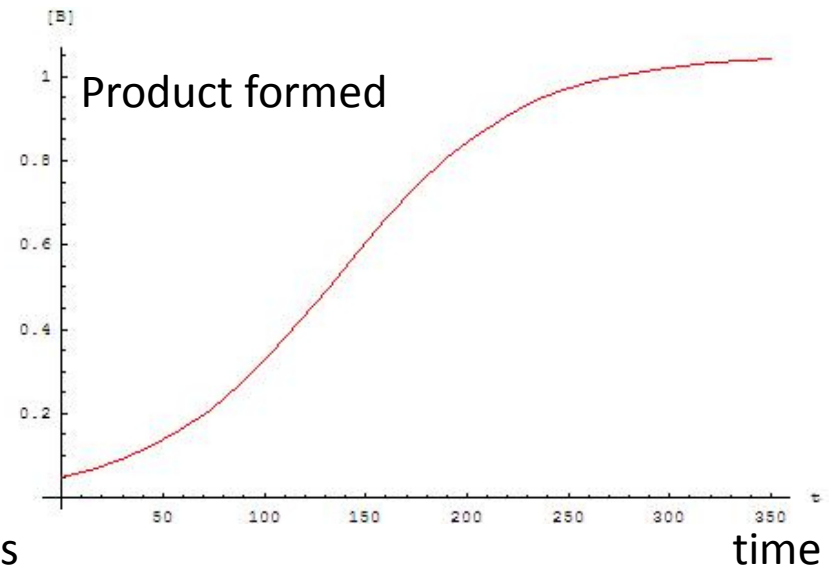
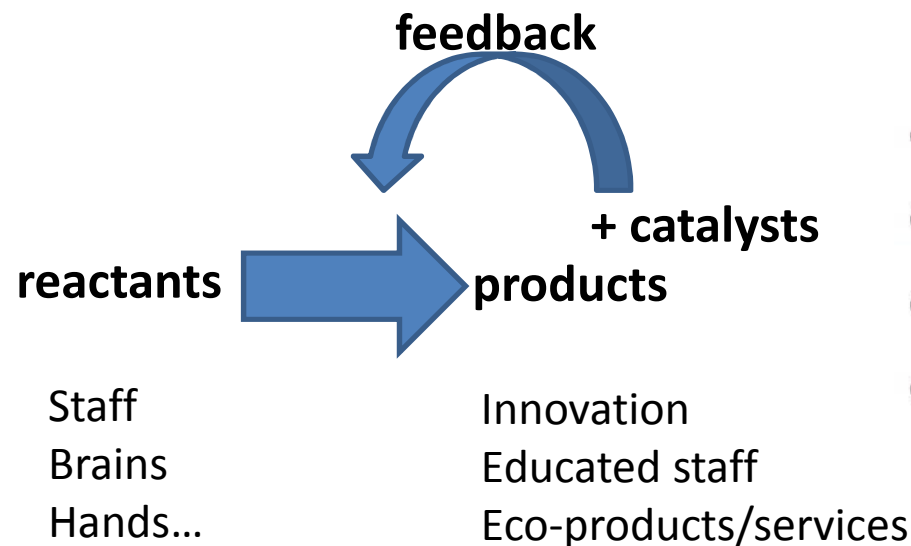
→ resource limitation as a chance



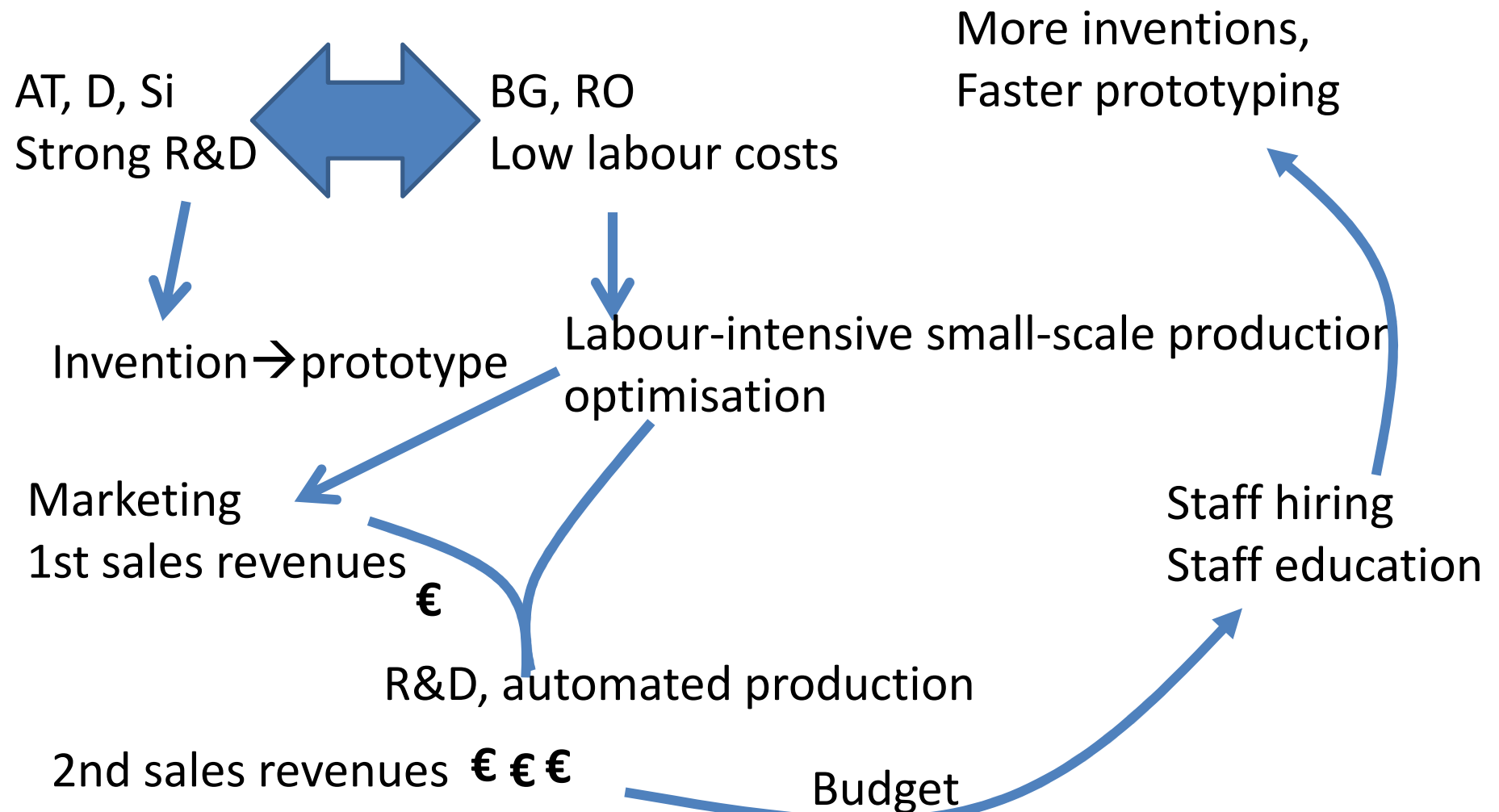
Conclusions

- Eco-innovation status very diverse in DR countries
 - Different hurdles / bottlenecks, strengths
- make use of national specifics → develop:

Autocatalytic cooperations



Autocatalytic cooperations



Thank you!