

# Where to now for smart specialisation: is sustainable the only smart direction ?

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SmartEIZ Conference  
Zagreb, 26 September 2018

# A reminder: there are nine planetary boundaries!

1. Climate change
2. Change in biosphere integrity (biodiversity loss and species extinction)
3. Stratospheric ozone depletion
4. Ocean acidification
5. Biogeochemical flows (phosphorus and nitrogen cycles)
6. Land-system change (for example deforestation)
7. Freshwater use
8. Atmospheric aerosol loading (microscopic particles in the atmosphere that affect climate and living organisms)
9. Introduction of novel entities (e.g. organic pollutants, radioactive materials, nanomaterials, and micro-plastics).

**We have already crossed four: climate change, loss of biosphere integrity, land systems change, and altered biogeochemical cycles**

Source: Stockholm Resilience Centre(Steffen et al. 2015)

# Smart Specialisation 1.0

“**Differentiation** is at the very heart of RIS3. The key to successful differentiation is to exploit related **variety** - a regional economy can build its competitive advantage by diversifying its unique, **localised knowledge base** (existing specialisation) into new combinations which are close or adjacent to it.....”

- ✓ Identification of '**niches**' or specific domains of competitive advantages
- ✓ Potential for **knowledge-based transformation**, from an international viewpoint:
  - positioning of the regional economy in international value chains
  - identification of specific key assets.
- ✓ **No unique** 'fits-all' **solution**, hence
- ✓ **Combination of evidence** that is most likely to provide a suitable basis for the identification process

# Cohesion Policy beyond 2020 – a smarter green focus or an artificial divide ?



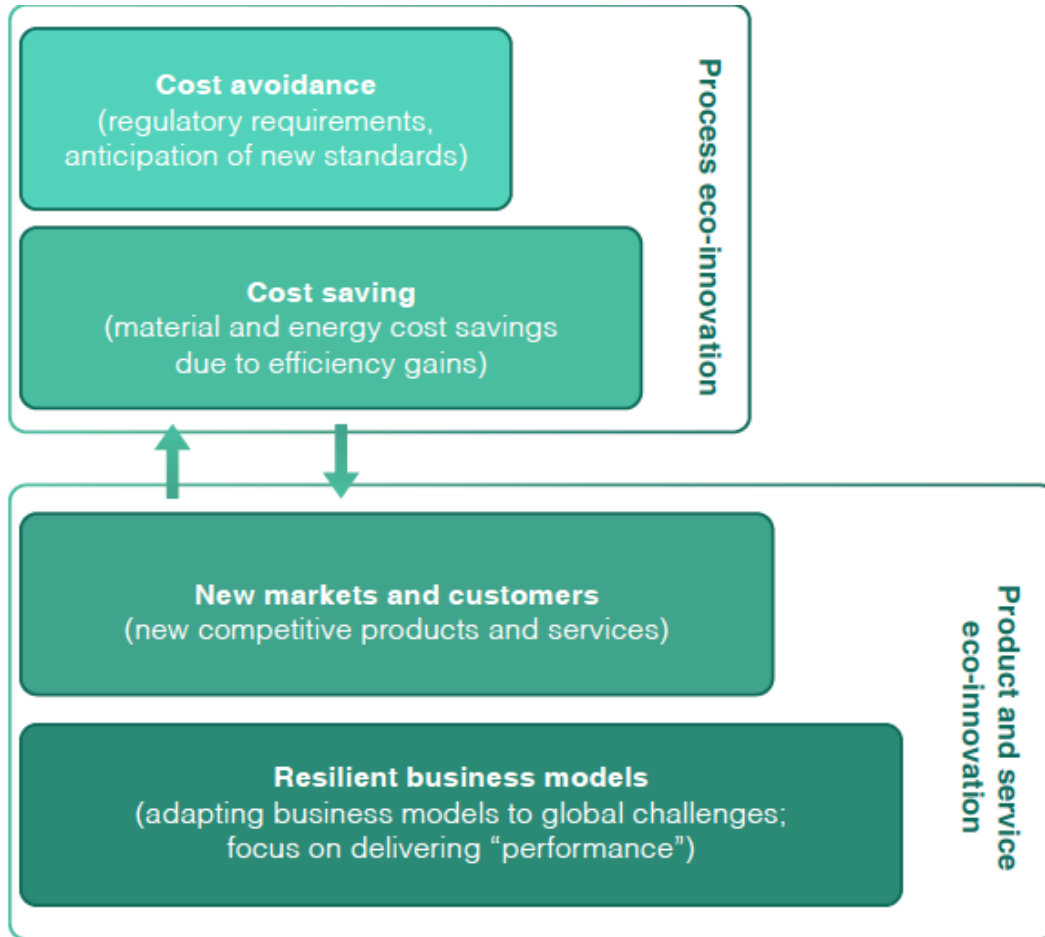
- From 11 'thematic objectives' in the 2014-2020 period, the new Cohesion Policy will now focus its resources on 5 policy objectives,:
  - 1) a **Smarter Europe**, through innovation, digitisation, economic transformation and support to small and medium-sized businesses;
  - 2) a **Greener, carbon free Europe**, implementing the Paris Agreement and investing in energy transition, renewables and the fight against climate change;
  - 3) a more **Connected Europe**, with strategic transport and digital networks;
  - 4) a more **Social Europe**, delivering on the European Pillar of Social Rights and supporting quality employment, education, skills, social inclusion and equal access to healthcare;
  - 5) a **Europe closer to citizens**, by supporting locally-led development strategies and sustainable urban development across the EU.
- The majority of European Regional Development Fund and Cohesion Fund investments will be geared towards the first two objectives: a Smarter Europe and a Greener Europe. Member States will invest 65% to 85% of their allocations under the two funds to these priorities, depending on their relative wealth.

# Economic Transformation Challenges

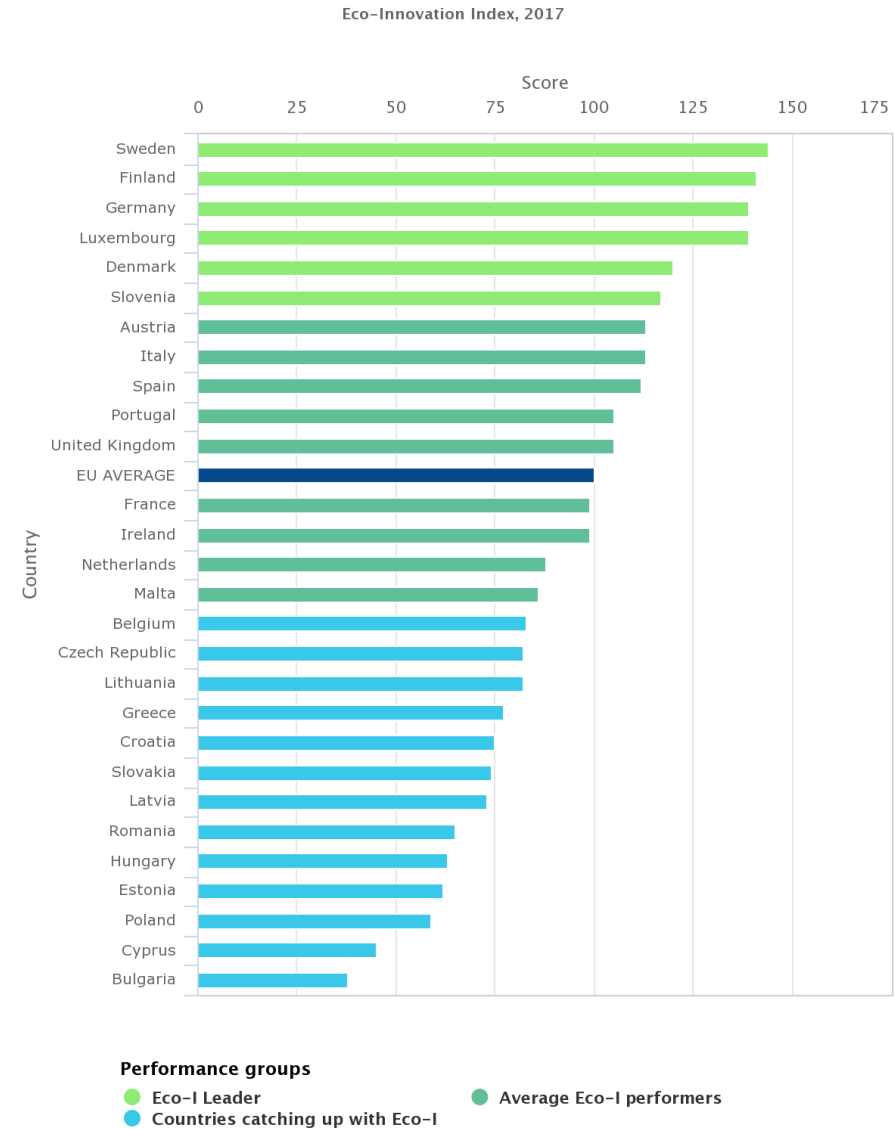
The European Commission (DG REGIO) is piloting actions with a number of 'industrial regions' to prepare for post-2020 'smart specialisation'. The focus is on five themes:

- Preparing for the jobs of the future
- Broadening innovation and innovation diffusion
- **Transition to a low-carbon and circular economy**
- Promoting entrepreneurship and mobilising the private sector
- Inclusive growth

# Eco-innovation should be second nature for business



Source: EIO 2012



# Closing the circle of smart specialisation

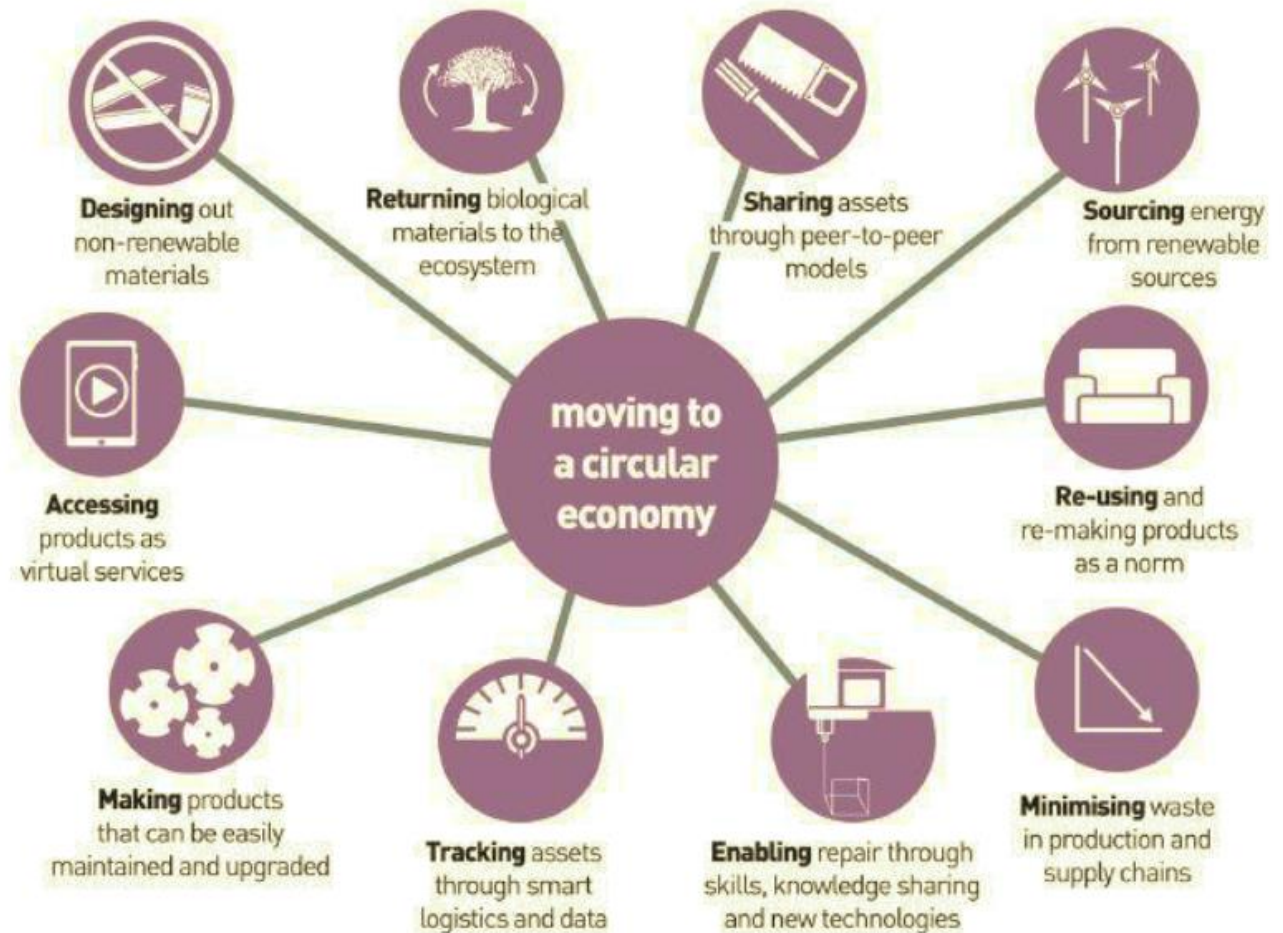
Resource efficiency is the wrong metric. We should use nature as the measure, using nature's wisdom as a template for our economic systems.

Douglas Tompkins, Founder The North Face & Conservationist

“We are often told we are materialistic. It seems to me, we are not materialistic enough. We have a disrespect for materials. We use it quickly and carelessly.

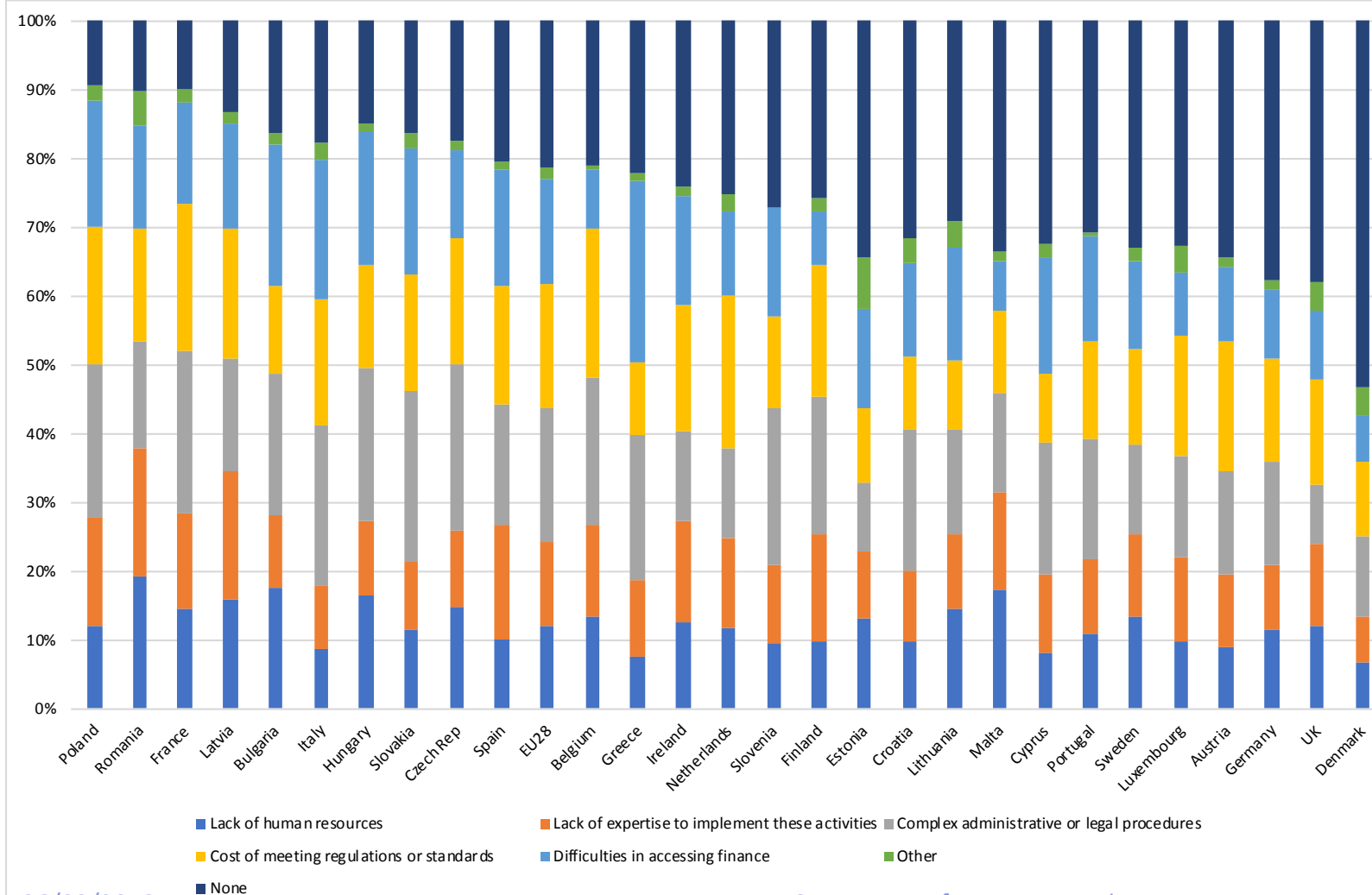
If we were genuinely materialistic people, we would understand where materials come from and where they go to.

George Monbiot, author of Feral, environmental and political activist



Scottish Government (2016)

# Difficulties implementing circular economy activities experienced by companies

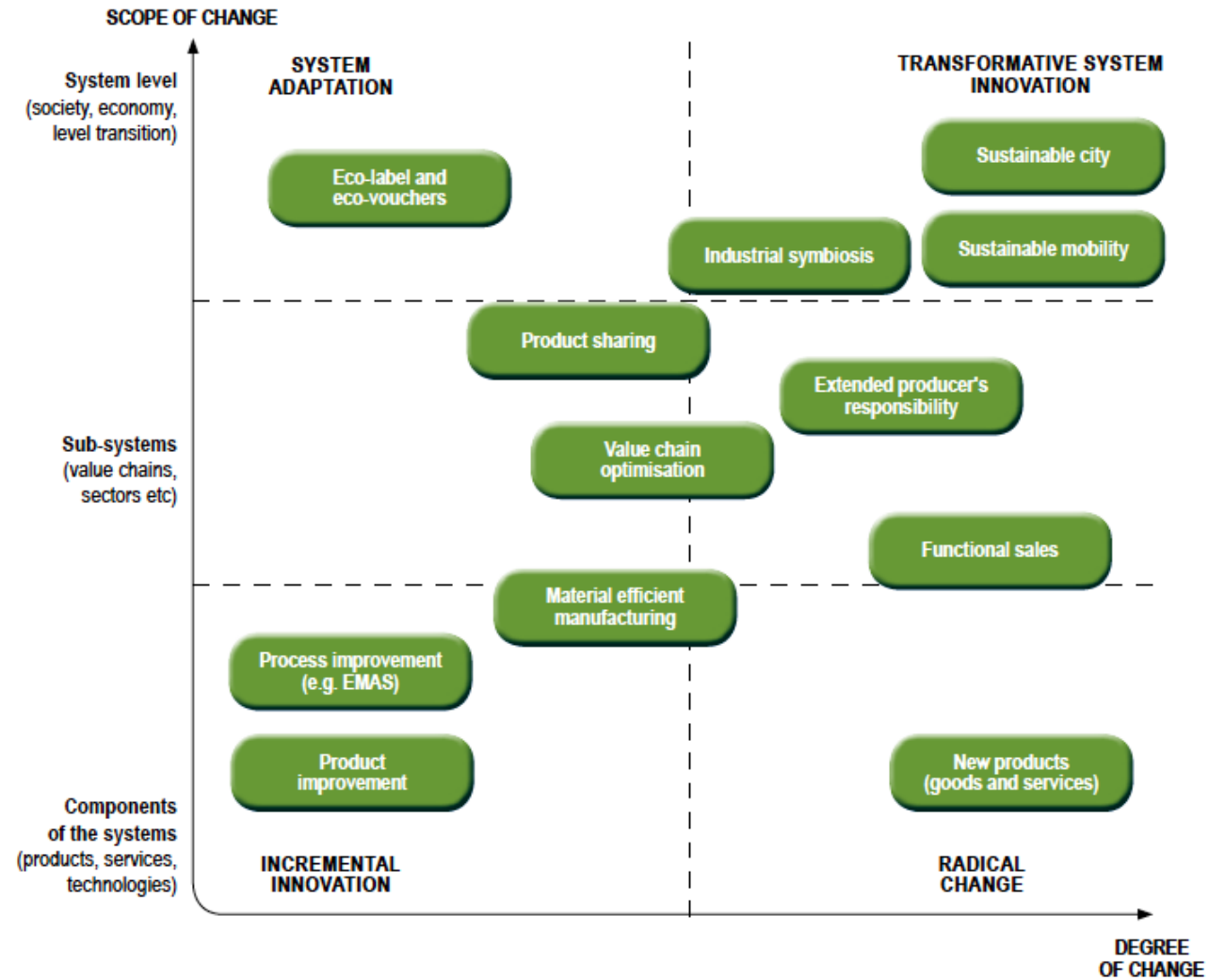


Implementing the circular economy goes far beyond “re-use and re-cycle” projects in individual firms currently captured by this term – yet even today firms struggle

# Transformative system innovations

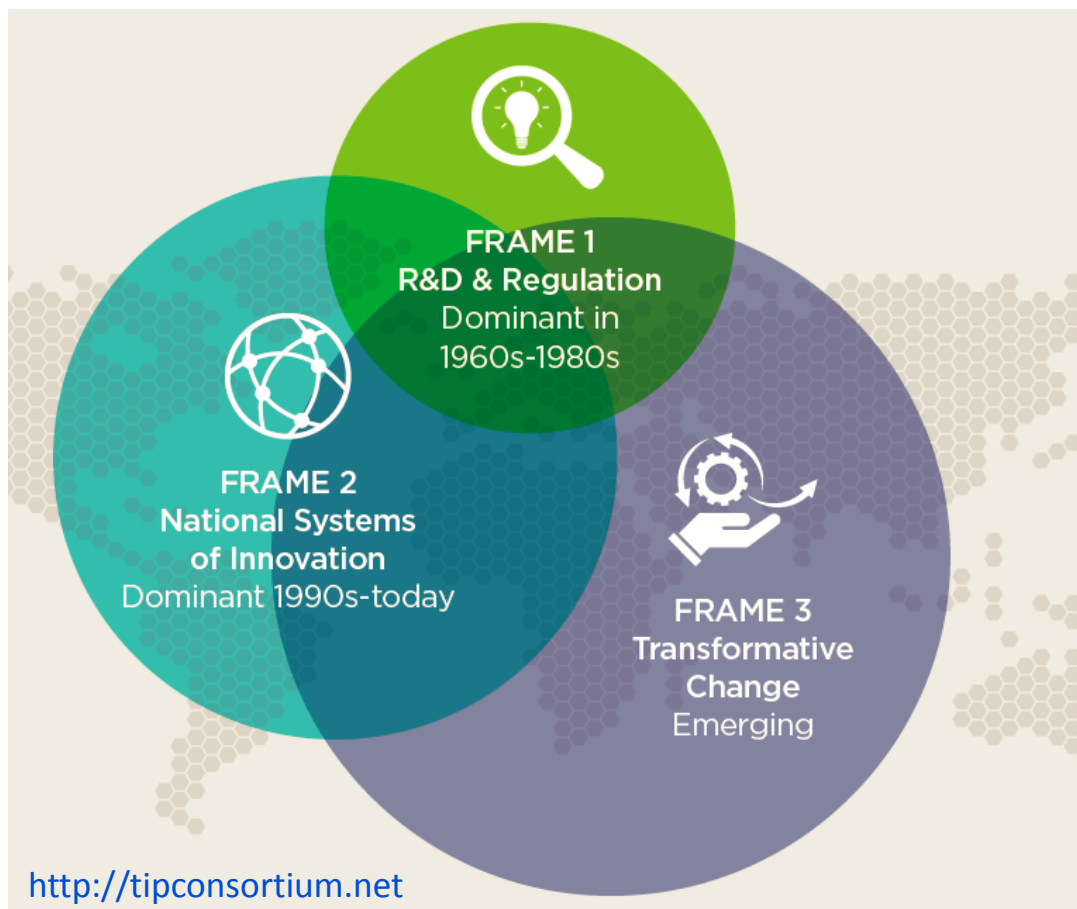
or

# Incremental change ?

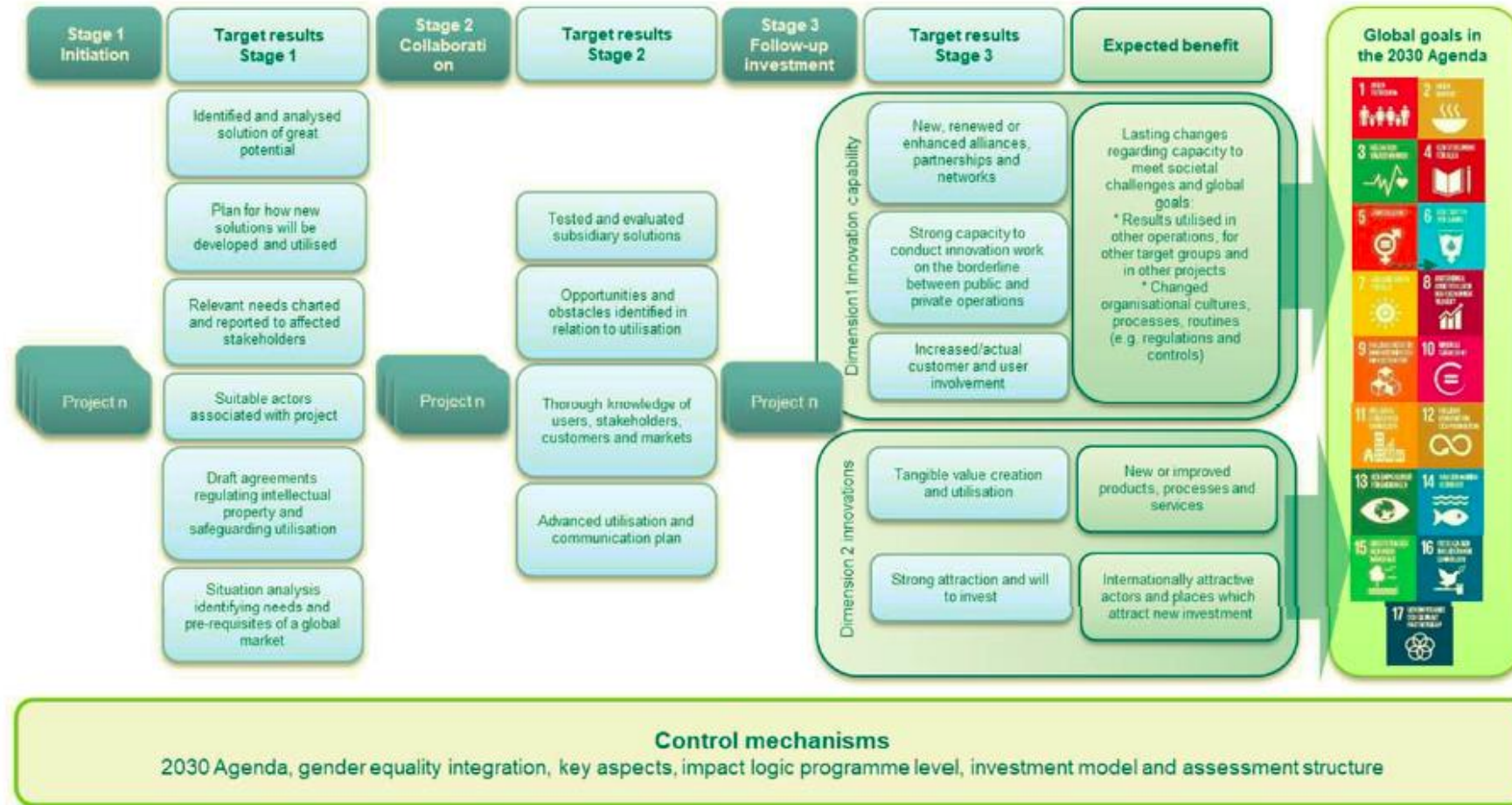


Source: Miedzinski et al (2012) Eco-Innovation Observatory Annual Report

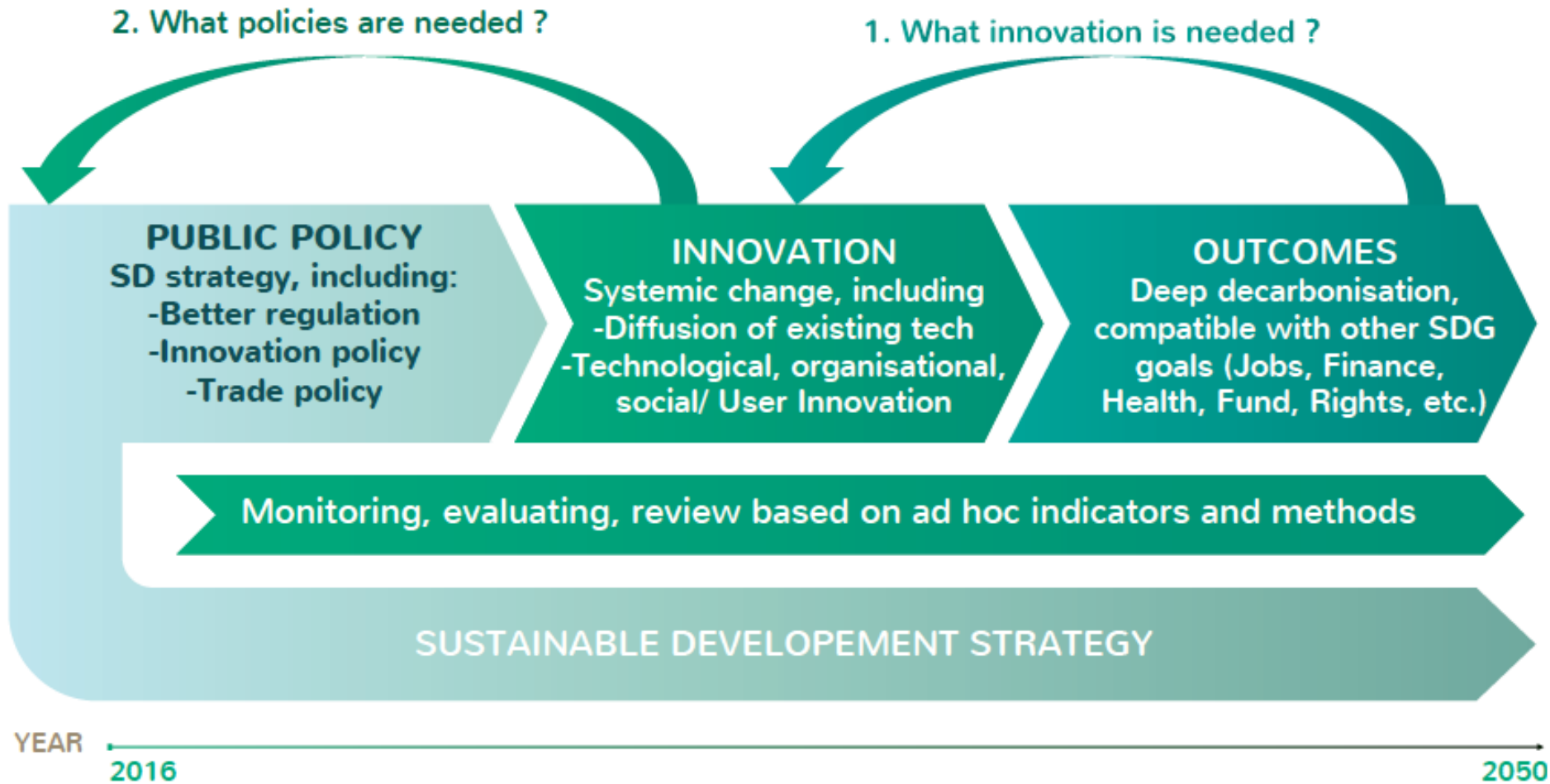
# Shifting to transformative change – the mission driven agenda



# Vinnova (Sweden) Challenge driven Innovation programme logic



# Low carbon or deep decarbonisation ?



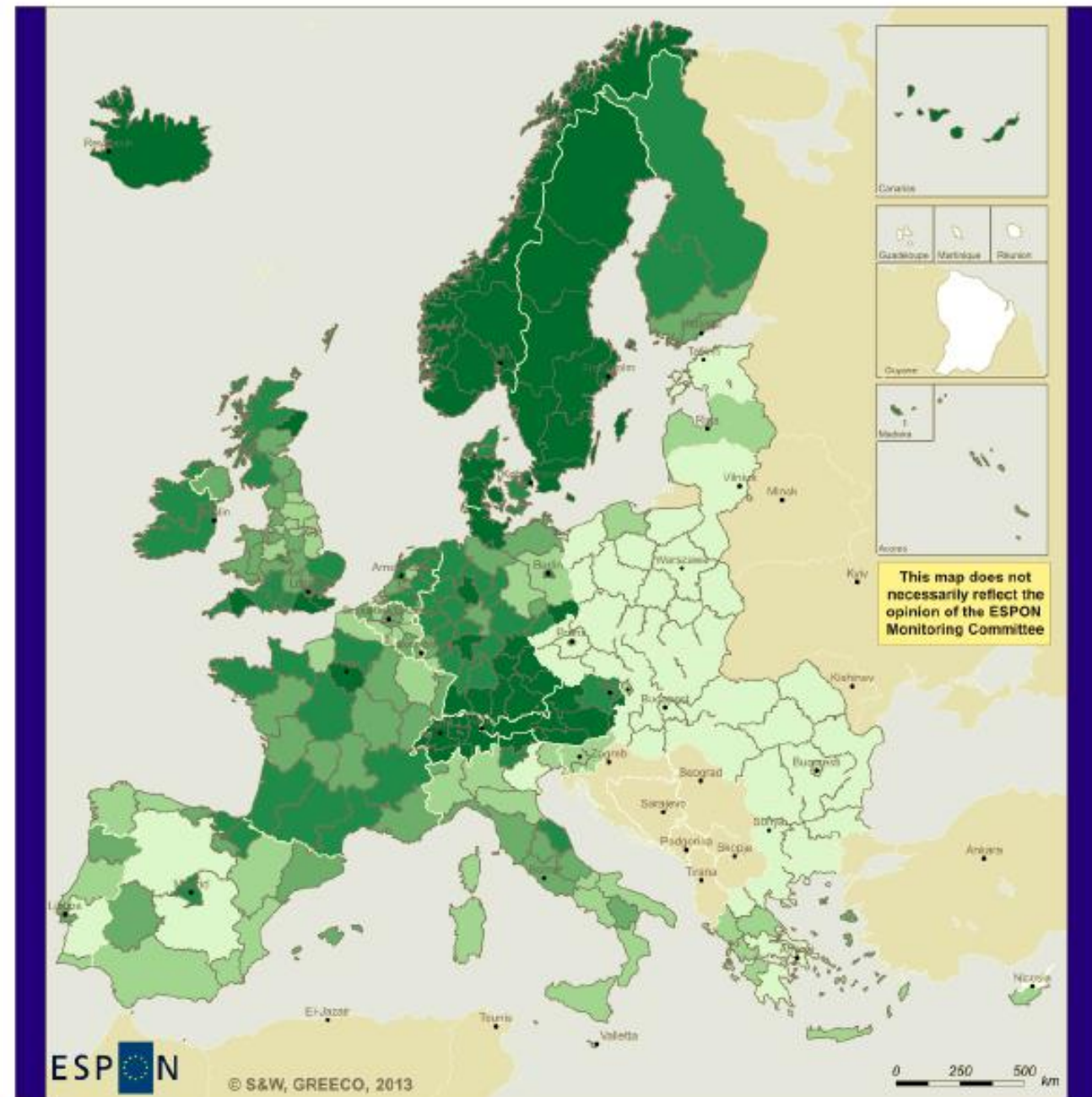
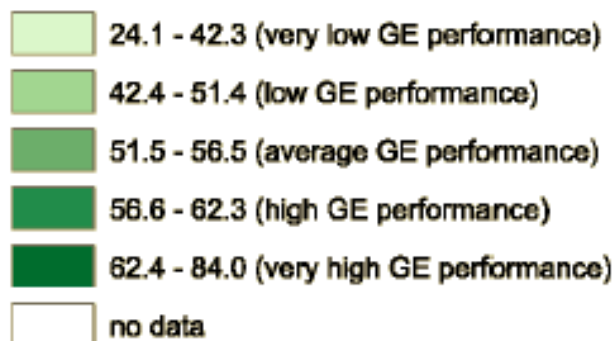
Source: CEPS (2016) Aligning policies for low-carbon systemic innovation in Europe

# Green economic performance

The degree of green economic performance is closely related to the economic development status of the territorial types.

GRECO - Territorial Potentials for a Greener Economy.  
Final Report for EPSON 2014

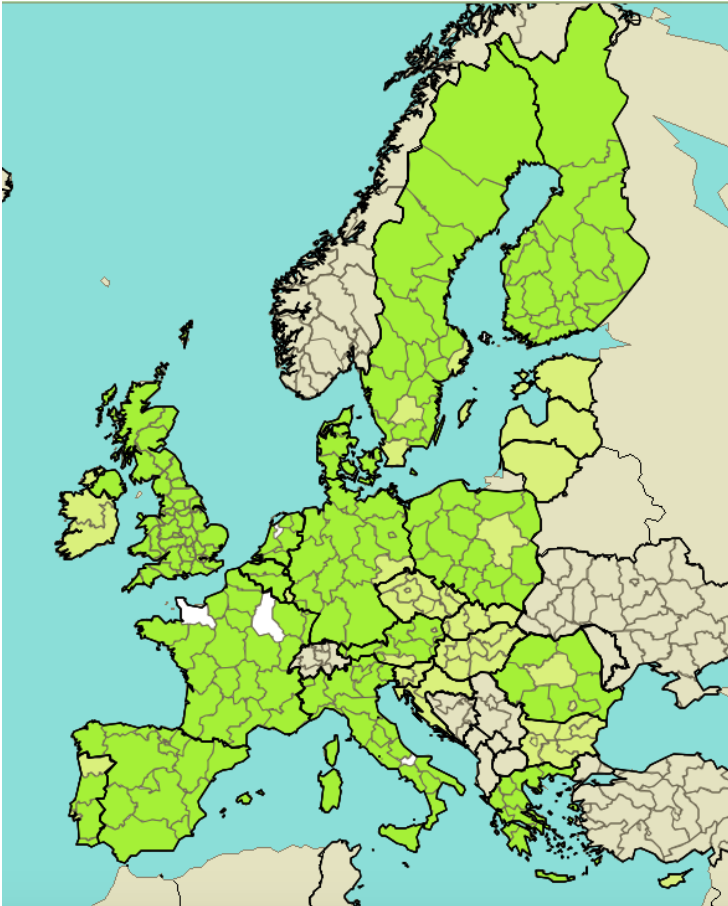
## Regional green economic performance Aggregate typology (quantils)



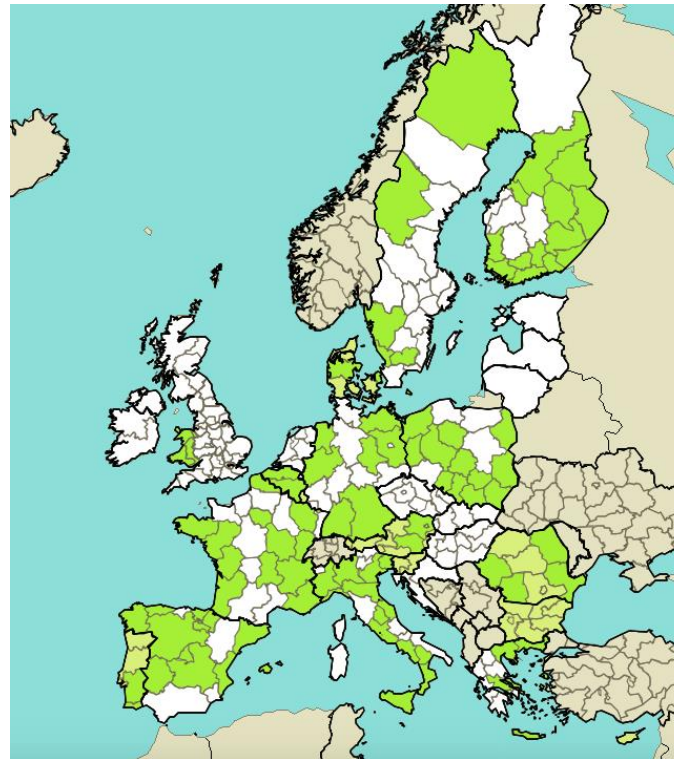
ESPON  
© S&W, GRECO, 2013  
EUROPEAN UNION  
Part-financed by the European Regional Development Fund  
Investing in the future

# Current focus on smart green priorities – EFIS regions prioritising sustainable innovation

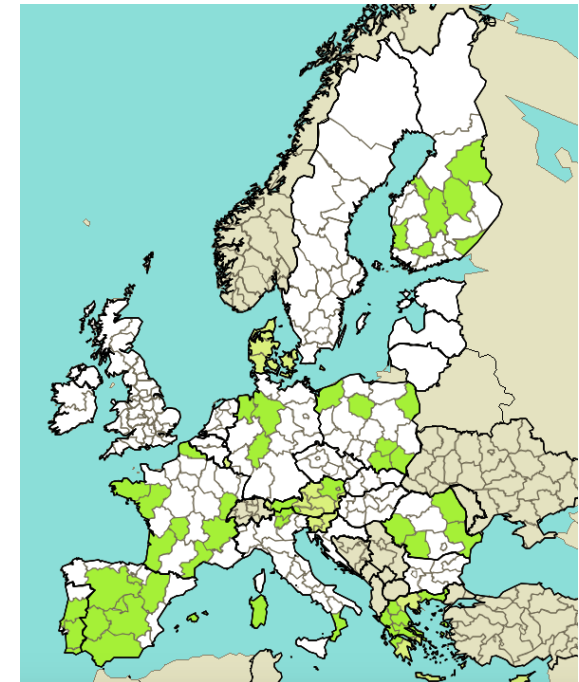
All sustainable innovation priorities



Eco-innovation only



Nature and biodiversity only



Source: eye@RIS3 - DG JRC

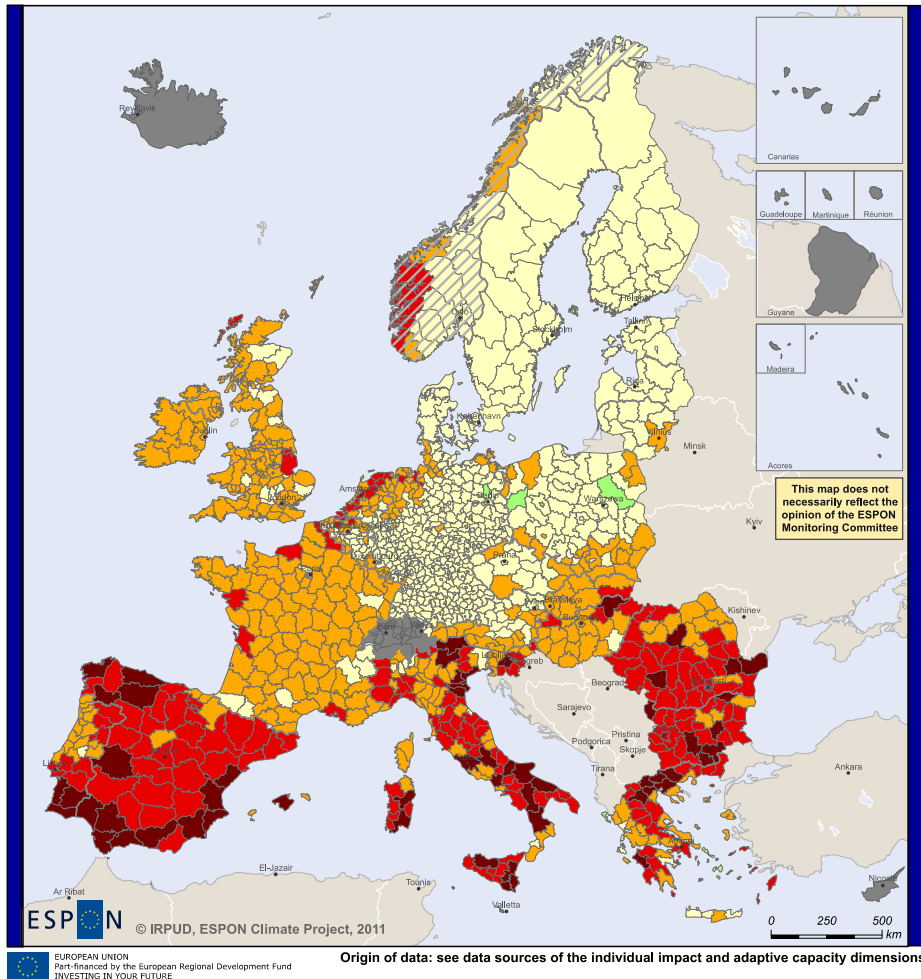
# Potential vulnerability to climate change

(EPSON, 2012 <https://www.espon.eu/climate-2012> )

VS

RIS3  
priority  
climate  
change

Source:  
eye@RIS3



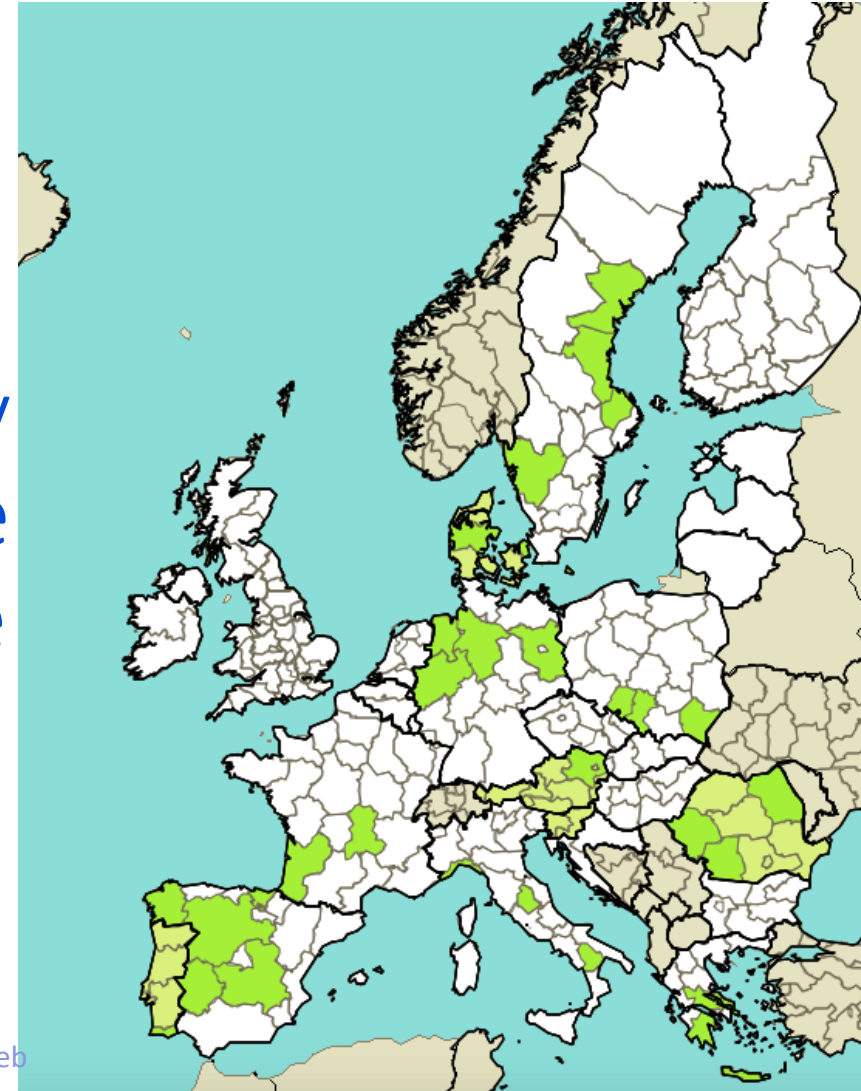
## Potential vulnerability to climate change

- highest negative impact (0.5 - 1.0)
- medium negative impact (0.3 - <0.5)
- low negative impact (0.1 - <0.3)
- no/marginal impact (>-0.1 - <0.1)
- low positive impact (-0.1 - -0.25)
- no data\*
- reduced data\*

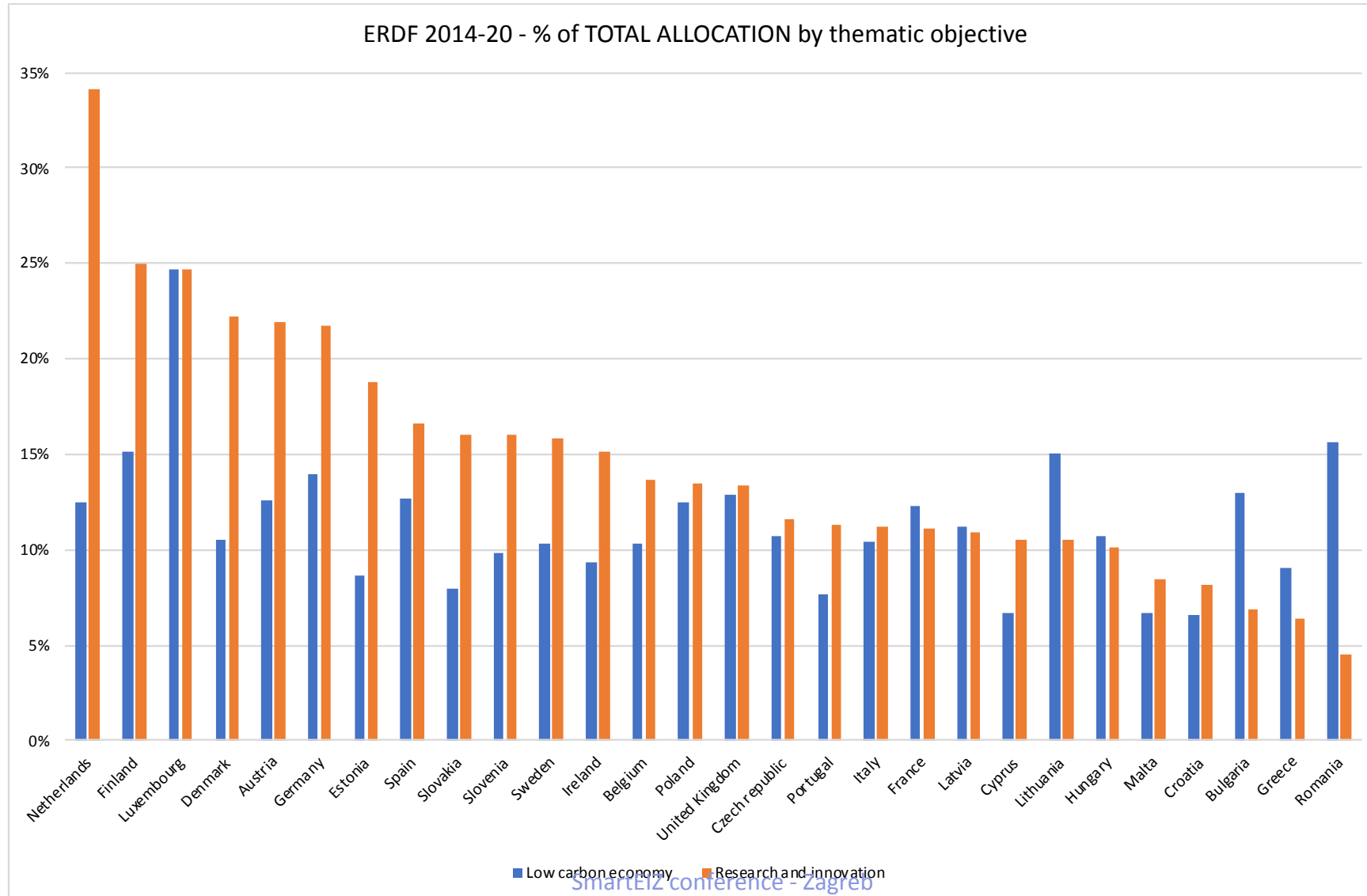
Vulnerability calculated as the combination of regional potential impacts of climate change and regional capacity to adapt to climate change.

The potential impacts were calculated as a combination of regional exposure to climate change (difference between 1961-1990 and 2071-2100 climate projections of eight climatic variables of the CCLM model for the IPCC SRES A1B scenario as well as resulting inundation depth changes for a 100 year return flood event based on river flooding projections of the LISFLOOD model and coastal storm surge height projections of the DIVA model adjusted with a 1 m sea level rise) and most recent data on the weighted dimensions of physical, economic, social, environmental and cultural sensitivity to climate change. Adaptive capacity was calculated as a weighted combination of most recent data on economic, infrastructural, technological and institutional capacity as well as knowledge and awareness of climate change.

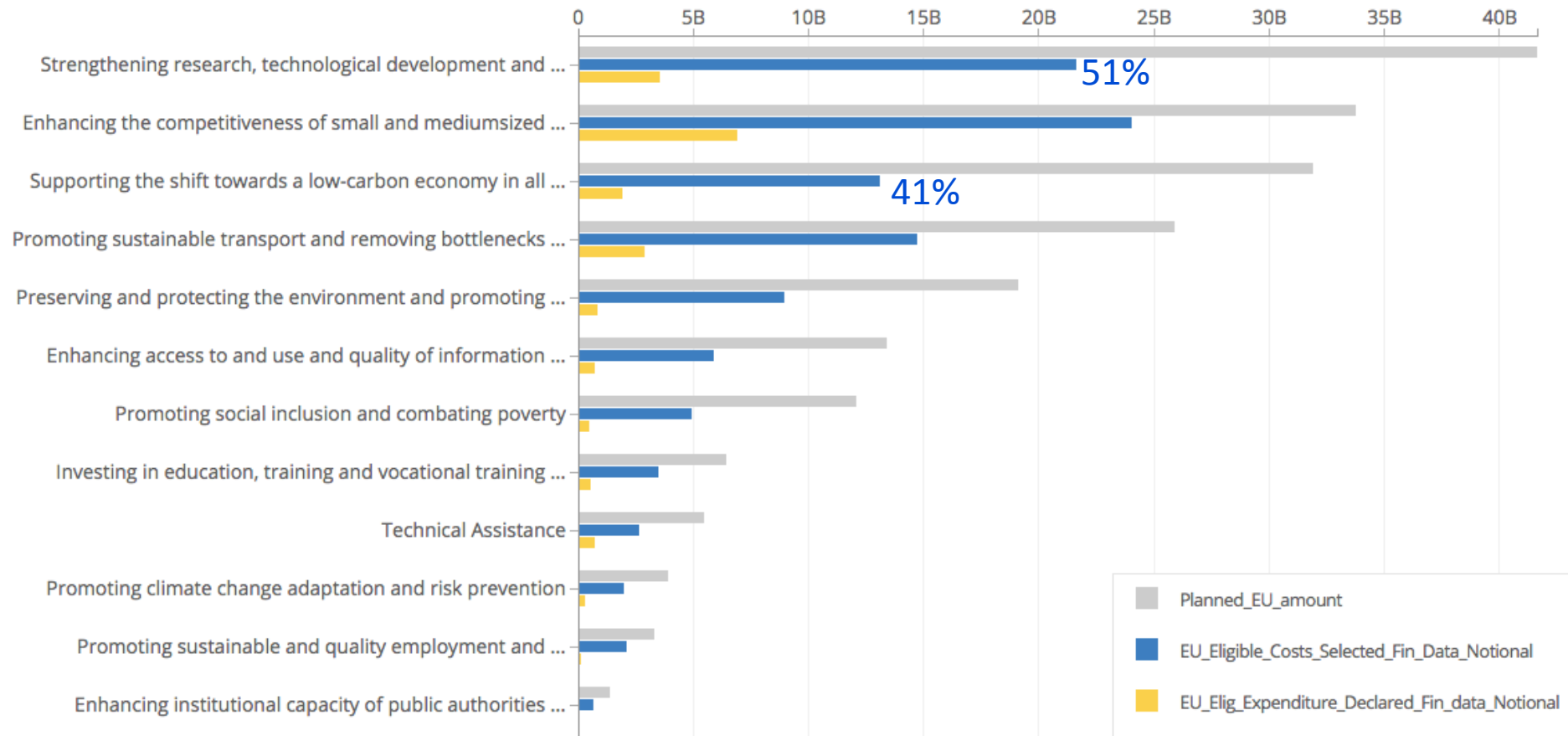
\* For details on reduced or no data availability see Annex 9.



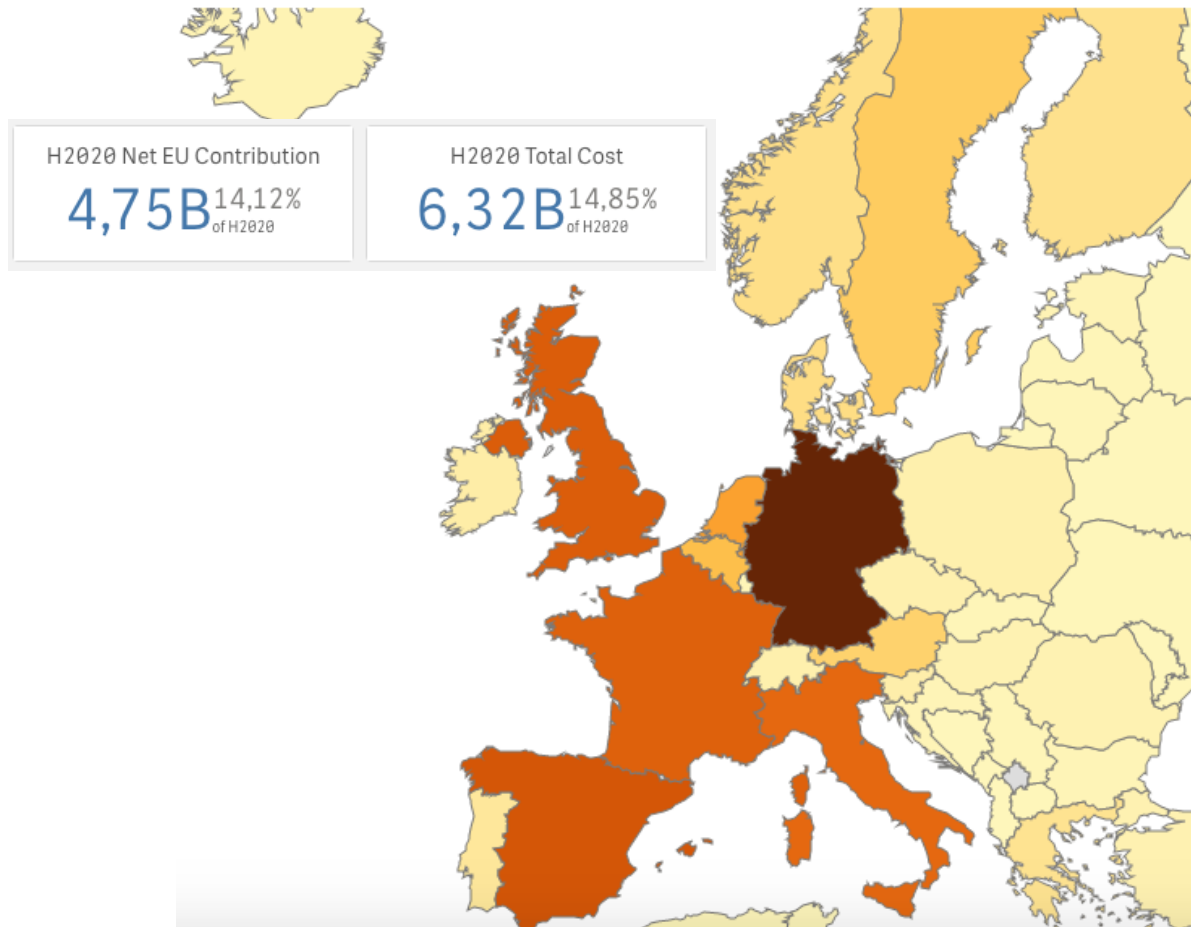
# How much is spent on “Smart Green” during 2014-20 ?



# ESIF implementation rates (2017) : low-carbon implementation lagging



# Horizon 2020 'green' societal challenges: dominated by advanced EU countries



H2020 societal challenges 'green' thematic priorities

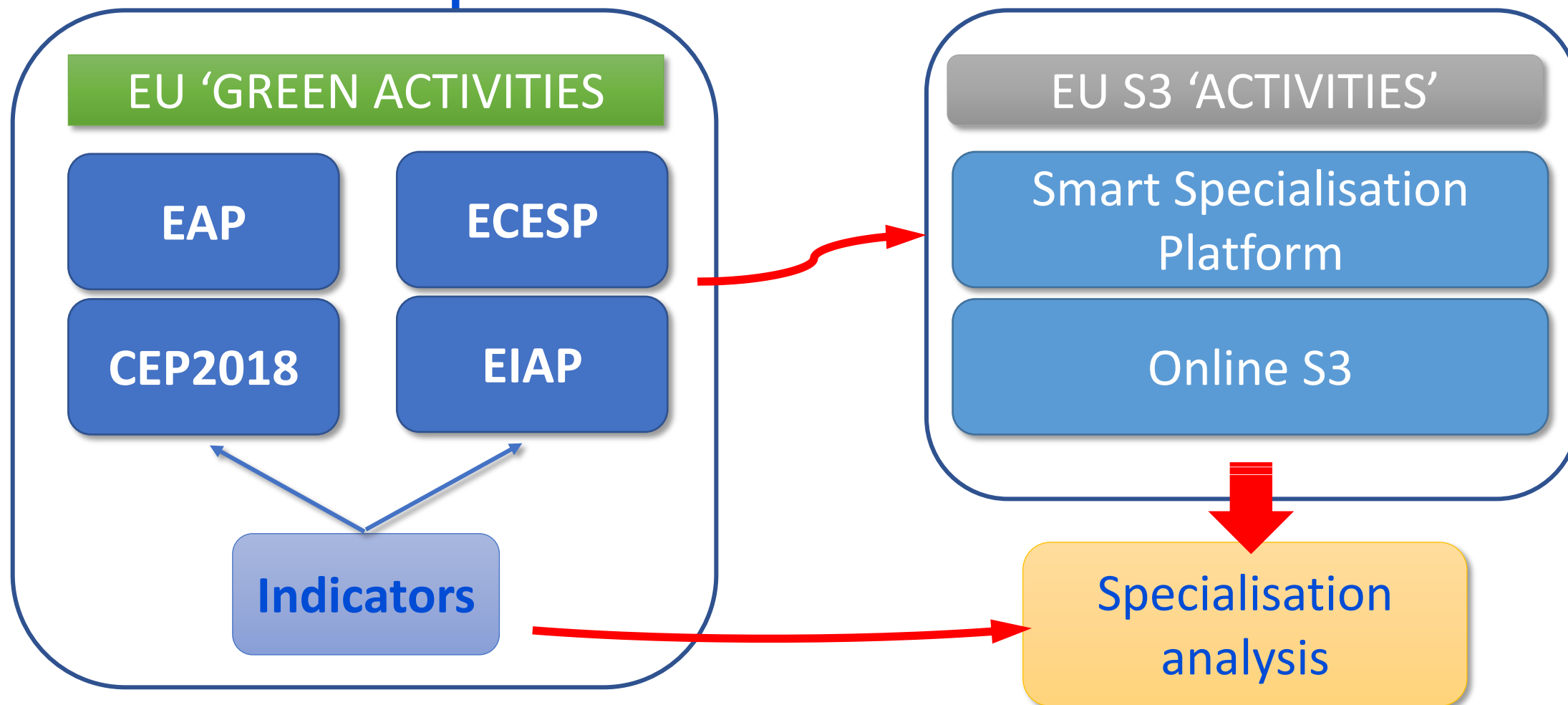
- Secure, clean and efficient energy;
- Smart, green and integrated transport;
- Climate action, environment, resource efficiency & raw materials

Country	H2020 Participations	%	H2020 Net EU Contribution	%
Germany	1,529	10.5%	€ 685,533,292	14.4%
United Kingdom	1,261	8.7%	€ 547,584,436	11.5%
Spain	1,686	11.6%	€ 541,486,312	11.4%
Italy	1,516	10.4%	€ 452,229,504	9.5%
France	1,022	7.0%	€ 387,881,268	8.2%
Netherlands	815	5.6%	€ 314,525,992	6.6%
Belgium	750	5.2%	€ 238,419,608	5.0%
Sweden	467	3.2%	€ 185,547,073	3.9%
Austria	493	3.4%	€ 161,304,008	3.4%
Denmark	388	2.7%	€ 151,740,955	3.2%

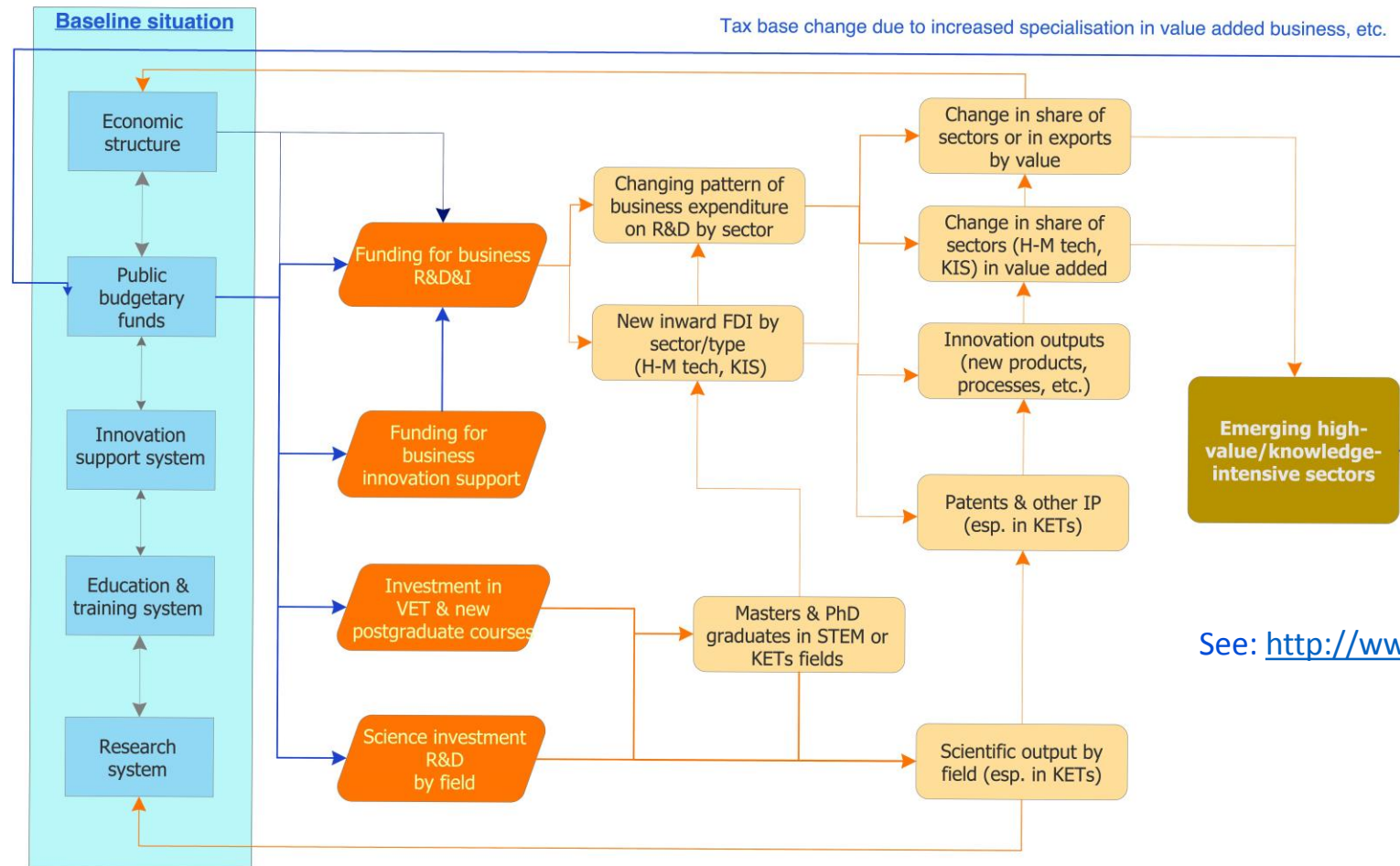
# Current EU ‘Green’ Activities

- **The 7th Environment Action Programme (EAP)** (to 2020)
- **2018 Circular Economy Package (CEP2018)**
  - EU Action Plan for the Circular Economy (2015)
  - European Strategy for Plastics in a Circular Economy (2018)
  - Monitoring Framework on progress towards a circular economy (2018)
- **European Circular Economy Stakeholder Platform (ECESP)**
  - Includes sections on *Good Practices & Strategies* (i.e. presentation of existing strategies for the transition to a circular economy adopted at national, regional or local level by public authorities)
- **Eco-innovation Action Plan (EIAP)** (European Commission, 2011)
  - Eco-Innovation Scoreboard (Eco-IS) and the Eco-Innovation Index
  - Country profiles and biennial country reports with updated Eco-IS

# How do we integrate green challenges into smart specialisation ?



# A standard roadmap for smart specialisation analysis (Reid et al, 2018)



See: <http://www.s3platform.eu/specialisation/>

# Greening smart specialisation analysis – adding the circular economy

## Circular economy monitoring framework

### 1 EU self-sufficiency for raw materials

The share of a selection of key materials (including critical raw materials) used in the EU that are produced within the EU

### 2 Green public procurement

The share of major public procurements in the EU that include environmental requirements

### 3a-c Waste generation

Generation of municipal waste per capita; total waste generation (excluding major mineral waste) per GDP unit and in relation to domestic material consumption

### 4 Food waste

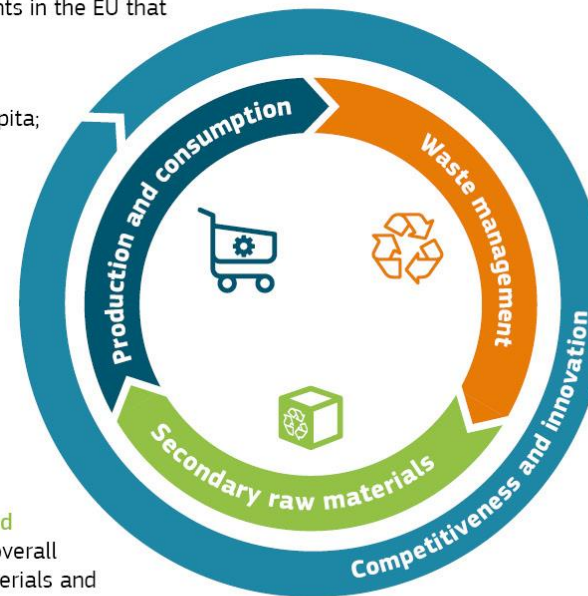
Amount of food waste generated

### 7a-b Contribution of recycled materials to raw materials demand

Secondary raw materials' share of overall materials demand - for specific materials and for the whole economy

### 8 Trade in recyclable raw materials

Imports and exports of selected recyclable raw materials



### 5a-b Overall recycling rates

Recycling rate of municipal waste and of all waste except major mineral waste

### 6a-f Recycling rates for specific waste streams

Recycling rate of overall packaging waste, plastic packaging, wood packaging, waste electrical and electronic equipment, recycled biowaste per capita and recovery rate of construction and demolition waste

### 9a-c Private investments, jobs and gross value added

Private investments, number of persons employed and gross value added in the circular economy sectors

### 10 Patents

Number of patents related to waste management and recycling

# Current focus on smart green field (1/3)

- **S3 Thematic Platforms** (Agri-Food, **Energy**, **Industrial Modernisation**): hands-on support to regions to foster interregional cooperation based on matching smart specialisation priorities related to these areas - such as Key Enabling Technologies, Service innovation or **Resource efficiency**.
  - ❖ **S3PEnergy** (Energy and the Smart Specialisation Platform on Energy):
    - supports policy-makers, authorities and stakeholders involved in energy and R&I policies (implementation) and Cohesion Policy funding (uptake)
  - ❖ **S3 Energy Partnerships** (under S3PEnergy):
    - offering interactive and participatory arenas for interregional cooperation along shared priorities related to energy
    - help policy makers to use S3-related European Structural Investment Funds (ESIF) and public/private investments smartly

# Current focus of S3 on smart green field

(2/3)

## S3 Partnership on Sustainable Buildings

- **Objective:** to create an alliance between European regions to boost new markets and take advantage of regional opportunities for specialisation
- **Why:** The building sector is the largest energy consumer in Europe, amounting to 40% of the total EU consumption and 36% of CO2 emissions.
- **Three main reference themes:**
  - 1) Eco-construction, bio-climatism and insulation of buildings;
  - 2) Renewable energy integration in buildings;
  - 3) Systems of maximum energy efficiency in buildings and cities



<http://s3platform.jrc.ec.europa.eu/sustainable-buildings>

# Current focus of S3 on smart green field

(3/3)

## ❖ S3P-Industry (S3 Smart Specialisation Platform for Industrial Modernisation):

- 15 Thematic Areas (additional new thematic areas can be proposed), one is on:
- **Efficient and Sustainable Manufacturing**’ with focus on technologies, methods and tools which aim, amongst, at:
- environmental sustainability, **reducing emissions, energy**, resources and materials consumption

## ➤ The Interreg Baltic Sea Region Programme 2014-2020

- Four priorities: #1: Capacity for innovation -> Specific objective 1.2 ‘**Smart specialisation**’
- Several projects use S3 to smart green fields (see ‘Smart Green’ examples)

# Smart Green S3 – BSR Stars S3

- **Flagship project** within the EU Strategy for the Baltic Sea Region
- Smart specialisation in **bio-, circular-, and digital economy** in the Baltic Sea Region through business-research-public-co-creation and innovative ecosystem management
- Funding from the Interreg BSR Programme (11 Partners)
- [www.bsr-stars.eu/bsr-stars-s3](http://www.bsr-stars.eu/bsr-stars-s3)
- <https://projects.interreg-baltic.eu/projects/bsr-stars-s3-33.html>



Source: [www.bsr-stars.eu](http://www.bsr-stars.eu)

# Smart Green S3

## Flexgrid, Smart grids industrialisation programme

- Regional programme aimed at the large-scale deployment of smart grids in the Provence-Alpes-Côte d'Azur Region
- **Aim:** develop excellence in the smart grids sector at the regional level, in line with the smart specialisation strategy.
- **Objective:** regional solutions to energy transition challenges through the development of smart grids technologies and services that can be replicated worldwide.
- [www.flexgrid.fr](http://www.flexgrid.fr)
- <http://s3platform.jrc.ec.europa.eu/flexgrid-smart-grids-industrialisation-programme>



Source: [www.flexgrid.fr](http://www.flexgrid.fr)

# Smart Green S3 – Oil-free and low-carbon roadmap

- Roadmap Towards Oil-Free and Low-Carbon Area 2040 is based on Energy and Climate Programme of North Karelia.
- Main sectors for the roadmap are: **Energy**, Transport, Land-Use, Natural resources and **bio-economy**, **Circular economy**, Innovations and know-how.
- Developed in several workshops involving key stakeholders.
- <http://s3platform.jrc.ec.europa.eu/oil-free-and-low-carbon-roadmap>
- Challenge and targeted objective:
  - North Karelia is applying for membership in Carbon Neutral Municipalities Network (HINKU municipalities) which aims to **reduce greenhouse gas emissions by 80 % from 2007 level until 2030** inside the municipality's borders.
  - **Fossil oil** used for heating will be **replaced with renewable energy by 2020** and in **transport by 2030**.



# Smart Green S3 – building the wave & tidal energy ecosystem in northern Scotland



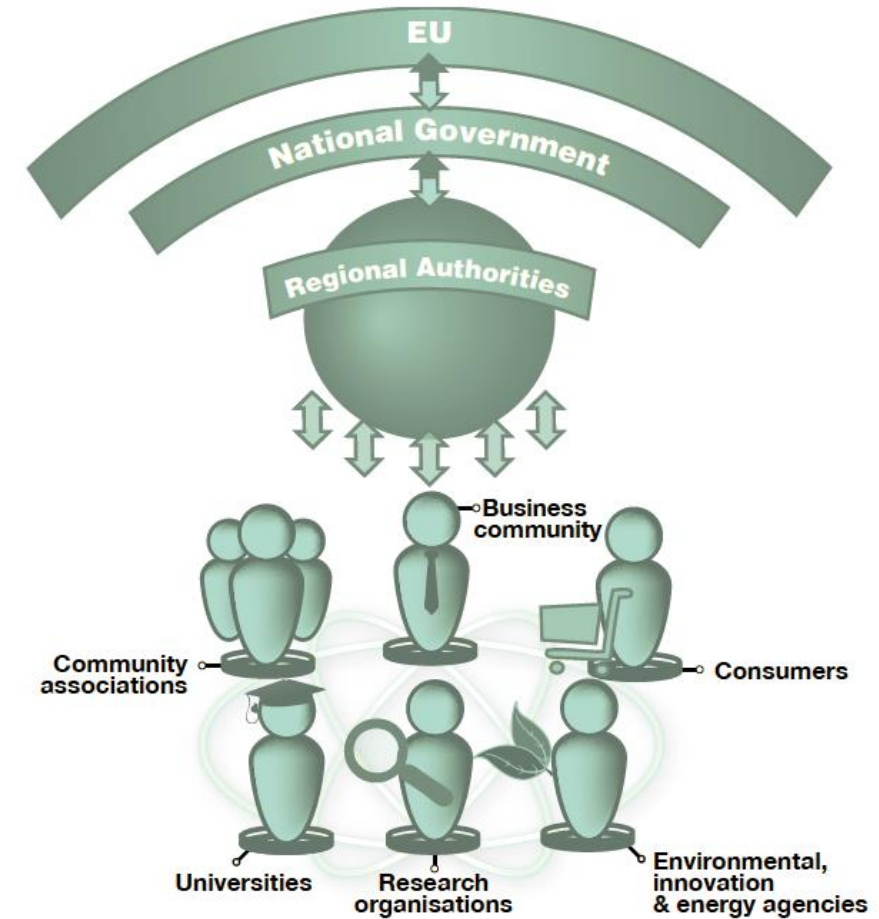
Located in northern Scotland (Caithness & Orkney)

- Significant natural resource advantage recognised and long-term public-private strategy developed
- ESIF and national funds used to upgrade infrastructure (harbours, EMEC campus) and support development of tech-start-ups, etc.
- FP7/Horizon 2020 significant funder of pre-commercial R&D and testing projects
- Wave Energy Scotland initiative to attract international expertise & businesses for testing
- 2016, launch of the world's first large-scale tidal energy farm !
- 2017 Surf 'n' Turf, a community initiative, successfully generated hydrogen from the action of tidal energy for the first time.
- 2017, EIB Funding requested for flagship MeyGen pre-commercial tidal array !



# Governing Smart Green

- What agencies, organisations, companies and other stakeholders could be involved in designing and promoting specific actions that will contribute to connecting smart and sustainable growth in the region?
- How can stakeholders best be mobilised to create regional alliances to promote innovations for sustainable growth?
- How can collaborative action and effective implementation best be organised?



Connecting Smart and Sustainable Growth through Smart Specialisation - A Practical Guide for ERDF Managing Authorities (2012)

# Conclusions

1. EU policies and regulations are still created independent from each other instead of reinforcing long-term green objectives;
2. Leads to 'Misalignments in innovation policy' and the need for a re-design of the way we set policy and regulatory agendas
3. Starting from ambitious “transformative innovation” SDG type goals and work back to what needs done today
  - For example, EU Strategy for Plastics in the Circular Economy – Green S3 can be a method to find tailored solutions. Plastics problem is different in each MS, depending on existing practises, regulations, levels of recycling, etc..
4. Will require a new “tool-set” of methods and indicators – Smart specialisation process can be re-engineered to support a new Smart Green agenda
5. Above all requires an urgent shift to transformative innovation and away from incremental change. Governance of implementation is the key.



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