



DYNAMIX

Decoupling growth from resource use
and its environmental impacts

Case study findings from policy mixes on key resources - insights

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CASE STUDY WORK ON POLICY-MIXES

- 15 ex-post evaluations of existing policy-mixes were produced in the *DYNAMIX* project over the last few months
- Included both input (resource) and output (impact) oriented mixes
- The evaluations are meant to inform development of policy-mixes as well as modelling of impacts/effects

APPROACH (1): CHOICE OF RESOURCES

UNEP International Resource Panel's report *Priority products and materials: assessing the environmental impacts of consumption and production* was broadly followed, i.e.:

- **Agricultural goods and biotic materials:** Particularly impact based studies highlight the relative importance of animal products (high land use as a consequence).
 - **Fossil fuels:** Fossil fuel combustion is the most important source of most emissions-related impact categories; plastics are important in terms of impacts among materials.
 - **Metals:** Many metals have high impacts per kg compared to other materials, especially iron, steel & aluminium
 - **Construction materials:** Studies do not agree regarding the issue. Show up as important in studies using mass based indicators; not in all studies that also include a measure for impact per kg material.
- + We also decided to add land explicitly as a category.

APPROACH (2): CASE STUDY SELECTION

- Balanced coverage of key resources + provide more than one case on similar resources => to compare & contrast approaches.
- 15 were identified for further in-depth evaluation out of a longer list.
- Criteria taken into account in the case study selection:
 - Type of resources (inputs/outputs)
 - Objective of policy mix (absolute/relative reduction of use of resource use, reduce outputs (wastes/emissions) or impacts (historically impacts on environmental media))
 - Orientation of instruments (mix led by regulatory, economic or info tool/approach)
 - Level of focus– economy wide, sectoral, specific products
 - Geographic coverage (N-S, E-W EU, and non-EU countries)
 - Successes and failures
 - Timeline/age of policy mixes – more recent may mean less assessment
 - Data availability
 - Potential replicability / transferability to EU level/other EU countries/region
 - Competition; dealing with scarcity and importance for other systems
 - Cost effectiveness if information is available

APPROACH (3): ASSESSMENT

- Once the case studies for evaluation were selected, an in-depth evaluation was undertaken based on a common assessment template.
- Evaluation usually distinguished between:
 - (a) the **effect** of the policy mix, i.e. the results of a measure that can be attributed to its implementation (which implies a causal link between the policy action and its intended impacts on human behaviour and the environment) and
 - (b) its **effectiveness**, i.e. whether or not the intended objectives and targets have been achieved.
- In addition, the policy mix's efficiency and **(social) sustainability** was evaluated. Efficiency of the policy mixes was assessed comparing the achieved level of resource and impact decoupling with the monetary (or other) resources applied to achieve the outcome.
- Wider literature review (informing comparative analysis)

CASE STUDIES: WHAT RESOURCES WERE TARGETED?

Renewable resources

- Sustainable use of **forests and wood** in Finland and world wide
- Sustainable levels of **fish** catch in Iceland

Mineral/metal (non-renewable) resources

- More efficient use of **aggregates** in the UK
- A sustainable **material** cycle society in Japan

Land

- Conserving **rural land** in England
- Reducing **land sealing** in Germany

Environmental media

- Reducing **transport CO2 emissions** in Spain
- A **fossil fuel-free energy** system by 2050 in Denmark
- Reducing **fossil fuels** use in Sweden
- Reducing **fertiliser use** in Denmark
- Reducing **PVC and phthalates** use in Denmark
- Increasing **industrial energy efficiency** in Portugal

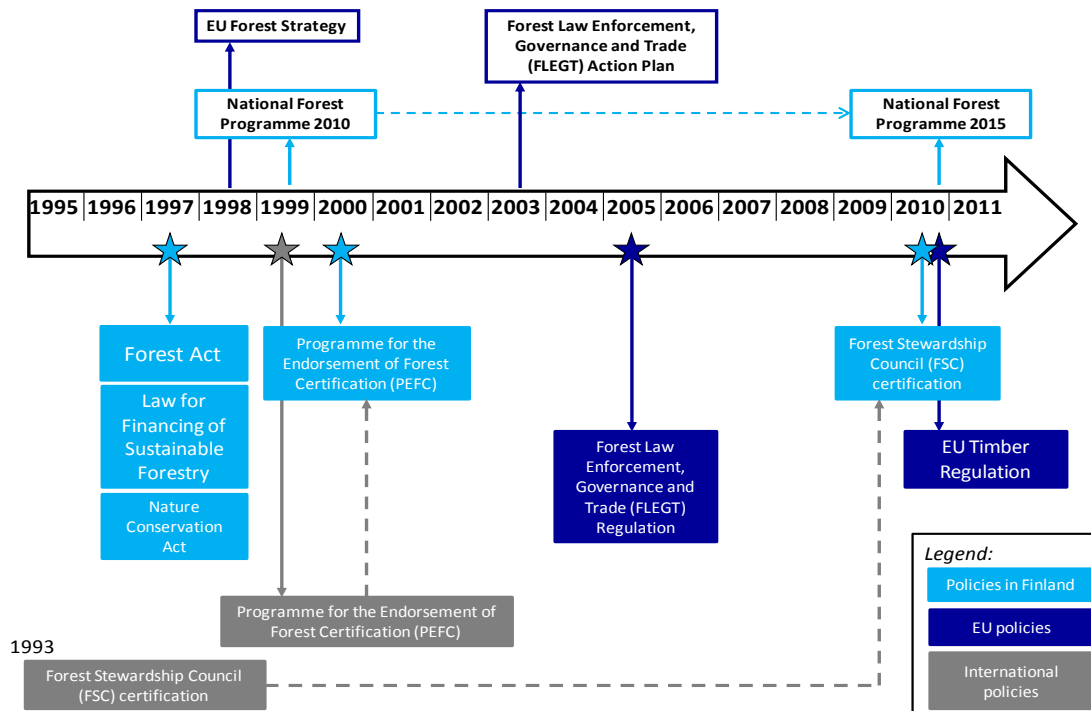
Waste prevention

- Reducing **municipal waste** at the local level in Slovakia
- Preventing **food waste** in the UK
- Reducing **plastic bag** use in the UK and Ireland

POLICY-MIXES TARGETED AT RENEWABLE RESOURCES

- Sustainable use of **forests and wood** in Finland and worldwide
- Sustainable levels of **fish** catch in Iceland

SUSTAINABLE USE OF WOODS IN FINLAND & FORESTS WORLDWIDE

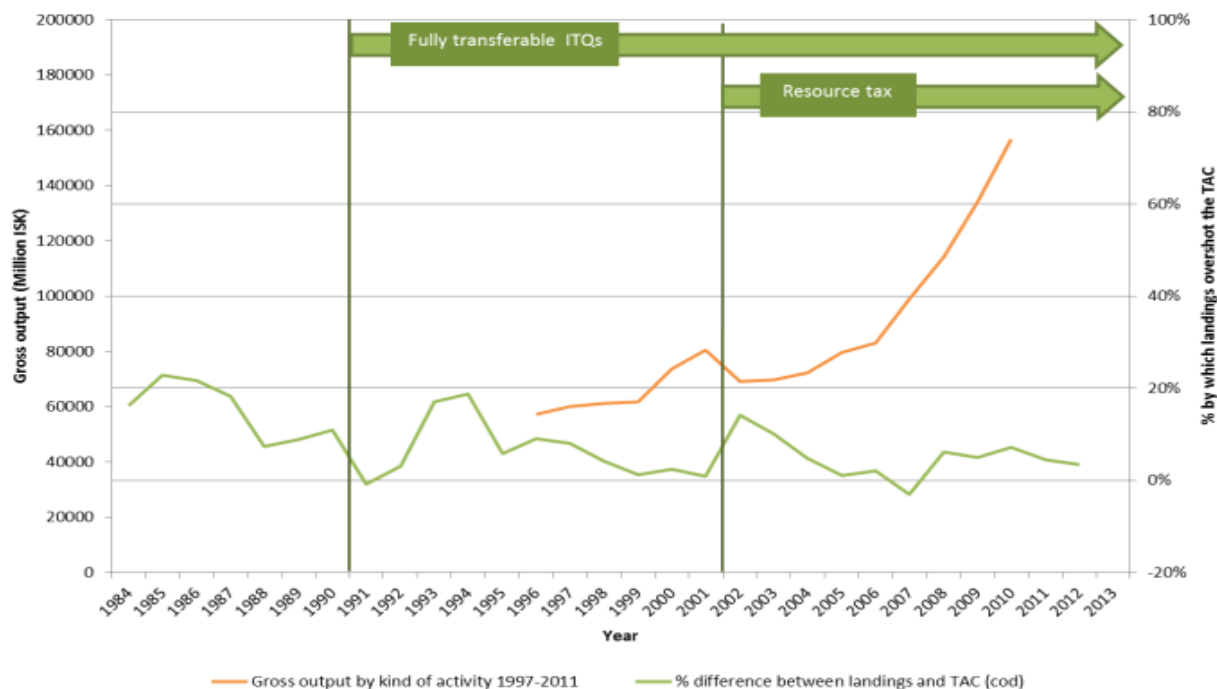


- Sectoral economic performance remains coupled with wood removals: profitability and productivity hardly increased
- domestic wood production has increased but is still within limits
- growth in stock of wood in Finnish forests has been greater than removals since 1975
- 95% of Finnish economic forests are certified

=> Relative decoupling achieved?

- Increase in wood consumption & production largely based on imports which have increased by 50% from 1990 to 2007) – large share of this wood is from Russia and not certified/potentially illegally logged

SUSTAINABLE LEVELS OF FISH CATCH IN ICELAND



=> Iceland brought fish stocks back from the brink of collapse while increasing the profitability of its fisheries sectors.

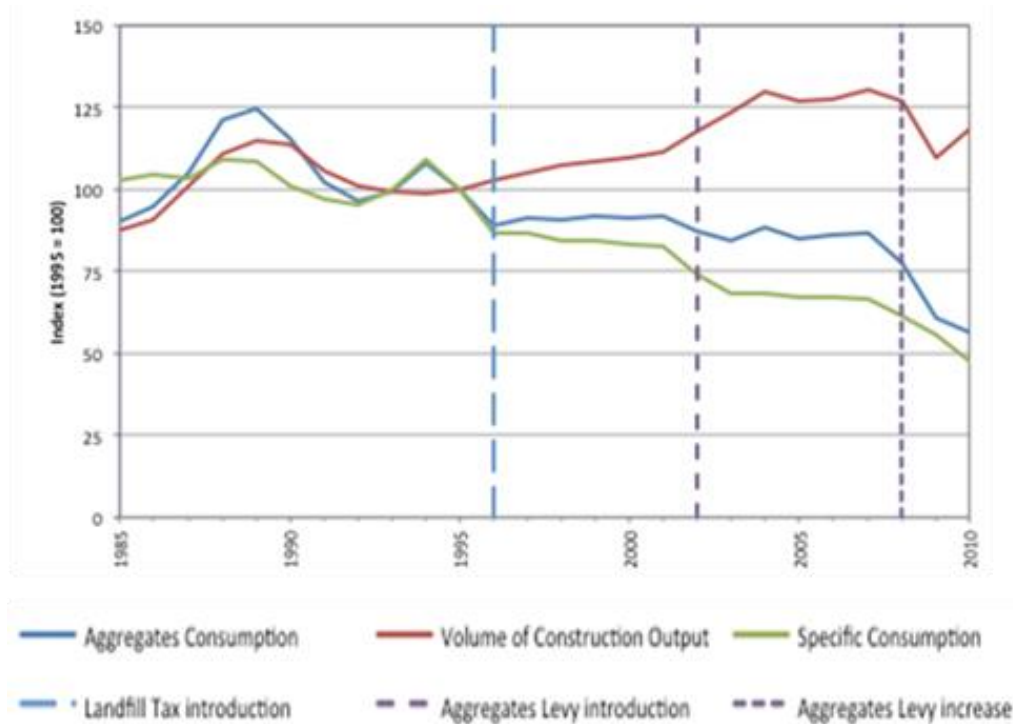
Figure: Gross output of fishing activity vs. % difference between landings and TAC (cod)

=> Decoupling achieved to a large degree

POLICY MIXES TARGETED AT MINERAL RESOURCES

- More efficient use of aggregates in the UK
- A sustainable material cycle society in Japan

MORE EFFICIENT USE OF AGGREGATES IN THE UK



=> Data shows a trend towards absolute decoupling between construction and aggregates consumption for the UK over the 1995-2010 period.

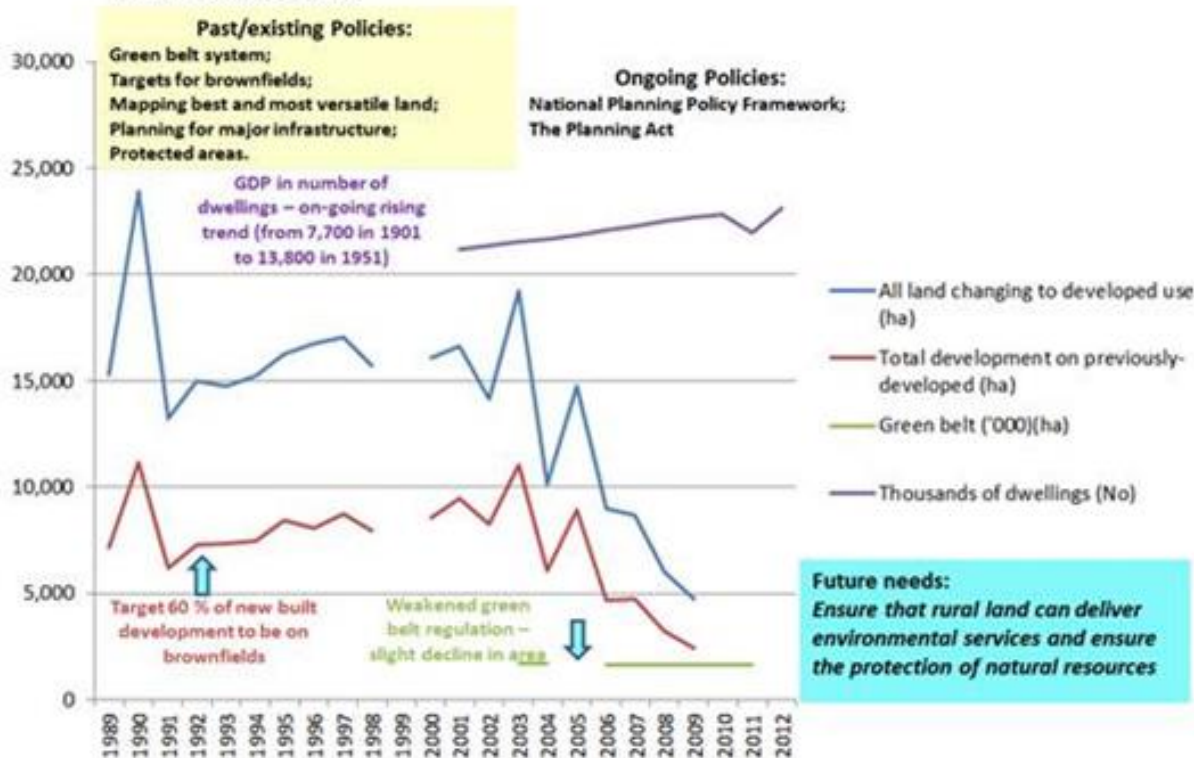
Figure 2: Aggregates consumption & construction output against 1995 baseline

POLICY MIXES TARGETED AT LAND

- Conserving rural land in England
- Reducing land sealing in Germany

CONSERVING RURAL LAND IN ENGLAND

Relative decoupling

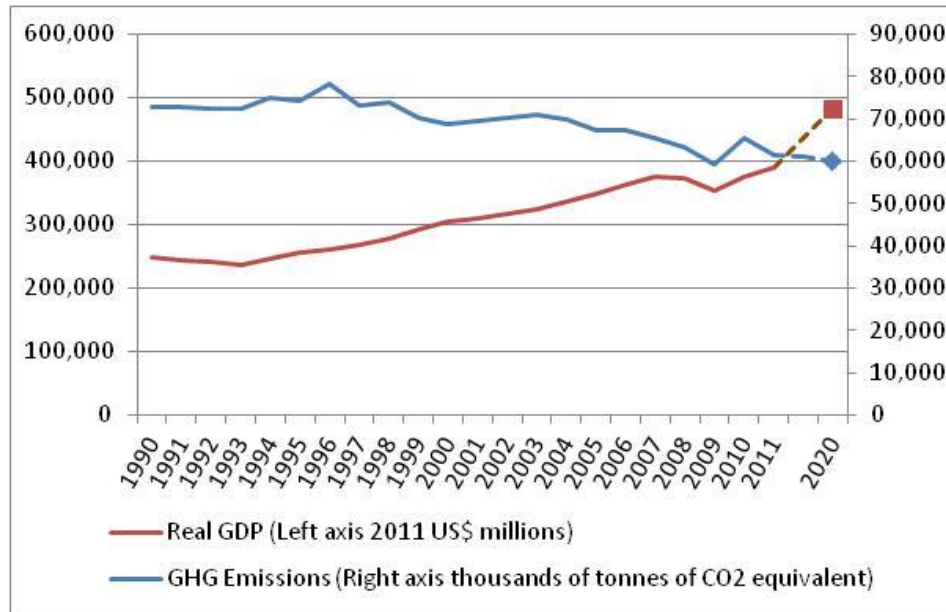


=> The share of land allocated to different land uses in the UK has remained relatively stable in the last 50 years despite economic growth and new dwellings.

POLICY MIXES TARGETED AT ENVIRONMENTAL MEDIA (AIR, WATER, SOIL)

- Reducing transport CO₂ emissions in Spain
- A fossil fuel-free energy system by 2050 in Denmark
- Reducing fossil fuels use in Sweden
- Reducing fertiliser use in Denmark
- Increasing industrial energy efficiency in Portugal

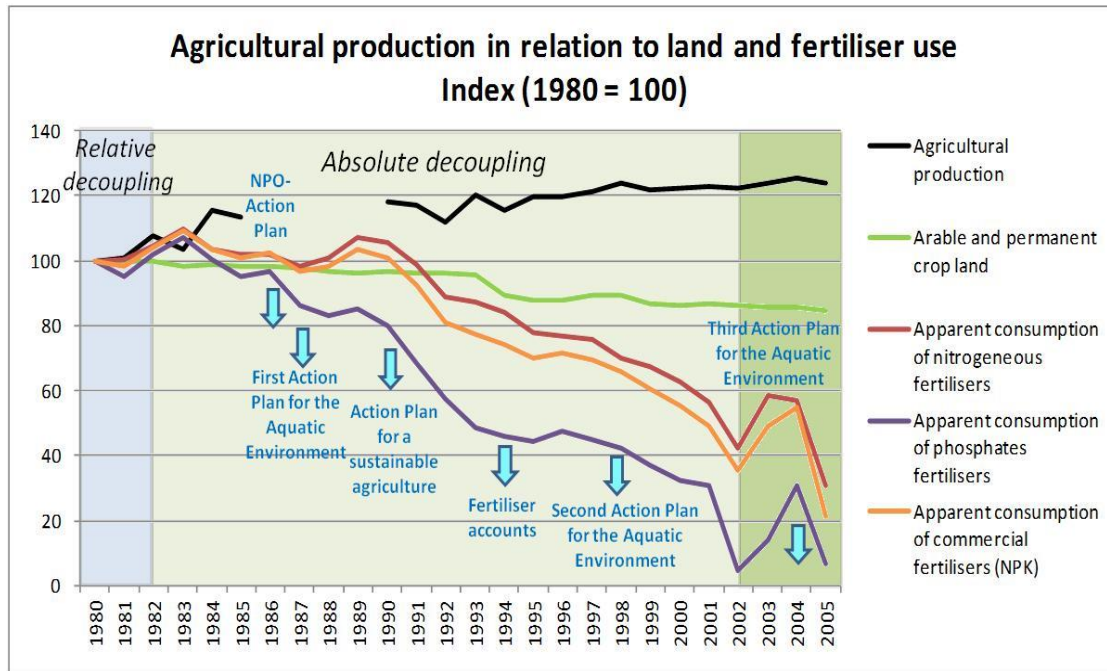
REDUCING FOSSIL FUELS IN SWEDEN



Absolute decoupling of GHG emissions from GDP occurred between 1996-2007 and 2010-2011, and relative decoupling occurred from 1993-1996. GHG emissions appear to have grown beyond GDP growth from 2007-2010 => **mixed picture.**

In the context of their plans to 2020 we are presuming that absolute decoupling will be achieved because they have targets across different energy uses

REDUCING FERTILISER USE IN DENMARK



=> Absolute decoupling between agricultural production & fertiliser consumption has occurred since 1991.

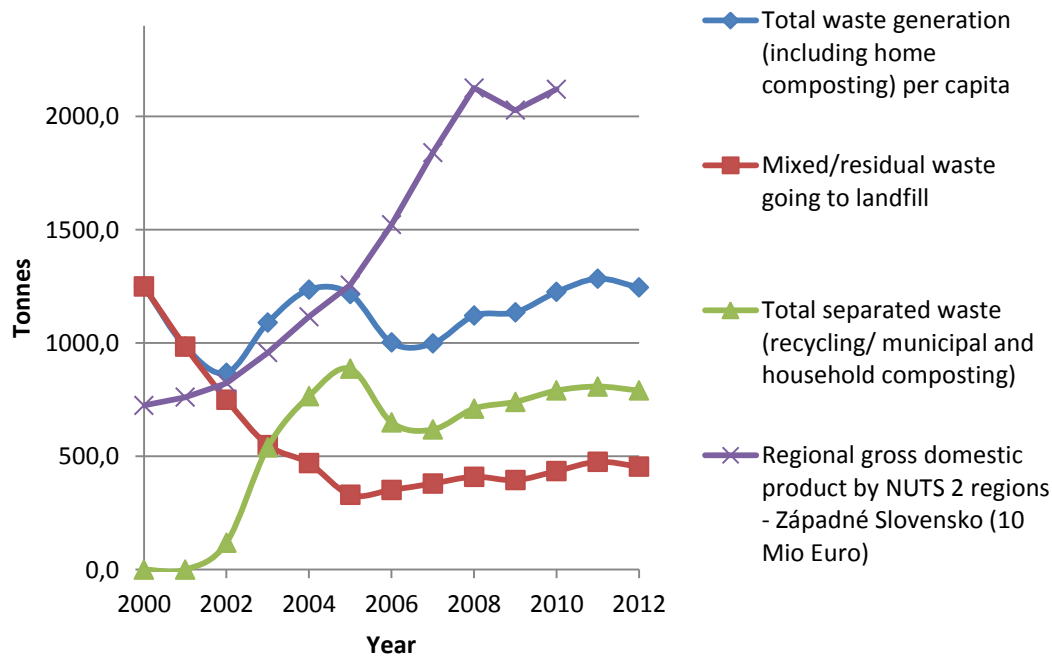
=> Despite signs of absolute decoupling of fertiliser use, the current levels of its use cannot be considered sustainable

POLICY-MIXES TARGETED AT WASTE

- Reducing municipal waste at the local level in Slovakia
- Prevention food waste in the UK
- Reducing plastic bags use in the UK and Ireland

REDUCING MUNICIPAL WASTE AT THE LOCAL LEVEL IN SLOVAKIA

Regional GDP vs Waste generation and management in Palarikovo and surroundings



- GDP shows positive trend since 2000
- Relative decoupling appears to have occurred in waste generation – relatively steady since 2000
- Decrease of waste going to landfill and of recycled and composted waste

NEXT STEPS

- Publication of case study summary report (aiming for end November)
- Availability of full case study evaluation reports on the Dynamix website (end November)

=> Now: Q&A + any clarifications from present case study authors

THANK YOU!

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