University Logo

Doctoral Thesis Exposé

Preliminary title:

Integrated assessment of the coherence of climate & landuse policy mixes in Germany from a global context

Date

Submitted by: Supervised by:

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1. Motivation (2 pages and a half)
   1. Landuse in Germany

51% of Germnay’s territory (51%) is used for farming purposes, 30% forested, and 14% is covered by settlemetns, industry, and infrastructure such as roas and rails. Of the land for agriculture,71% is used as farmland togrow cereals, food crops, animal fooder and energy crops. 14.2 million hectares are used for growing food for people. Pastures (grassland) 28 percen of agriculture land. AVERAGE FARM SICE 60.5 HECTARES. Between 200 and 2016 its size declined by 6970 km2. Urban sprawl, new infrastructure, and small growth of forests. The german government has targeted 20% of arable land to be used for organic farming by 2030. In 2017 it ws 9.9 percemt an di n 2005 4.7%.

Since 1991 Germany has lost over 600000 ha of grassland. The amont of arable land grew by 27 prcent between 1990 and 2016, mainly by turning pastures into cropland. This is down to an increased demand in crops like maize and rapessed for animal fodder and to produce bioenergy. Rise in greenhouse gas emissions of 17.3 percent. Grasskand loss due to 66 ha used to build new houses or roads every day.

Moorlands are usually carbon neutral however if they are drained the oxygen can enter and release co2. Considering that Germany is covered 4^ of moorlands and that they store between 1300 and 2400 million tonnes of carbon, can be dangerous. 95% of Germany’s moor soils are drained, mainly for agriculture and forestry.Around 1.3 million ha o fmoorland is used fro farming purposes in Germany. These drained peat soils make up five percent of the totable farmable land but are responsible for 50% of greenhouse gas emissions from agricultural land use. The (partial) restoration of the drained moorlands and the strict protection of existing peat soils would be one of the most effective measures to reduce emissions. Between 7 million and 15.2 million tonnes of co2 cold be saved each year. However, other effect son biodiversity, endangered species and local water balance have to be considered for negative trade-offs between ecology and climate action. Also, moor restoration is good for the climate , financially feasible and acceptable to citizens depend very much on local conditions , water supply, drainage, soil composition and legar structures. Also it takes between 10 and 20 years until a restores moorland starts to become carbon neutral again. High share of pastures and cropland are located on peat soils, voluntary measures to give up land for restoration are unlikely to be effective if they are not generously compensated.

Forstry (1/3) of Germany, in the last 40 years have grown by one million hectares. Forest is the laregest CO2 sink. Currently store around 1,170 million tonnes, Coniferous trees, specially douglas fir, could store mor carbon than the current mix of 44.5 percent hardwood and 55.5 percent coniferous trees.

* 1. Landuse pressures

Emisions

Carbon dioxide when grassland and moorlands are drained and turned intofields

Methane when ruminants (cattle and dairy cows) digest their food( enteric fermentation) and when animal manure I sdistributed on fields.

Nitrous oxide (N2O) laughinggas and NOX: when manure and mineral nitrogen fertilizer is used on fields.

Ammonia (NH3) and NOx Amonia from manure and fertilizers can affect biodiversity, waterbodies and drinking water, can turn into nitrous oxide is a climate gas.

Under LULUCF “LAND USE AND LAND USE CHANGE AND FORESTRY”.

In Germany, greenhouse gas emisisons from the agriculture ssector amounted to 65 million tonnes CO2 equivalents in 2016. 26.4 millions of which came from soils, and 24.5 from enteric fermentation.

* 1. IPCC view to the Policy Instruents for land and Climate

(si est’a subrayado es porque lo copi’e y pegu’e sin asco jejjejej hay que parafrasearlo y cambiarlo)

Importance of land

Based on the last Climate Change and Land report (cite), the appropriate design and implementation of diverse climate and land policies, at all scales, can contribute to climate adaptation and mitigation. Policies can potentially enhance the optimal management of resources, social resilience, and ecological restoration. With this in mind, policies should be mutually supportive and aim to bring together different stakeholders to reduce the risks and barriers to implementation.

Policies relevant to climate and landuse usually respond to address food security (availability, access, utilization, stability of food and social protection), land degradation and desertification (land degradation neutrality, land use zoning, conservation of biodiversity and ecosystem services, standards and certification for sustainability of biomass and land use sectors), sustainable land management, climate related extremes (droughts, fires, floods), and GHG flux for climate change mitigation.

Study of policy mixes ha emerged in the last decade in regards to the mix or set of instruments that interact together and are aimed at achieving policy objectives in a dynamic setting (reichardt et al. 2015). The study of policy mixes includes studying the ultimate objectives of a policy mix, the interaction of a policy mix, the interaction of policy instruments within the mix and the dynamic nature of the policy mix. This study helps in the consideration of policy coherence which is broader than the study of discrete policy instruments in rigidly defined sectors, but entails studying policy in relation to the links and dependencies among prolblems and issue s. A coherent, consistent mix of policy instruments can solve complex policy problems as it involves lateral, integrativem and holistic thinking in defining and solving problems It is necessary to achieve sustainable development ((FAO 2017b). There is a gap integrated considartion of adaptation, mitigation, climate change policy and development.

Barriers to implementation

1.4 Current policies in Germany and barriers in implementation

1. Research Plans (Parragraph with bullet points) Which gap am I planning to close?
2. Methodology (1 page)

Mnetion about MAgPIE, how to use it, which changes I’m going to make..

1. Tentative timeline (Table current work, 1st paper, 2nd paper, 3rd paper, dissertation, date and main tasks)
2. References

Links of webpage

<https://www.cleanenergywire.org/factsheets/climate-impact-farming-land-use-change-and-forestry-germany>