Submitted Abstracts (revised versions)
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Abstract title	Sustainable land use - Assessing the effects of state measures in scenario analysis
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Topic	Track 1B - Long term change towards sustainable societies: scenarios, forecasting and backcasting
Keywords	land consumption
	scenario analysis
	regional impact assessment
	tradable permits for declaration of new sites

Abstract text

Purpose of the paper is to present new findings in forecasting and scenario analysis of sustainability of settlement development and land use in German Regions. The approach is to display interrelationships and trends concerning land use and to identify all determining factors and link them to projected general economic and demographic changes on the regional and national level. The regional level is set on NUTS3. The basis for the modelling structure is the macroeconomic forecasting model PANTA RHEI which enables the analysis of environmental questions in a macroeconomic context. It now was extended to a (further) regional level which is of special importance for the land use related development. The forecasting results show that there is further challenge to achieve a sustainable development in land use change as formulated by the national government for 2020. These deficits have a regional and a user (land-use-specific) component, which can be evaluated by the model separately. Political interventions can reduce land consumption. But fiscal instruments have negative side effect. There's evidence, that there is additional need for changes in planning practice and general rethinking in the society. The multi-interdependent structure of the model enables the calculation of scenarios of various types. Previous intentions weren't capable to calculate and evaluate both forecast on and scenarios on a detailed regional level. An especially interesting instrument for controlling land consumption and achieving the aims is a system of tradable certificates for land area. With PANTA RHEI REGIO a tool was created which is suitable for analysing effects of such a trade system, even on the regional level. Although government planning is organised in different ways in nations, it can be expected, that further finding to regional effects are relevant for other nations and global sustainability as a whole.

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Abstract title	Assessment of interlinkages between different priorities of the EU SDS
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Topic	Track 1B - Long term change towards sustainable societies: scenarios, forecasting and backcasting
Keywords	Sustainable development indicators
	Climate protection scenario
	Economy-energy-environment model
	Forecasting

Abstract text

The key objectives of the renewed EU Sustainable Development Strategy (EU SDS) are environmental protection, social equity and cohesion, economic prosperity and meeting the EU's international responsibilities. There are trade-offs as well as synergies between these objectives. The European Commission developed indicators to monitor the progress towards a more sustainable development in Europe. Knowing the nature of the relation between different sustainable development objectives is very useful for policymakers allowing them not to disregard social consequences of environmental policies and vice versa. We apply the economy-energy-environment model GINFORS (Global INterindustry FORecasting System) developed by GWS, to assess interlinkages between these indicators.
The paper first summarizes which SDIs are included in GINFORS (mainly environmental indicators, but also some social indicators closely related with the economic sphere) and how GINFORS is used to assess the interlinkages between SDIs. Next, the future development of the SDIs is projected for different scenarios. Due to the full interdependency of the system, variations in exogenous variables such as policy instruments in model simulations deliver a consistent picture of the changes in the different SDIs. We conduct a scenario analysis considering a unilateral reduction of GHG emissions of 20% within the EU. Comparing the results of this "climate-protection" scenario with a reference scenario allows us to identify possible synergies and trade-offs in the indicators affected by such a policy.
In a business as usual scenario, most economic indicators are positively linked (synergy), whereas environmental indicators will worsen, as economic performance improves (trade-off). The results of the "climate-protection" scenario show a worsening of the economic indicators, while several of the environmental indicators improve. We are able to show that there are interlinkages between different SDIs. While there are synergies between different economic indicators or between different environmental indicators, there is some trade-off between climate protection and economic development.

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Abstract title	A global VAR model for sustainable development
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Topic	Track 1B - Long term change towards sustainable societies: scenarios, forecasting and backcasting
Keywords	Sustainable development indicators
	Econometric approach
	Interlinkage assessment
	Global VAR model

Abstract text

The key objectives of the renewed EU Sustainable Development Strategy (EU SDS) are environmental protection, social equity and cohesion, economic prosperity and meeting the EU's international responsibilities. One of the targets of the strategy is to "break the link between economic growth and environmental degradation". The linkages between the different objectives of sustainable development have not been subject to econometric investigations to a great extend yet. The subsequent analysis will identify possibly conflicting and synergetic sustainable development policy targets using the econometric method of global vector autoregressive (VAR) modelling. This method has mainly been applied in the context of economic and financial interlinkage assessment, forecasting and impact response analysis. We apply this method to 5 sustainable development indicators covering 5 themes of the EU SDS using data for the EU15 countries from the World Development Indicators on an annual basis between 1981 and 2005. The advantage of the global VAR modelling approach is its applicability to rather short time series, since it does not aim at estimating all coefficients of the global VAR model at a time. Rather, one VAR model per country or region is estimated first and these models are then stacked together into the global VAR model. The regression fit of all country VAR models are rather high and possible negative and positive interlinkages between sustainable development indicators are identified.

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