

developments if it is fully included and throughout all plants negative development pathways if neglected. This presentation will contribute to the conference and the session in particular through showing how such modeling approaches will help in assessing future chances or risks in the fields of food, energy and climate. The study shows that the investigated area will probably see a shift towards plants like Maize, Barley and maybe Sorghum. This may indicate a shift towards more bioenergy use or probably an increase in processing industry and away from raw food cultivation. The presented approach will be applicable to areas around the world, helping in generating similar assessments for various regions. It can also be seen as a study on how applicable or suitable the modeling of large datasets currently is or if limits (concerning data structure or processing time) still do exist, thus limiting the potential number of modeling sites.

<b>0376</b>	<p>Extended impact assessment of European Union's legislative and non-legislative measures: applications of the Land Use Modelling Platform (LUMP) for integrated assessment of policies</p>	<p>Carlo Lavalle, Claudia Baranzelli, Ana Barbosa, Filipe Batista e Silva, Chris Jacobs Crisioni, Sarah Mubareka, Carolina Perpina Castillo, Ine Vandecasteele, Ricardo Barranco, Eric Koomen, Maarten Hilferink</p>	<p>Italy</p>
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Based upon the principle that the changes in the cover and use of the surface of the earth depend on natural processes and are, at the same time, shaped by demographic, economic, cultural, political, and technological drivers, the Joint Research Centre has developed the Land Use Modelling Platform (LUMP) to assess the consequences of policies with direct or indirect spatial impacts. LUMP supports the policy design of different services of the European Commission and provides a comprehensive, consistent and harmonized analysis of the impacts of policies and/or specific proposals in the context of environmental and socio-economic changes in Europe. LUMP is based upon the combination of a spatially explicit land use model and its linkages with other modelling activities in thematic fields such as hydrology, agriculture, economy, forestry, etc.

The Land Use Modelling Platform (LUMP) is continuously applied in ex-ante and ex-post impact assessment of European policies that influence, directly or indirectly land use/cover change. The forecasted land use/cover changes are not only analyzed per se. Land use/cover is an important factor for many ecosystem services such as provision of food; fibre and timber; biodiversity; water flows and climate regulation; carbon sequestration; provision of recreational opportunities; etc.

LUMP's modelling framework allows the translation of policy questions into alternative scenarios that could be compared through a set of indicators that capture economic, environmental and social issues. To date, LUMP has been applied in the following impact assessments and related exercises:

- Integrated Coastal Zone Management;
- Green measures of the Common Agricultural Policy post-2013;
- the EU 2012 Blueprint to Safeguard Europe's Waters;
- Resource efficiency.

Further applications are being conducted in the fields of energy, regional and cohesion policies, bio-economy and adaptation to climate change.

The presentation will highlight the process of translation of policy options and regulations into drivers for land use/cover changes. Also, it will show how planning processes occurring at different

<p>administrative and government levels (e.g. European, National, Regional and Local) interact and are accumulated to predict the impact of European policies. Finally, a set of examples from the performed application will explain methods and criteria for wider sustainability assessment.</p>			
<b>0377</b>	<p>Coffee forest use and conservation in Ethiopia: local land transformation dynamics in the view of global markets and protected area approaches</p>	Till Stellmacher	Germany
<p>Ethiopia is the worldwide origin of Coffee arabica. The montane rainforests in South-western Ethiopia still comprise naturally regenerating coffee populations with a genetic diversity that is globally unique. Local smallholders living in or adjacent to these coffee forests highly depend on the forest coffee as a cash crop. Beyond they utilize a great number of other timber and non-timber forest products. However, Ethiopia's coffee forests witness high rates of depletion and deforestation, mainly due to the expansion of smallholder agriculture and intensification of coffee production in the forests. Since 1975, all land in Ethiopia has been nationalized, a policy that still remains in place today. In the 1970 and 1980s, most of the Ethiopian coffee forests have been designated as protected areas, namely "National Forest Priority Areas", however, with very limited conservation effectiveness.</p> <p>In the last years, the Ethiopian state, NGOs and international donors have made attempts to promote the sustainable use and conservation of the Ethiopian coffee forests as human-environment systems by taking the complex human-forest-coffee dynamics into consideration. In 2010 and 2012, three UNESCO Coffee Forest Biosphere Reserves were established in Southwestern Ethiopia with the aim to promote sustainable development based on local community involvement.</p> <p>The paper is based on local-level empirical field research conducted in coffee forests in South-western Ethiopia as part of the transdisciplinary BMBF research project "Conservation and use of wild Coffee Arabia in the montane rainforests of Ethiopia". Methodologically, a combination of household interviews with forest users, semi-structured expert interviews with local decision-makers, NGO representatives and state agents on district, regional and national level, as well as focus group discussions and visual communication techniques, was used.</p> <p>The presentation will contribute to the conference and the session by empirically showing detailed land transformation dynamics in complex human-environment systems in a rural African development setting. The findings demonstrate how local land use decisions in rural Ethiopia are being influenced by the path-dependent persistence of traditional land tenure systems and legal pluralism and the global demand for high-quality coffee, and how that impacts on forest use, management and conservation in formally protected areas.</p>			
<b>0378</b>	<p>Development of a land cover change monitoring system for protected areas in Sub-saharan Africa</p>	Zoltan Szantoi, Andreas Brink, Dario Simonetti, Andrea Lupi	Italy
<p>Protected areas monitoring is increasingly important as their natural resources, biodiversity and landscape are under increasing anthropogenic pressures. Thus, the monitoring of land use/cover change, particularly deforestation and de-vegetation, are crucial for managing protected areas and their surroundings. Furthermore, a well designed protected areas monitoring system is able to identify the important problems for longer-term decisions, assess the current and future values, status and threats of these areas. The European Union pledged significant support toward management and conservation of protected areas in Sub-Saharan Africa. The Joint Research Centre (European Commission-JRC, Ispra, Italy) developed a semi-automatic approach, which detects and measures land use/cover change for the period of 20 years, starting from the 1990's. Additionally, the system is capable to handle new, incoming satellite imagery (Landsat 8 and Sentinel 2).</p> <p>The system has the necessary pre-processing stages, such as radiometric calibration and normalization,</p>			