



**Observatory of the dynamics of interactions between societies and environment in the amazon
Sustainability and adaptations to global changes**

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The WP3 (“Environmental dynamics: observation and understanding”) and WP4 (“Vulnerability, adaptive capacity and governance related to environmental changes”) of the ODYSSEa project co-organized a special session at the 2nd Austrian conference on International Resources from Feb, 28th to March, 2nd at the University of Innsbruck (Austria). The main topic of the conference was about “Resources for a social-ecological transformation”. More precisely, the synopsis of the conference is described below:

World society is facing a comprehensive social-ecological crisis related to fast political, economic, technological and social changes. The current economic model and its forms of excessive resource extraction and use exacerbate ecological problems and conflicts, generates political instability and increases social inequalities. There is emerging agreement in science, politics and society that a fundamental transformation is needed. Some stakeholders frame the adoption of the UN Sustainable Development Goals (SDGs) as an important step towards recognising and addressing the most pressing transformation needs. However, many scholars argue that such a transformation requires a more radical change of current modes of production and living as well as development pathways instead of mere technological and managerial solutions.

In this context, the extraction, distribution, use and disposal of natural resources are of crucial importance. We acknowledge resources as a biophysical materiality and, at the same time, as a social, ecological and in the end as a political ‘construct’, and part of the powerfully structured social relations. Such a perspective intends to overcome the dichotomy between society and nature in a wider concept of ‘societal nature relations’. A better comprehension of the multidimensional character of resources as well as a multiscale perspective are needed to achieve a better understanding of the complex nexus between resources and transformation potentials.

Following the first conference (“Towards International Resource Fairness - Theories, Conflicts and Policies” in 2014, see also programme, documentation and conference publication), the 2nd Austrian Conference on International Resource Politics focuses on the role of natural resources for a social-ecological transformation. Highlighting a North-South-perspective, the conference aims to analyse past, present and future challenges for transformation pathways that take global inequalities, geopolitics but also transnational resistance and forms of cooperation into account. The goal of the conference is to bring together researchers, practitioners and activists from different regions and disciplines to advance inter- and transdisciplinary research.

In that context, the ODYSSEa partners (Fig. 1) proposed a special session on the BR-163 road, the north-south transamazonian road that concentrates parts of the study sites of the ODYSSEa project. The special session consisted in 6 presentations given by ODYSSEa members and that represented a good opportunity to exchange about research experiences in these study areas.



Figure 1: ODYSSEA team participating to the 2nd Austrian conference on International Resources (Innsbruck).

The detailed program of the special session is described below:

Special session program

BR-163: A hot spot of socio-environmental change in the Brazilian Amazon
Drivers of regional development and governance conditions for social-ecological transformation

Co-chairs:

Martin Coy (University of Innsbruck, WP4 leader) & Damien Arvor (CNRS, WP3 leader)

Over the last decades, the struggles around the pavement of the BR-163 highway from Cuiabá (Mato Grosso) to Santarém (Pará) represented one of the most emblematic conflicts in the Brazilian Amazon between a globalization-driven regional development on the one hand, rainforest conservation and sustainability-oriented strategies on the other. The dynamics of highly modernized soy farming and cattle ranching, as well as the implementation of large dams for energy production stand for the main driving forces of recent frontier expansion from the Cerrado-regions of Mato Grosso towards Southern Pará and the consequent incorporation and transformation of rainforest areas. Efforts of the Lula-governments to implement innovative measures of environmental governance for the BR-163 corridor led to a rapid decrease of deforestation after 2004. However, enormous economic and political pressure of agribusiness and related groups associated to global market conditions indicate that the agricultural frontier is still very dynamic so that long term reversions of the mentioned trends of frontier expansion are not to be expected. However, perspectives for a social-ecological transformation are urgently needed considering the environmental impacts of frontier expansion and its implications for (regional and global) climate change. In this sense, the BR-163 is much more than a specific regional socio-environmental conflict. It stands for

the multi-scalar entanglement of economic and political interests, power relations and logics of action of the involved stakeholders. The Special Session aims at joining results from recent empirical research in and about the study area from different conceptual and methodological perspectives, generated under the EU-financed ODYSSEA network (Observatory of the dynamics of interactions between societies and environment in the Amazon). Analyses of recent land-use and land-cover change and its driving forces come into dialogue with investigations about the expansion strategies of the agribusiness, conflicts between land-use tendencies and the implementation of environmental governance, perspectives of climate change as well as studies on changing rural-urban interactions. Building on this interdisciplinary dialogue, the objective of the proposed Special Session is to identify resources, potentials and blockades for initiating processes of social-ecological transformation under the conditions of a highly contested hot spot of men-environment contradictions.

Contribution 1

Climate change in the BR163 region: a multiscale analysis

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Climatic resources, especially a long and regular rainy season, represented a favorable context for migrants moving along the BR163 road in Mato Grosso to develop agriculture. In return, this region has undergone profound landscape changes including deforestation, agricultural expansion and urbanization that led to climate changes via the modification of surface conditions (roughness, albedo, soil moisture). In this presentation, we propose a multi-scale analysis of these changes using in-situ and remote sensing data:

- At the scale of Mato Grosso, the trends of changes in rainfall volumes and rainy season dates show sometimes divergent evolutions to which producers try to adapt, for example by multiplying farm dams and irrigation pivots.
- At regional and local scales, significant differences are observed between forest and pasture or croplands, especially during the dry season.
- At local scale, the extension of cities such as Alta Floresta, Sorriso or Sinop contribute to generate urban heat islands, well marked during the night and the dry season.

We show that, beyond the global effects of deforestation on the water and carbon cycles in the Amazon, the climate consequences of such geographic transformations are reflected first on local and regional scales and are particularly spectacular in northern Mato Grosso.

Contribution 2:

Along the BR-163 in Mato Grosso:

Regional implications of coupling with Global Production Networks of soybeans

Christoph Huber (ÖAW-Fellow, Brasília / Dept. of Geography, University of Innsbruck)

Brazil has seen an unprecedented rise in soybean production in the last decades and became

the world's largest soybean exporter. One of the expansion corridors of soybean production runs along the BR 163 in the north of Mato Grosso. The soybean production has created regional highly complex socio-economic arrangements that assemble integration into a global production networks. Although global transnational corporations (traders, agrochemical firms) have a position of power in these global production networks, also Brazilian farmers have become large-scale producers and also Brazilian megafirms have emerged with vertical integration into global production networks. The mono-structural economic focus on soy has turned the soy producers into regional influential elites which have taken up central political positions and therefore have become key players for regional development. As a consequence regional development strategies are highly aligned with the logic of global production networks of soybeans. Against such a background, this contribution focus on the different strategies of soybean agribusiness actors, depending on their power and position in global production networks of soybeans and the resulting implications for possibilities and limitations of sustainable regional development.

Contribution 3:

Agribusiness, rural-urban relations and social-ecological transformation:
The case of the Sinop region in Northern Mato Grosso

Martin Coy (Full Professor, Department of Geography, University of Innsbruck, Austria)
Tobias Töpfer (Senior Lecturer, Department of Geography, University of Innsbruck, Austria)
Frank Zirkl (Researcher, Department of Geography, University of Innsbruck, Austria)

In Northern Mato Grosso, the expansion of the soybean agribusiness caused deep transformations of economic, social and territorial structures. This is especially true for the BR-163 corridor. Under the influence of a highly modernized and globalized production system regional and local actor constellations, social and power relations, as well as the societal relations with nature have been subject to profound changes. Due to the specific character of the soy business – local-global entanglement, high degree of mechanization, frequent use of different urban based services – rural-urban relations are submitted to specific re-configurations: Increasingly, new regional centres and “agro-towns” such as Sinop, the case study of this contribution, exert the function of powerful multi-purpose “command centres” whereas the countryside is more and more reduced to serve as a “production machine”. These constellations influence local perceptions and discourses of the need for, as well as the feasibility of a social-ecological transformation.

This contribution is based on extended fieldwork in the Sinop region (surveys, expert interviews, thematic mappings) and aims to scrutinize determining elements of the regional “societal relation with nature” in order to uncover, in this way, the potentials and blockades for a (regional) social-ecological transformation.

Contribution 4:

From zero deforestation to zero illegality. Discussing practices of territorialization in Southwest Pará.

Michael Klingler (Researcher, Dept. of Geography, University of Innsbruck, Austria)
Philipp Mack (MSc candidate, Dept. of Geography, University of Innsbruck, Austria)

Environmental policy changes and supply chain interventions greatly influenced the post-2004

deforestation slowdown in the Brazilian Amazon. Nevertheless, since 2012 deforestation rates are on the rise again. Especially in Southwest Pará, where the frontier dynamics of speculative deforestation and illegal cattle ranching are ubiquitous, deforestation is far from 'zero'. Even though a series of governmental command-and-control actions to control illegal deforestation have been implemented, especially the situation of land tenure insecurity dulls the story of governance success in the region.

We argue that the rural environmental registry (CAR) is a significant practice of territorialization to establish control over people and resources in space. In this context our analysis highlights contradictions of zero deforestation strategies and efforts to strengthen zero 'illegality' by developing rural economy in terms of socio-ecological sustainability.

Contribution 5:

Local initiatives to promote the implementation of the Brazilian Forest Code in the Amazon: a focus on the BR-163 region, Mato Grosso

Marion Daugeard (PhD candidate, CREDA, Univ. of Paris 3 Sorbonne Nouvelle, France & CDS, Univ. of Brasília, Brazil)

Six years after the Brazilian Forest Code has been reformed (May 2012), much remains to be done to ensure its implementation, especially in the Amazon. Although officially 100% of rural landowners have registered their properties in the Rural Environmental Registry (CAR), efforts are still insufficient to achieve environmental compliance. Since it is often considered that environmental compliance must be pushed "from the top", most studies on the Forest Code focus on discussions and commitments led at national or federal levels to enforce compliance and rely on macro analysis combining remote sensing and qualitative data to identify changes in behaviors and assess the landowners' compliance. However, initiatives are also being implemented locally, especially at municipality level, following a "bottom-up" approach. Although the role of such local initiatives to control deforestation has been clearly highlighted (for example through pilot initiatives such as in Paragominas, Pará), their potential to support environmental compliance is little emphasized. In this study, we identified and analyzed municipal initiatives through online surveys and telephone interviews of 68 municipalities in the Amazon part of Mato Grosso state and collection of data on the internet and fieldwork. The aim of this contribution is (i) to present our results, particularly in the area of the BR 163 road, a very strategic agricultural region, and (ii) to discuss the role played, and the potential role to be played by municipalities to encourage Forest Code compliance.

Contribution 6:

Perceptions, politics and municipal public action: agriculture and climate variability in Mato Grosso

Neli Aparecida de Mello-Théry (Full Professor, Department of Geography, University of São Paulo, Brazil),
Damien Arvor (Researcher, CNRS)

The problematic analyzed is the insertion of new concepts of perception and adaptation to climate change in policies and public actions, based on the positions of key actors in

agriculture in Mato Grosso located in some municipalities of the State. Aiming to understand the effectiveness of municipal policy by incorporating factors of climate variability, semi-structured interviews with key actors and fieldwork in the region, complemented by information and data obtained in official institutional documents are the elements of the analysis of perception and public policy. In addition to the local scale, the aim is to identify as well regional and national positions.

Some conclusions point out that, although municipal government reaffirms in its mission and values the objectives of economic, social and sustainable development, and public institutions and actors repeat in their speeches the main terms of international agreements and protocols, there are insignificant changes in their institutional behaviour.