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Session 6. Theory, methods and practice -- 6.3. Indicators and modeling approaches

Please note: This paper presents preliminary results of the European POLFREE project, which explores of new concepts and paradigms that can bring about a radical increase in resource efficiency, and a vision for a resource-efficient economy in the EU, with suggestions also for new more resource-efficient business models for firms, and ideas for a global governance regime. Several other abstracts that are submitted to this conference present work from this project. We suggest to group them together in a session

Title: A vision for a resource efficient Europe

Summary
This paper presents a positive vision of the future based on three pillars: a safe and fair use of global resources, a sustainable society, and a transformed economy. It is based on a literature review of sustainability visions as well as stakeholder workshops in the realm of the EU research project POLFREE (Policy Options for a Resource Efficient Economy). In particular, we focus on the targets underpinning our vision for living well within the global safe operating space of resource use. The state of research, rationale and research needs for potential dashboard targets in the four footprint categories — materials, land, water and carbon — are discussed. All in all, we present a bold vision for Europe, arguing that a resource-efficient transformation requires a systemic shift in values, innovation, governance and management regimes.

Extended abstract
In her article on envisioning a sustainable world, Donella Meadows argues that "vision is the most vital step in the policy process. If we don't know where we want to go, it makes little difference that we make great progress. Yet vision is not only missing almost entirely from policy discussions; it is missing from our whole culture" (Meadows 1996). Despite the fact that a number of visions have emerged, developed both in policy documents (EC 1993, 2011; UN 1992, 2012) and by powerful coalitions of stakeholders and experts (WBGU 2009; WBCSD 2010), little, or painstakingly slow, progress has been made on turning visions into concrete policy actions. An informed, societal discussion on visions as well as societal engagement in the visioning processes remains almost entirely absent.

The purpose of this paper is to develop a vision underpinned by clear and shared goals for a sustainable, resource efficient economy in Europe. It is based on both a literature review of sustainability visions as well as stakeholder workshops in the realm of the EU research project POLFREE (Policy Options for a Resource Efficient Economy). The vision and targets will be further used in the POLFREE project to provide the physical and material endpoints for evaluating and driving scenarios and modelling exercises. In this way, the POLFREE project presents research centred around the visioning process as a key driver toward transforming both societies and economies, as well as the policies which govern them.

Our paper reviews past sustainability visions and highlights strong and weak elements within the visions themselves. Examples include "Vision 2050 – the new agenda for business" from the World Business Council for Sustainable Development (WBCSD 2010); "World in Transition: A social contract for sustainability" by the German Advisory Council on Global Change (WBGU 2009) and the "The Great Transition: The Promise and Lure of the Times Ahead" by the Tellus Institute (Raskin et al. 2012). In general, available visions show that the specific problem of socio-ecological transformation requires special efforts and may not be solvable by conventional means. More theoretical considerations and inter- as well as transdisciplinary approaches could help to discover common blind spots and to transcend the established tracks of problem-oriented public policy.

We also examine the state of research on footprint targets in the four categories of materials, land, water and carbon. Specifically, we assess the implications for EU citizens by 2050, data sources, target rationale and research needs. We argue that targets should be based on the concept of using "a fair share" of the safe operating space (Rockström et al. 2009) for the EU. At the current time, work to develop such targets in each resource category is ongoing, with some areas more advanced than others. In concrete terms, per person targets of 10 tonnes TMC[1], 0.20 hectares cropland and 1.05 tonnes of CO_2 are discussed in detail. For water, a 30 to 50% reduction compared to 2004 is presented as a preliminary target framework.

Finally, our vision is presented. In comparison to other recent visions, our vision looks more closely at how human needs for all can be met within the safe space of resource use to balance environmental objectives with human well-being. It is organized according to the following three groups:

- ***Safe and fair use of global resources***: European consumption of global resources is both within the safe operating space of planetary boundaries and fair. This means that consumption levels are below environmental limits—natural thresholds related to maintaining Earth operating systems—and below limits of equal resource distribution—per capita use of global resources is below or equal to per capita world availability.

- ***Sustainable Society:*** Europeans in 2050 have lifestyles that are less resource-intensive and more fulfilling. The options people have to meet their needs, contribute in a meaningful way to their communities and spend their leisure time in a resource-efficient way are diverse. Governance plays a key role in creating the conditions, infrastructure and networks, which make more sustainable lifestyle choices possible. With greater coherence between local and regional governments and national and EU policies, cities and communities across Europe are meeting the sustainability challenges in different ways. The EU remains culturally diverse, with local architecture, food culture, and traditions a defining aspect of European identity, and has created a common foundation for achieving a resource efficient and sustainable society.

- ***Transformed economy***: The economy has been transformed by both efficiency and sufficiency. Strengthened partnerships between businesses (along their value chains), between business and citizens (leading to much greater levels of user-led innovation) and business and governance (to get the framework conditions for "eco-innovation" right) have redefined production and consumption systems. On the production side,

[1] Total Material Consumption

the combined research efforts of universities and industries have lowered resource requirements across the economy—with the development of new materials, technologies and processes for efficient manufacturing and remanufacturing. New business models—focused on maintaining profit—offer services to meet customer needs in resource efficient and surprising ways. Citizens have embraced change and not only adapted their living, mobility and consumption behaviours, but were also key to shaping these changes.

Overall, staying within the safe operating space will require new forms of adaptive governance and a systems perspective that recognizes the dynamic links between the social, ecological and economic system and between the different levels of our society (macro, meso, micro). The vision provided in this paper is a starting point to highlight the kinds of changes we think are needed to live well within the safe operating space.

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