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Description of research in relation to the Circular Economy

The transition towards a bioeconomy is associated with the uptake of bio-based and biodegradable materials from biomass to replace fossil resources. It thereby spans many economic sectors at multiple scales and possesses a key role in addressing grand global challenges, such as climate change or 'carbon lock-in' (Bugge et al. 2016; Philp 2018).
A successful transition is shaped by the roles of different types of actors that purposefully support or hinder the transition towards a bioeconomy. However, the role of actors has rarely been part of the research agenda, yet (Fuenfschilling and Truffer 2016).
Therefore, this paper will study the (changing) roles and perspectives of different types of actors exemplified by the automotive industry in the German state of Baden-Württemberg which is characterized by a high spatial concentration of that industry.
This constitutes an interesting and fruitful case since the automotive industry does not belong to the 'traditional sectors' of the bioeconomy, such as forestry, agriculture or pharmacy, and thus still offers a huge potential for further research in order to investigate the potential of the usage of degradable bioplastics in manufactured cars leading towards a more circular bioeconomy (Bioökonomierat 2016).

The realization of a sustainable bioeconomy strongly depends on action and (radical) change at local places (Martin 2016). Applying the Regional Innovation System [RIS] framework with its focus on the internal functioning of systems sheds light on specific regional settings, potentials, limitations and actor constellations that determine innovation activities on the local level (Asheim and Gertler, 2005).
However, the locally embedded automotive industry in Baden-Württemberg itself is institutionalized in a fairly stable global regime and its transition within the bioeconomy creates an extensive global challenge (Martin 2016). Hence, elements of the Multi-Level-Perspective [MLP] framework will complement the strengths of the RIS by providing a more outward orientated view, for instance on exogenous forces such as overall global societal developments that drive radical change and shape regional and industrial dynamics globally. Thereby, this impact on actors´ intention and strategies (Martin 2016; Weber and Rohracher 2012).

A qualitative research approach will be applied combining an extensive review of existing literature on the conceptualization of the term 'bioeconomy' and the concept of 'roles' in transitions, as well as current development paths in the automotive industry. Relevant policy papers will be analyzed, and interviews will be carried out along experts, covering research institutes, supply chain actors, policy makers and public authorities, or intermediaries.

The contribution of this paper lies in an improved understanding of the roles and strategies of actors in transitions processes. Different perceptions and visions that may be contested, hindering and promoting factors that actors face on the local level, or global determinants that hinder the unfolding of the regional potential will be identified. This will contribute to the still somewhat neglected conceptualization of role within sustainable transitions research. The results could create a starting point for further research on comparisons with other regions or industries in the future to examine for instance, if similar developments occur or not or which types of (key) roles should be investigated further.

Literature:

Asheim, B.T. and Gertler, M. (2005). The Geography of Innovation: Regional Innovation Systems. In: Fagerberg J, Mowery D and Nelson R (eds.) *The Oxford Handbook of Innovation*. Oxford: Oxford University Press, pp. 291-317.

Bakker, S. (2014). Actor rationales in sustainability transitions - Interests and expectations regarding electric vehicle recharging. Environmental Innovation and Societal Transitions 13, 60-74.

Brown, R. R., M. A. Farrelly und D. A. Loorbach (2013). Actors working the institutions in sustainability transitions: The case of Melbourne's stormwater management. Global Environmental Change 23(4), 701-718.

Bugge, M., Hansen T. and Klitkou A. (2016). What is the Bioeconomy? A review of the Literature. *Sustainability* 8(7), 691.

Coenen L., Asheim B., Bugge M. and Herstad, S.J. (2016). Advancing regional innovation systems: What does evolutionary economic geography bring to the policy table? Environment and Planning C: Government and Policy 0 (0), 1-21.

Fuenfschilling, L. and B. Truffer (2016). The interplay of institutions, actors and technologies in socio- technical systems - An analysis of transformations in the Australian urban water sector. *Technological Forecasting and Social Change* 103, 298-312.

Martin, H. (2016). Innovation for tackling grand challenges: Cleantech industry dynamics and regional context. Lund.

Philp, J. (2016). The bioeconomy, the challenge of the century for policy makers. *New Biotechnology* 40, 11–19.

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Weber, M.K. and Rohracher H. (2012). Legitimizing Research, Technology and Innovation Policies for Transformative Change: Combining Insights from Innovation Systems and Multi-Level Perspective in a Comprehensive 'Failures' Framework. *Research Policy* 41(6), 1037-1047.