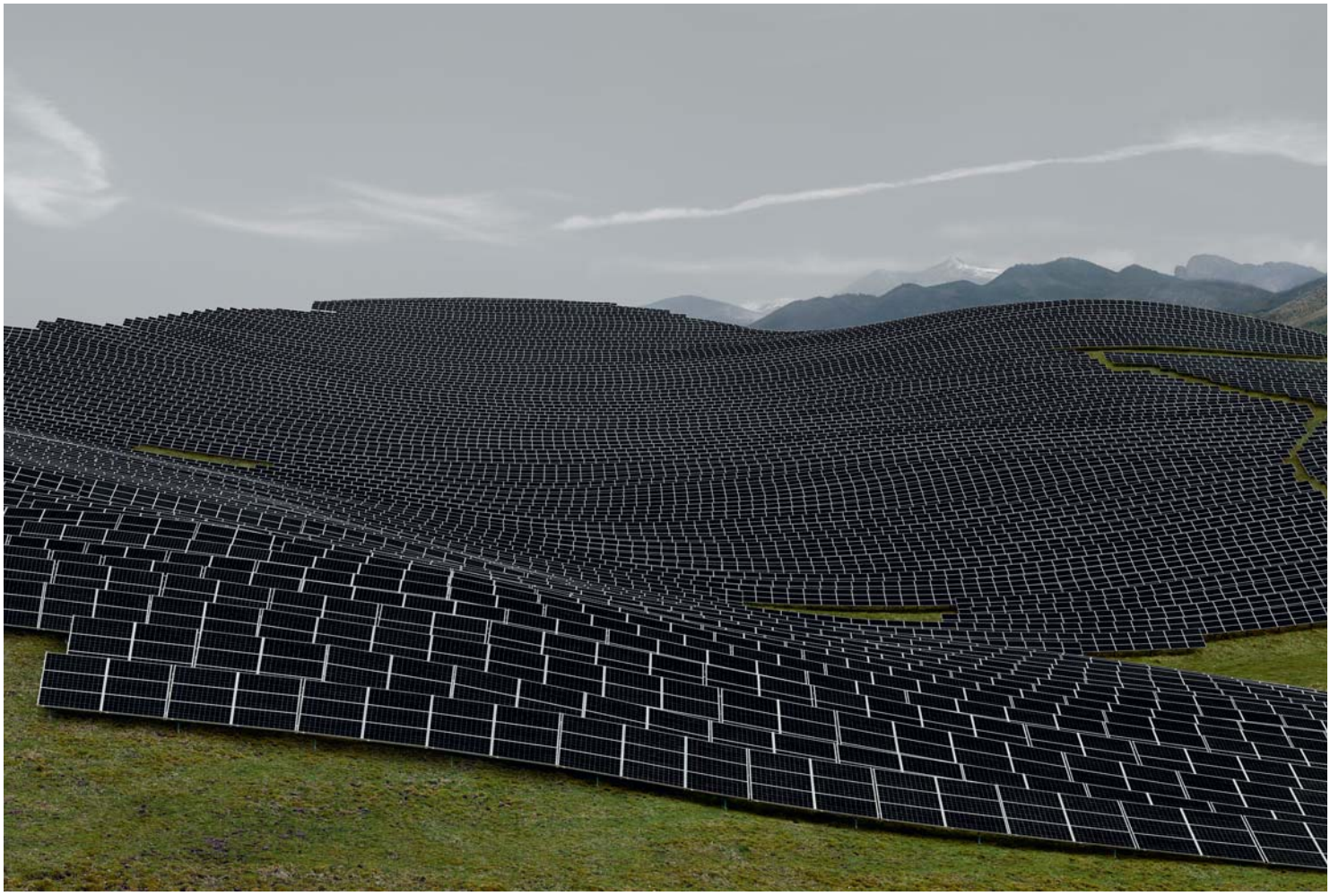
GAiA S1 | 2019
ECOLOGICAL PERSPECTIVES FOR SCIENCE AND SOCIETY
ÖKOLOGISCHE PERSPEKTIVEN FÜR WISSENSCHAFT UND GESELLSCHAFT



SPECIAL ISSUE
SUSTAINABLE ECONOMY: PERSPECTIVES OF CHANGE

oekom verlag
GAIA is available online at *www.ingentaconnect.com/content/oekom/gaia*
www.oekom.de | B 54649 | ISSN print 0940-5550, online 2625-5413
GAIAEA 28/S1, 177–248 (2019)

Governance for the sustainable economy

Institutional innovation from the bottom up?

To achieve sustainable development, it is evident that new approaches to governance are required to govern the transformation of the economy and enable the replacement of unsustainable technologies and practices. Very much like new technologies and social innovation, institutional innovation emerges from the bottom up by non-state actors aiming to facilitate the governance of transformation. What is the potential of such institutional innovation?

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GAIA 28/S1 (2019): 204 – 209

Abstract

A sustainable economy fulfills societal needs in a fundamentally different way to the current economic system. Improvements to the efficiency of existing technologies or practices appear insufficient for achieving sustainable development within the planetary boundaries. Disruptive, systemic and transformational changes appear necessary in order to replace existing technologies and practices to establish a sustainable economy. Such innovations often start out in niches; however, the scaling up and the ultimate replacement of current socio-technical systems requires governance to allow for the coordination of actors, the reorganization of socio-technical systems and the mobilization and allocation of resources. As governmental institutions are part of the current (non-sustainable) systems and thereby fail to provide coherent, integrated and transformative governance, we explore whether institutional innovation from non-state actors can step in to provide governance of transformation processes. Based on explorative qualitative case studies of networks in the food sector, city planning and reporting tools, we analyze the potential of bottom-up institutional innovations to coordinate actors in transformation processes.

Keywords

governance, infrastructures, innovation, institutions, networks, supply chains, sustainability, sustainable economy, transformation

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https://doi.org/10.14512/gaia.28.S1.6
Submitted December 19, 2018; revised version accepted July 14, 2019.

A sustainable economy serves the needs of society without exceeding the planetary boundaries and in a way that can be generalized for future generations and other countries. It has been argued from both academia as well as policy makers that this goal cannot be achieved within the existing trajectories and through incremental improvements only (e. g., UNEP 2019, UN 2015). Instead, societal needs (e. g., for mobility, heating, housing, communication, or nutrition) have to be fulfilled fundamentally differently from today. This requires a disruptive, systemic and transformational change. Disruptive innovation implies a replacement of existing technologies and practices instead of their improvement (Christensen et al. 2015). Systemic change means that such innovation is not limited to technologies, but also implies changes of related infrastructures, institutions, products, markets, social practices and cultures, which in their combination provide services to society. For such systems, the term socio-technical or socio-economic systems was coined (Geels 2004). These changes are transformative in the sense that existing systems are replaced or fundamentally reconfigured. Transformative change starts in niches, that is, networks of actors demonstrating alternative system configurations and by this challenge existing socio-technical regimes (Jacob et al. forthcoming with additional references).

How are disruptive bottom-up innovations actually mainstreamed to ultimately replace socio-technical regimes? Given the scope of the of transformative change, this requires considerable coordination and (re-)allocation of resources as different parts of socio-technical systems are subject of change, there are many different actors involved, and resources necessary. The coordination of actors, systems, and the mobilization and allocation of resources are means of governance. Governance is understood as the establishment and enforcement of rules by governments, networks or markets to regulate the common affairs of different actors (Benz 2004, Mayntz 2008). The term governance is not limited to the instruments of enforcement of rules or incentivisation, but includes communicative aspects, objectives and institutions. Governance is typically attributed to governments: it is governments that are expected to aggregate differing interests, to find

compromises, provide rules, coordinate and to (re-)allocate resources. This is because governments have the legitimacy to impose general and binding rules and the resources, administrations and means for their implementation. Transformations are subject of politics and power, given their redistributional character (Patterson et al. 2017).

Given the complexity of socio-technical regimes and their transformation, it has been argued that governance would need to be adaptive and reflexive: as transformations cannot possibly be planned, and responsibilities are widely distributed, a governance of transformation would need to be polycentric, experimental, continuously monitoring and learning and anticipatory (Koontz et al. 2015 with additional references).

A vital part of socio-technical systems are the (governmental) institutions that provide rules and stability for the functioning of such systems. This is why governmental actors often act as regime actors: instead of pursuing a strategy of disruptive change, they tend to prefer innovation within the systems. Governments are, however, not unitary actors; they pursue in their different branches and at different levels often competing goals. Governments explore options for renewables, efficiency and sufficiency, while at the same time they support a continuation of fossil technologies. They pursue a greening of agriculture, housing or transport, while protecting existing pathways. The lack of policy integration and coherence is a characteristic not only of transformation, but rooted in the functioning of governments and their public policies (Jacob et al. 2016).

A sustainability transformation requires changes in governance. But these are often hard to pursue for governmental actors. Instead, companies, civil society or local governments develop new governance approaches from the bottom up to foster transformational change.

Since governments are part of system-regimes and public policies are often incoherent, they are unlikely to provide steering capacity of transformation. In principle, the pluralistic character of governments and an incremental policy process is compatible with concepts of adaptive, polycentric governance. Transformative policies can be developed from a sectoral perspective, using the dynamics of societal change and providing directions for ongoing transformation (Jacob et al. forthcoming, Wolff et al. 2018). However, a comprehensive, integrated and coherent governance of transformation towards sustainability cannot be expected from governments. Transformation as disruptive and systemic change does not result from a top-down steering by governments as it is suggested in ideas of a transition management (Berkhout et al. 2004).

Governance is not limited to government of societies for the common good, but entails rule making and enforcement by non-state actors and local actors (e. g., municipalities). Against the limited capacities of states for governing transformations, it can be asked in how far not only new technologies and social practices emerge from the bottom up, but also institutional innovations that provide governance for a transformation towards sustainability.

To answer this question, we explore cases of institutional innovation. As institutional innovation, we understand new formal and informal rules (Raffaelli and Glynn 2015). This wide definition, inspired by the publications of North (1990), overlaps with social innovation – new social practices can also be interpreted as new rules (e. g., vegetarian lifestyle as an informal rule). However, the distinction is that governance has the intention to provide guidance while social innovations focus on the actual practices.

Examples for institutional sustainability innovations

The basis for our empirical analysis are projects that were funded in the program *Sustainable Economy* of the German Ministry for Science and Education (BMBF). The projects developed technological and social innovation in different sectors (agriculture, mobility, raw materials, etc.), using different approaches (living labs, life-cycle analysis, etc.). A common feature was the involvement of practitioners from business and civil society as well as policy makers. The innovation processes were subject of research to explore the requirements and potentials for their transfer and upscaling. In some of the projects, experimentation with institutional innovation was undertaken, although that was not necessarily the primary focus of the projects. The institutional innovations were not developed following a common research protocol, but for the purposes of own research questions. They provide, however, a basis for assessing the potentials of bottom-up institutional innovation to the governance of transformation. The cases are analysed against requirements for a governance of transformation which are developed in the section after the following. Given the anecdotic character of the cases, we pursue a qualitative case study approach: the cases are relevant by providing insights to the functioning and the constraints of institutional innovation. The approach is explorative rather than testing of hypotheses, and we do not infer from the cases to a larger universe.

Networks in the food movement

In the food sector, alternatives to global "Big Food" (Williams and Nestle 2016) are emerging that operate locally, ecologically, in a socially aware way, are small scale and based on solidarity (Gruch- >

mann et al. 2019). Local networks of small farmers include sustainability aspects in their core business. However, further technological and logistics integration is vital for achieving a higher sustainability performance. The activation of people's own resources along with the production of local goods is a means of circumventing long-distance and complex value chains. Local food initiatives and enterprises that operate in a community-oriented, collaborative and grassroots-based democratic manner (Renting et al. 2012) are key contributors in this (Antoni-Komar et al. 2019). Rather than focusing on seeking more and more material opportunities for self-fulfilment, efforts are aimed at developing practices of provision and mutual care that change conventional patterns of consumption and, therefore, coexistence. Referred to as the grassroots movement (Seyfang and Smith 2007), urban gardening projects, Community Supported Agriculture (CSA), food coops and producer-consumer networks establish links between producers and consumers, promote "prosumerism" (Blättel-Mink et al. 2017) and create learning spaces to support processes of self- and group empowerment. In these newly developing transformative enterprises, a wide range of heterogeneous actors work together. This also poses challenges on organizing the supply chains in this sector: insufficient integration and coordination of decentralized production entities limit growth. This missing broad effect hinders the necessary investments in infrastructure and more innovative distribution channels, limiting competitiveness against conventional food supply chains.

Tools for supply chain management

The *Economy for the Common Good (ECG)* movement is an example for a new approach towards managing supply chains. It is a civil society movement that aims at aligning economic activity more strongly with values such as ecological sustainability, social justice and democracy (Felber 2015). Companies, which play an important role in the movement, assess the extent to which they contribute to these values by compiling a so-called *Common Good Balance Sheet (CGBS)*. It delivers an account of the degree to which a company acts in correspondence with the "core values" promoted by the *ECG* in relation to central stakeholders in the whole supply chain (such as suppliers, investors, employees, business owners, customers, business partners, and the "social environment"). Compared to other instruments of *Corporate Social Responsibility*, the *CGBS* focusses relatively strongly on the absolute reduction of resource consumption in the supply chain and as the only one explicitly promoting the objective of sufficiency (Sommer et al. 2016). With regard to ecological sustainability, *ECG* companies make use of social innovations and socio-technical innovations alike. However, the specific measures taken in companies are diverse. They not only address the management of supply chains, but also environmental management for the production, durability and reparability of products or support for sustainable staff mobility.

Another example of an institutional innovation to manage supply chains are private standards and certification tools in the field of conflict minerals and the globalized minerals markets, which feature high cost-pressure and complex supply chains which are hard to manage and monitor (Brix-Asala et al. 2018, see also Hiete et al. 2019, in this issue). More than 20 voluntary sustainability standards and certification systems on minerals mining and their supply chains were developed. The supply chains for these minerals span the mining sector as well as multiple other industries (Sauer and Seuring forthcoming).

Planning for sustainable cities and regions

Cities are key players in the field of climate protection and sustainability as they provide the physical, cultural and institutional structures for economic activities (Engels et al. 2018). Many German local authorities and municipalities adopted environmental targets and created climate protection concepts. By now more than 887 local climate protection concepts have been created. This provides a framework for a sustainable economy by measures for cutting emissions, adapting to climate change, saving of energy, sustainable urban planning, etc. (Göpfert 2014). Despite these favourable circumstances local authorities and municipalities struggle in effectively implementing and prioritizing the measures, as well as in integrating and operationalizing the climate protection concept in the local and regional planning processes (Engels et al. 2018, Hiete et al. 2017). Additionally, concerning energy infrastructures and efficiency, many stakeholders with various conflicting interests interact (Hiete et al. 2017). Main challenges are the interdepartmental integration of sustainability targets and the respective coordination of activities and stakeholder networks. Those partly result from missing information and respective data exchange formats and, as described by Engels et al. (2018), from political agenda and other organizational barriers and inefficiencies. Besides these organizational challenges, other major shortcomings can be identified, for example, their lack of specifications, missing quantitative indicators or specific strategies and overall coordination. As a result, many measures remain intangible, difficult to communicate and manage (Bierwirth and Schuele 2012). Despite these shortcomings, they have proven to be a helpful tool to support the sustainable economy.

Analysis: bottom-up institutional innovation for the sustainable economy

How far do these bottom-up institutional innovations provide governance for a sustainable economy? Regardless of the specific technologies and practices, a sustainable economy would require a different supply of goods and services, a demand that prioritizes sustainability and according supply chains and adequate infrastructures to provide such supplies and meet the demand. Are the above-depicted institutional innovations supporting the development of markets of a sustainable economy? Smits and Kuhlmann (2004) suggested (more) systemic policy instruments to support innovation processes, including the management of interfaces across subsystems, building, reconstructing and deconstructing innovation systems, provision of platforms for learning and experimenting, provision of an infrastructure for strategic intelligence,

stimulation of demand articulation and facilitation of the search for possible applications. Such instruments – if designed properly – could provide functions for innovation systems and support technical and social innovation towards sustainable development (Hekkert et al. 2009). However, as shown in the following, also the bottom-up institutional innovations do contribute to such systemic change.

Not only new technologies and social practices emerge from the bottom up, but also institutional innovations for the scaling up of sustainable innovations. Non-state actors provide coordination of innovation systems by establishing networks or market mechanisms.

Building and coordinating innovation systems

The networks in the food movement demonstrate the value of an "enabler" to coordinate innovation activities within local networks. For example, an organic bakery shields itself and its partners from market pressures in sourcing its grains by means of round tables with farmers instead of relying on commodity markets. Bakeries and farmers agree on a price that guarantees that the grain can be grown according to the highest ecological and social standards and that the farmers are not caught in a quote-driven cutthroat competition (Stumpf et al. 2017). Such networks also evolve as joint enterprises with financial commitments of the regional partners. With regard to network advantages, coordinated networks increase competitiveness, particularly in market environments where larger companies are less successful (Moore and Manring 2009). Moreover, the relational leadership of the intermediary enterprises that govern the networks represents a driver of strategic sustainability (Kurucz et al. 2017). *ECG* companies in the sample also foster common good oriented business practices through cooperation and networking. They pursue long-term relationships with their suppliers based on dialogue, collective improvement measures and support the development of sustainable innovations within their branches and extended fields of activity (Stumpf et al. 2017). Establishing such networks can be supported by providing blueprints for their design and mechanisms for strengthening the commitment of its members (e. g., CSR Regio.Net 2014).

Secondly, the reporting and planning tools can help to coordinate sustainability innovations. The *CGBS* is such a tool. It helps companies to evaluate and reconfigure their business models, products and activities in terms of sustainability. According to the *CGBS* guidelines, companies that participate in the *ECG* are asked to offer "products and services which have a less significant negative impact on the environment through their use and disposal than existing alternatives" (ECG 2017, p. 56) as well as "contribute to a good life for all and satisfy the basic needs of as many people as possible, including disadvantaged and lower socio-economic groups" (ECG 2017, p. 63). Moreover, empirical evidence shows that the *CGBS* also stimulates companies to look at topics of corporate responsibility, which were not in their focus before, and to improve their "common good performance" in these areas.

Another tool to provide supply of sustainability innovation are planning instruments for urban development. Energy-use plans alike land-use plans can be used for coordinating activities and determining formal resolutions in urban planning (WBGU 2016). The plans comprise of a data driven stock and potential analysis, a concept development, identification of a bundle of measures and a plan of implementation of the suggested measures. A key feature of the plans is the spatial allocation of planning objectives. Additionally, outcomes from the technical plans can be converted to formal resolution, as in land-use planning (TUM 2011). The plans provide a basis for levelling their competitive disadvantages of sustainable businesses, for example, by sourcing and public tender processes.

Consumer demand articulation

Consumer preferences are not consistently in favor of sustainable goods and services. To date, only certain customer groups demand sustainable products and services, also partly due to their higher willingness-to-pay (Stumpf et al. 2017). However, they play an important role in developing a sustainable economy. For example, food businesses include additional environmental and social benefits at the core of their value proposition to attract additional customer segments (Schaltegger et al. 2016). By external communication of such sustainability benefits, business can achieve reputational effects. Lüdeke-Freund (2014, p. 311) showed that such effects were "the most important driver but also the most complex and hard to manage one". To address this, Ruppert-Winkel et al. (2017) presented possible ways to communicate social and ecological measures. Among these are brands, sustainability reports, and the use of social media. Internal communication is similarly important: companies operating with sustainable business models need to reinforce the incorporated values and norms. The employees need to recognize the business model and reinforce its authenticity (see also Süßbauer et al. 2019, in this issue).

Another information tool is the *CGBS*. The reporting strengthens a company's credibility and, consequently, influences consumer preferences. The *CGBS* is even seen as the "Mercedes of balance sheets", as an interviewee puts it (Mischkowski et al. 2018, p. 127). Common good oriented companies consider the reporting as a "kind of stakeholder dialogue" (Stumpf 2018) that enables consumers to engage in the companies' activities. In addition, the *CGBS* is a means of internal communication, showing pos- >

itive effects on acquisition and retention of employees through participation in organizational governance and enhancing clarity about values (Mischkowski et al. 2018).

Conclusions

Innovations for sustainability often emerge in small-scale niches. To become mainstream, it is called for appropriate framework conditions provided by governments: by economic incentives, removal of subsidies, or regulation of market access, etc. However, the state is limited in its capacities to provide a comprehensive and consistent framework for a transformation to sustainability. The analysis demonstrates that not only technological and social innovations, but also institutional innovations for the scaling up of sustainable innovations are provided from the bottom up. Non-state actors provide coordination of innovation systems by establishing networks or market mechanisms. They support the articulation of demand by tools for supply chain management and reporting.

Does this imply bottom-up institutional innovations are superior to governmental institutions? For example, someone may argue that small and regional networks of food suppliers are based on mutual trust and reciprocity. This may have limitations as innovation systems grow out of their niches and become more complex. It would be open to discussion if a sustainable economy is necessarily regionalized (as it is argued for food, energy or mobility) and thereby such networks would be possible, or if large scale and possibly global supply chains are necessary and possibly other mechanisms for coordination are necessary.

Furthermore, it is questionable if market based institutional innovations are effective and efficient when it comes to a comparison with (potential) governmental instruments with similar functions. Given the large number of tools for supply chain management developed on private initiative, someone could argue a coordination of information management across value chain and certification by a central authority would be more efficient. It may also overcome possible disincentives to share information or to effectively change practices. However, a comparative assessment is hardly possible as there are – so far – few substantive governmental requirements for a sustainable supply chain management.

Furthermore, bottom-up institutional innovation may provide a coordination among actors, but fail to internalize external costs or solve zero-sum conflicts that may arise for example from the phaseout of unsustainable technologies. We do not have examples of bottom-up institutional innovation to provide (access to) infrastructures regardless of their importance for sustainable innovation, most likely because of spillover effects.

As the discussion points to (potential) shortcomings of bottom-up institutions while at the same time governmental policies fail to provide sufficient guidance and a robust framework for a transformation to sustainable development, it could be further explored in how far a meta-governance, that is, a combination of hierarchical, market and network governance could utilize complementarities and overcome failures (Meuleman 2018). In a similar vein, the hybridization of governance, whereby binding rules provide a framework for the self-regulation of markets could be a strategy for a capacity saving governance (Hey et al. 2007). Local communities, in their hybrid role between civil society and governments could serve as a laboratory for such approaches.

We thank the German Federal Ministry for Education and Research (BMBF) for making this article possible. It was developed in the context of the project *NaWiKo* (FKZ 01UT1501C) funded within the *Social-Ecological Research (SOEF)* funding priority of the BMBF and the *SOEF* funding measure *Sustainable Economy*. We also thank the anonymous reviewers for their critical comments and remarks.

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