

This book shows how the most comprehensive societal fault lines of our times are deeply intertwined and confronts us with challenges concerning the security as well as justice of our societies. Increasing wealth inequality, financial crises, ecological crisis, climate change, trade wars, migration issues, and even vulnerabilities to the coronavirus pandemic (related to global dependencies and interconnectedness) can be traced back to two common denominators.

First, the schism between humans and nature and the dominant anthropocentric world view that arose during the Enlightenment era. Second, the capitalist economic logic and in particular the unsustainability of infinite economic growth in a finite world and belief in the infallibility of the free market that arose after the Second World War.

Since the 1970s, many Western countries have too easily subscribed to an economic model that if the market arranges it, then it is better and more efficient. However, this has left us with market-based societies characterized by individualism and self-interest, materialism, privatization, short-termism, and a dogmatic focus on profit and economic growth. The result diminishes social and ecological values and instead prioritizes excessive production, consumption, and depletion of our natural resources and raw materials. This decades-long focus has resulted in loss of biodiversity and key ecosystem functions, as well as environmental degradation, and the depletion of natural resources and raw materials. We now experience first-hand that ecological vulnerability translates into economic and social vulnerability and a complex set of security and justice challenges.

As the scientific evidence mounts, we can conclude with little doubt that humankind has siphoned resources and stressed the ecological balance across planet. We know that loss of key ecosystem functions and biodiversity threatens the well-being of our own species and that effects from global warming and environmental degradation have real consequences for real people and communities in every corner of the world. These ecological crises have struck the very heart of human coexistence and pose serious threats to security and justice for all.

However, this gloomy message need not lead to despair. Human beings still have time to act and are capable of transitioning to more sustainable models of governance and economics. This book proposes new frameworks and approaches, including the concept of Transformative Social-Ecological Innovation (TSEI) and a Natural Social Contract, to help reshape priorities, habits, and decisions for decades to come.

The half-century between 2000 and 2050 will be remembered as a sustainability transition in what has been called the ‘Great Mindshift’ (Göpel 2016) or the next ‘Great Transformation’ (Schellnhuber et al. 2011). The changes and innovations refer to a redirection of civilization that recalls the advent of market economies described by Karl Polanyi in *The Great Transformation* (Polanyi 1944). Following the 2008 global credit crisis, the COVID-19 pandemic in 2020–2021 has once again highlighted painful vulnerabilities of today’s world. In fact, the coronavirus crisis could become the next major tipping point towards a more sustainable, healthy, and just society.

The outline of a Natural Social Contract serves as a counter-proposal to existing social contracts. A Natural Social Contract implies an existential change in the way humankind lives in and interacts with its social and natural environment. To navigate this transformation, we will have to find new ways to inhabit and cultivate our planet and keep it healthy for future generations.

Generally speaking, a Natural Social Contract reserves a central place for core values such as solidarity, togetherness, collective well-being (as being central to group life), democracy, equity, and social and environmental justice. More specifically, a Natural Social Contract stresses the importance of social and environmental stewardship. After all, everyone is part of a social and natural environment, and the environment is part of each of us. It is noteworthy that values such as stewardship and solidarity have a prominent role in all world religions. For instance, many religions and denominations have various degrees of support for environmental stewardship, which is a theological belief that humans are responsible for taking care of the world, including all life (humans, animals, and nature). Another example comes from New Zealand, where the Maori term *Kaitiaki* is used for the concept of ‘Guardianship’, for the sky, the sea, and the land. This concept has been adopted in New Zealand’s legislation, allowing Maori communities to be appointed as guardians for a specific area.

The Natural Social Contract overall seeks to promote a new way of thinking designed to mitigate poverty, inequality, social exclusion, and environmental degradation. A tangible vision could serve as a vehicle to identify and create shared and common values during the process of Transformative Social-Ecological Innovation (TSEI). Agreement on these ethical and normative aspects is important for holding actor coalitions together during a transition process and could be achieved through deliberation on shared beliefs and values, shared discourses, common interests, procedural justice, and options for multiple value creation and mutual gains.

Drawing on economic and institutional design lessons from nature, a Natural Social Contract encourages innovative strategies and tests our institutional and economic models against sustainability benchmarks. Design lessons taught by healthy and mature ecosystems deserve special attention, such as those related to

complex adaptive systems, adaptive capacity and resilience, resource efficiency, circularity, self-organization, and the networked relationship between all organisms. From an economic perspective, Circular Economy and Regenerative Economy provide examples of economic design based on ecology, where nature shows how circularity is usually organized at the lowest possible level. The latter provides an argument for short and local supply chains, for realizing circularity related to water, food, energy, raw materials, and consumer goods. This means much less dependence on international trade, especially trade that is characterized by long, expensive and environmentally harmful logistics and supply chains, and risks related to market fluctuations and climate change impacts. For businesses it will require a fundamental shift from linear to circular business models. Such a transition would make businesses more climate resilient, since climate change poses wide-ranging threats to business operations, including disruption in production capacity and supply chains, increased operational costs, or the inability to do business. The latter could result in loss of jobs. From an institutional perspective, the governance of a social-ecological system requires new ways of dealing with ambivalence, complexity, uncertainty, and distributed power in societal change, such as adaptive, reflexive, and deliberative approaches to governance.

Examples of institutional design based on ecology include adaptive spatial planning in urban and rural areas, polycentric governance of the commons, and the sustainable co-management of natural resources (e.g. fishing grounds, forests, and agricultural land), urban commons (e.g. social housing, urban gardening or direct farmers-consumers-cooperatives) and cultural resources (e.g. sources of information, knowledge, and culture). This will require discussion, for instance, to decide under what circumstances it is possible to shift from private property to common property and user rights for the joint management of agricultural land or urban spaces. We also know from nature that a one-size-fits-all approach is doomed to fail. Resilience is increased by biological diversity as well as institutional diversity. A Natural Social Contract, therefore, should be tuned to the specific features of local geography, ecology, economies, and cultures.

This book explains how Transformative Social-Ecological Innovation (TSEI) plays a central role in the sustainability transition and humankind's quest for a Natural Social Contract. Transformative Social-Ecological Innovation (TSEI) is defined as 'systemic changes in established patterns of action as well as in structure, including formal and informal institutions and economies, that contribute to sustainability, health, and justice in all social-ecological systems' (definition by author). It is about society aspiring to create a sustainable, regenerative, and healthy future. This will require collective action and effective cooperation between multiple parties, multiple sectors, and multiple levels, as well as institutional change and new modes of governance.

At the core of TSEI lies the engagement and participation of government, businesses, academia, civilians, civil society, media, and the environment, in a process of multi-party deliberation, co-creation, collective learning, and evidence-based decision-making, resembling the quintuple helix innovation model. The quintuple helix shows how democracy and the environment need to be integrated

in the wider perspective of the architecture of TSEI and societal transformation more in general.

In a Natural Social Contract, society cannot rely on the market or state alone for solutions to collective problems, nor leave it to individual responsibility. Instead, collective problems need to be resolved with systemic, sustainable, and fair solutions requiring the involvement or strong representation of groups and stakeholders most affected by those problems. Fundamental change must come from within society. In other words, realizing a Natural Social Contract will require a rethink of how society is organized to solve problems at the most appropriate level (the subsidiarity principle) and by new coalitions in horizontal innovation networks.

From an institutional perspective, a societal transformation towards a Natural Social Contract will require new forms of democracy, governance, organization, management, and cooperation. Adaptive, reflexive, and deliberative approaches to governance will be required that focus on addressing ambivalence, complexity, uncertainty, and distributed power in societal change. It will go hand in hand with processes of collective learning in which different parties learn from each other and participate in joint knowledge production, co-creation and systemic co-design in a transdisciplinary approach. Society's capacity to learn is perhaps the most essential property for realizing a societal transformation towards a Natural Social Contract. Proven methods for collective learning and co-creation can help generate mutual trust, develop a shared understanding of problems, resolve conflicts, and find shared solutions that ultimately enable all stakeholders to achieve better results than otherwise attained on their own.

From an economic perspective, the most fundamental systemic change required for realizing a Natural Social Contract is a transition from our current linear economic system (i.e. produce, use and dispose) towards circular and regenerative economies and cultures. The promise of a circular and regenerative economy is to organize circularity, sustainability and social justice at different scales, preferably as an integrated economic and societal task, which involves technological, social, organisational and institutional innovation. In practice this will require a radical change from linear to circular business models characterized by collective and shared value creation. Innovative and hybrid forms of financing, such as revolving energy and sustainability funds, will also support this development. Likewise, the joint management of commons (instead of private ownership) and a sharing economy focused on sharing of access to goods and services could improve efficiency, sustainability, and community values. These would be important systemic changes toward a Natural Social Contract. Furthermore, True Cost Accounting (TCA), by incorporating the hidden social and ecological costs in the price of products and services, will create opportunities to level the playing field between unsustainable, unhealthy, and unfair production and consumption patterns and systems, with more sustainable, healthy, and fair ones. Finally, taxation remains arguably the most effective policy tool for mitigating unsustainable and unhealthy behaviour. Products and services (e.g. carbon tax) along with tax revenues and tax rebates offer positive incentives for sustainable and healthy practices, behaviour, products, and services.

Likewise, taxation is a powerful tool for addressing growing inequality through tax increases on capital and tax decreases on labour.

Based on a literature review I have highlighted key theories and concepts that provide substance to the workings of Transformative Social-Ecological Innovation (TSEI), such as transition studies (4.2), institutional change and the structure-agency debate (3.9), resilience theory and social-ecological systems (3.8), institutional design principles for governing the commons (4.3), design principles from nature (4.4), complex adaptive systems (4.5), adaptive, reflexive, and deliberative approaches to governance, management, and planning (4.6), social learning, policy learning, and transformational learning (4.7), shared value, multiple value creation, and mutual gains approach (4.8), effective cooperation, (4.9), quintuple helix innovation model (3.9), transdisciplinary cooperation, living labs, and citizen science (4.10), and the art of co-creation: approaches, principles, and pitfalls (4.11).

Drawing on the insights from this literature, I argue that studying and advancing Transformative Social-Ecological Innovation (TSEI) should investigate both structure and agency and at decisive moments where both structure and agency intersect (i.e. in series or clusters of closely related action situations). This includes the resulting outputs, outcomes, and impacts. I identify a critical need to focus on the fundamentally political character of Transformative Social-Ecological Innovation and the need for multiple value creation that promotes shared values, mutual gains, and collective well-being among parties in a social-ecological setting.

The TSEI-framework presented in this book helps to diagnose and advance Transformative Social-Ecological Innovation across sectors and disciplines and at different levels of governance. Predecessors of the TSEI-framework have been used successfully in environmental diplomacy and mediation processes in various parts of the world, as well as in advancing transformation processes and institutional change in water management, agriculture, and spatial planning. The TSEI-framework is proposed as an open framework, in the sense that it is open for additional predictors and moderators if they have a documented effect. To this end, it identifies intervention and leverage points and helps formulate sustainable solutions that can include different views as well as changing and competing needs. Overall, the concept of TSEI encourages public officials, business leaders, and the greater public to think more broadly about how society can rethink cooperation to address humankind's greatest challenges.

We now have an opportunity to make better decisions about how to organize our 21st-century society.

The aim of my research group, in collaboration with our partners, is to generate more insights into Transformative Social-Ecological Innovation (TSEI) for a sustainable, healthy, and just society. By doing so, we can together support our common quest for a Natural Social Contract and not simply for the benefit of ourselves but also for our planet and future generations (Fig. 8.1).

Earth, that's us.



Fig. 8.1 “There is no planet B”, by climate protesters (Shutterstock)

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