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# No green deal without a nature-based economy

*A green deal cannot be left to economics and engineering. It requires social innovations and new economic thinking that enable people to make a decent living based on ecological practices.*

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The need for a sustainable transformation of the economy – a green deal – is acknowledged at the highest levels of policy making. The hope is that a green economy will have zero net greenhouse gas emissions and remain within the finite environmental boundaries of the planet. Thereby, the focus is mostly on technical innovations such as renewable energies, increased efficiencies, and recycling. Although a rapid upscaling of these technologies will contribute to tackling the climate crisis in the short-term, we also have to transform our relations with nature in fundamental ways. Regenerative practices and ecological competences must become the norm across economic sectors so that all production and consumption help to restore natural capital.

In this article, we explore how inter- and transdisciplinary perspectives well beyond economics and entrepreneurship are needed to achieve such a turn towards a nature-based economy. While it is now widely acknowledged that the economy must be transformed to become ecologically sustainable (IPBES 2019), the interplay of different leverage points and their relations to other aspects of a societal transformation need to be better understood (Chan et al. 2020). Any economy is embedded in the worldviews, knowledge systems, and social relationships that prevail in a society, and in turn influences society by shaping power relationships among knowledge and value holders and decision-makers. In a prosperous country like Switzer-

land, how can we ensure that many more people will be able to live a decent life based on ecological practices in the coming decades? How can nature-based ways of making a living be fostered through economic instruments and social innovations? This article is meant as a call to sustainability scholars to join forces with ecologists and nature-based practitioners to facilitate a transformation of the economic system.

## Towards a nature-based economy

Transforming our economy into a nature-based one requires that nature-based solutions (NBS) will be widely adopted – from households and companies to governments. The International Union for Conservation of Nature (IUCN) defines NBS as “actions to protect, sustainably manage and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human well-being and biodiversity benefits”<sup>1</sup>. NBS range from storing carbon in soils and forests to agroecological practices. Large-scale implementation of NBS implies a fundamental shift in our relationship with nature from an exploitative to a mutually beneficial one. Such a transition towards a nature-based economy has implications for all aspects of society: new competences are needed and therefore changes in the education system, power relationships between ac-

1 [www.iucn.org/theme/nature-based-solutions/about](http://www.iucn.org/theme/nature-based-solutions/about)  
2 [www.oecdbetterlifeindex.org](http://www.oecdbetterlifeindex.org)



tors will shift, and the economic system and business models must change. Instead of the gross domestic product (GDP) more comprehensive metrics measuring economic development must be implemented that account for social, cultural and ecological capital (e.g. *OECD's Better Life Index*<sup>2</sup>, Stiglitz et al. 2019); thereby acknowledging the manifold dependencies of life quality and prosperity on intact natural capital (Dasgupta 2021). A holistic approach is needed because focusing on monetarization of nature risks to promote new forms of over-exploitation and unequal access to public goods provided by nature.

## Leverage points for a transition to a nature-based economy

There is no single leverage point to enable a transition towards a nature-based economy. Transformation research can help to identify synergies among tools and over-

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come systemic lock-in situations. We discuss in the following some leverage points; and there might be other ones.

### Legal regulations

Legislation must restrict business opportunities that destroy nature (including greenwashing) and establish a fundament for nature-based services and goods; for example, compulsory ecological expertise will create business opportunities from consultancies and education to care-taking and continuous management of ecosystems (e.g., restoration<sup>3</sup> or eco-friendly gardening).

Transforming the legal system to promote a responsible relationship with nature requires at least two changes of perspective. First, all land, not only wilderness areas, must retain ecological qualities. Environmental legislation must protect the interests of wild plants and animals also on intensively used land; whether urbanized or agricultural. Secondly, it is not enough to minimize negative side-effects on nature; activities must maintain and restore ecological qualities. Stewardship for nature has to become a legal obligation. All jobs must adhere to ecological principles.

Centuries of experience fighting for human rights, gender equality, and against racial discrimination show that changing ethical norms is the basis for new legislation. Laws that better account for the rights of nature and non-humans should be the result of inclusive dialogues in society about ecological ethics and environmental justice. As ethical norms are embedded in daily life, they will be fostered when citizens have an opportunity to live closer to nature. Pioneers of ecological innovations in different sectors (e.g., eco-design) can change public perception of what is desirable and feasible. For instance, the growing interest in green cities can trigger a co-dependent change of social attitudes and legal regulations. City dwellers want more nature in their neighborhoods, while urban planners recognize that cities must become greener to foster climate change adaptation, health, and quality of life – which, in turn, may allow new planning and building legislations to be passed, such

as compulsory greening of roofs and facades or protecting urban soils and trees (Kueffer et al. 2020).

### Environmental taxes

Environmental taxes are effective policy instruments to reduce consumption and production of polluting goods and services. However, according to OECD less than 0.1% of total tax revenue in Switzerland is biodiversity-related<sup>4</sup>. Environmental taxes that penalize the destruction of biodiversity must be upscaled. The underlying assumption of regulation through taxes is that any value is in principle replaceable by any other. If a company has enough money to pay for the taxes, it can continue to destroy ecosystems. Taxes must thus be combined with strict legal regulations and embedded in shared ecological ethics.

Returning tax revenues to those that directly benefit the local community through their good practice might increase the acceptance of taxes. For instance, in certain cities landowners pay less taxes for sewage treatment when the capture and rainwater drainage on their land reduces costs for the city's urban water system. Equally, the use of ecosystem services in sectors such as tourism could be made part of local economic decision-making through taxes that punish those that do not contribute to these services and pay those that provide them. If implemented locally, the ones who pay see where the tax money goes and how they profit. Economic decision-making is thereby embedded in social relationships.

At an international level, there is growing recognition that tax evasion by big corporations must be better regulated through international cooperation, which might provide opportunities to use additional tax revenues to revert environmental and social damage of the economy and promote eco-friendly alternatives. Switzerland as a tax haven plays an important role in this unfair redistribution of wealth.

### Re-directing subsidies

Subsidies are an important tool for implementing governmental policy. However, environmentally harmful effects of subsidies, including tax exemptions, are com-

mon. The International Monetary Fund estimated that fossil fuels have been globally subsidized with ca. USD 4.7 trillion in 2019 (ca. 6.3% of the global GDP). The need to abolish or reform perverse subsidies has been recognized internationally – although without much progress (e.g., CBD's *Aichi Target 3*<sup>5</sup>). In Switzerland, biodiversity-harming subsidies amount to at least CHF 40 billion per year (Gubler et al. 2020). Re-directing subsidies has to go hand in hand with inventing and implementing eco-friendly alternatives through transdisciplinary collaborations so that the affected sectors can adapt. Transformations of professional practices depend on anticipatory strategies; for example, by reforming professional training proactively to enable new business models. Indeed, subsidies generate path dependencies and lock-in situations. For instance, decade-long subsidies to intensive agriculture with its dependence on the agrochemical industry and the use of heavy machinery has led to strong interest groups and time delays until amortization of infrastructure is reached. Equally, health benefits of nature are difficult to promote within the current health system that prioritizes high-tech treatment (Kueffer et al. 2020).

### Ecological innovations

A societal transformation towards sustainability depends on three interlinked innovation pillars: technological, social, ecological (Kueffer et al. 2020). Ecological innovations must be promoted alongside technological and social ones through funding of research and development (R&D) as well as social learning. These might be rediscoveries of vernacular techniques and traditional knowledge or novel designs, for example, artificial food ecosystems that integrate insect farming with aquaculture. A nature-based economy will thus require major changes of the disciplinary structure and technology transfer strategies of universities. Currently, much funding goes into research that is directly or indirectly associated with energy- and material-in-

3 [www.decadeonrestoration.org](http://www.decadeonrestoration.org)

4 <https://stats.oecd.org/Index.aspx?DataSetCode=ERTR>

5 [www.cbd.int/aiichi-targets/target/3](http://www.cbd.int/aiichi-targets/target/3)

tensive technologies – with little money remaining for ecology and ecology-based innovation and entrepreneurship. Public funding bodies such as the Swiss Innovation Agency (Innosuisse) still emphasize promotion of short-term economic benefits, with no explicit interest in an ecological economy. Transformation of our knowledge production and economic innovation system is the trigger that is closest to academics that are among the loudest voices calling for societal change.

#### Financial markets and biodiversity

To achieve legally-binding nature conservation goals, it will take multiple times the current government spending, both globally and in Switzerland (CBD 2020, Mar-

Switzerland – innovation-based entrepreneurship in a mountain landscape – to continue in the 21<sup>st</sup> century.

#### New economic paradigms

Nature and her/his use do not follow the rules of classical economics: efficiency, standardization, division of labor, primacy of capital over labor, and growth (Kueffer 2020). Rather, manifold locally rooted business models are needed that are resilient, internalize social and ecological side-effects, and are characterized by multifunctionality instead of optimized monofunctionality. The carrying capacity of ecosystems sets limits to growth. Nature-based jobs are labor-intensive and, like care jobs, require experience-based competences and

social capital. This will require fundamental shifts not only in the way our economic system is organized but also in the competences, worldviews, and social relationships that prevail in society. A green deal cannot be left to economics and engineering. It will require interdisciplinary research that builds on systems thinking and enables conversations between economics and the social and cultural sciences, design and arts, and ecology, as well as transdisciplinary approaches that work with stakeholders in specific professions and local contexts to make transitions acceptable, just and effective. This is the kind of research that saguf promotes, and economics will have to be fully engaged as an integral part of sustainability science.

## Buying less does not have to end in collapse of the economic system if we use freed money to support nature-based jobs that restore rather than destroy ecological and social capital.

tin et al. 2017). However, these costs are affordable in comparison to the costs to bail out financial companies in the 2008 economic crisis. Now is the time to bail out nature. At last there is growing recognition of the huge costs resulting from the degradation of ecosystems<sup>6</sup>; including enormous systemic economic risks which increase every day with the continuation of business-as-usual. Conservation finance is seen as an economic opportunity<sup>7</sup>, and investments in nature can also have positive social effects. Currently, many nature-based jobs are poorly paid and marginalized (e.g., poorly educated workers without permanent employment in agriculture). In Switzerland, investments in nature-based jobs may have a broad range of positive side-effects including strengthening local markets, better balancing the economic productivity of urban versus rural areas, and enabling positive side-effects of healthy nature on key economic sectors. In short, a nature-based economy might be the only hope for the success story of

virtues such as humility or responsibility. Thus, a move towards a nature-based economy cannot be discussed independently of debates about changing economic paradigms: circular economy of natural materials, qualitative instead of quantitative growth, degrowth, strengthening of local economies, the value of informal and unpaid work, care economy, or tools such as a universal basic income. There will be many co-benefits: nature-based jobs can be more fulfilling than many well-paying jobs with little societal value, and, if well done, a transition towards a nature-based economy will reduce inequalities and increase diversity and inclusion.

#### Conclusions

Almost a century ago Albert Schweitzer warned against the destructive effects of obsessional work and consumerism. Buying less does not have to end in collapse of the economic system if we use freed money to support nature-based jobs that restore rather than destroy ecological and

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