

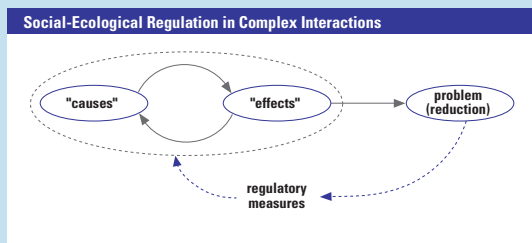
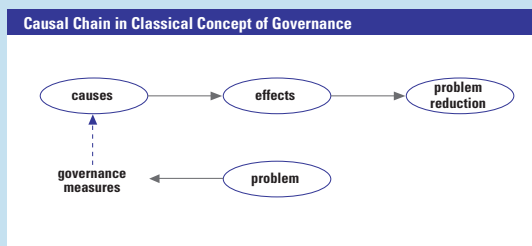
Social-Ecological Regulation

Social-Ecological Regulation – A Transdisciplinary Concept

Social-ecological contexts are mostly characterized by complex and dynamic interactions where causes and effects are no longer clearly distinguishable from each other. So conventional regulations based on classical notions of governance may fail. They propose a strict cause-and-effect-chain and seek to find problem solutions by interventions in that chain. This can be efficient and effective as long as problems can be assigned to distinct causes and as long as no much flexibility is required due to dynamic surroundings. Limitations of the conventional governance concept are in particular the lacking consideration of feedbacks and adaptivity. Against this background, the concept of social-ecological regulation was developed:

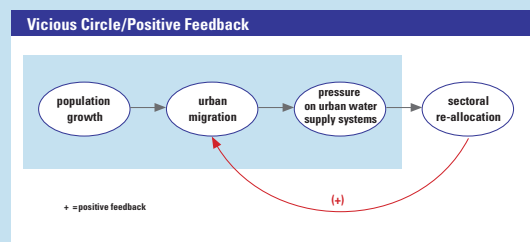
- Nature and society are described as a complex entanglement of relations, in which causes and effects – as in the cybernetic concept of circular causality – are linked by feedback loops. Thus, social-ecological regulation concentrates in particular on how effects in turn affect primary causes and initial conditions. Under these terms, informational and material aspects of positive and negative feedbacks are considered.

- The involvement of different actors and stakeholders is strengthened and adaptation within processes is emphasized: The regulating entity perceives the effects of its actions (feedback) and considers them for further, eventually modified measures and the adaptation of altering target states. Thus, social-ecological regulations are turning into adaptive and iterative learning processes.



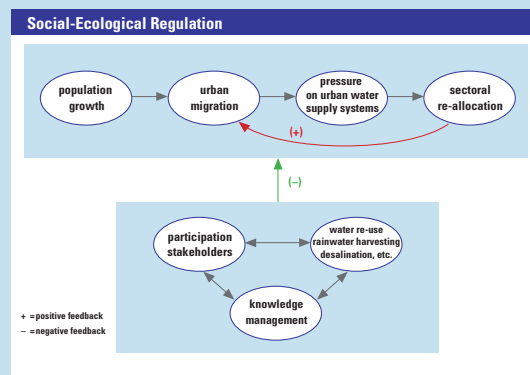
Example: Population Dynamics and Water Supply in Arid Regions

The meaning of the concept will be demonstrated by the example of Jordan, which is one of the world's most water scarce countries with a considerable population growth. The current population of 5 million inhabitants is expected to double by 2050. The country experienced rapid urbanization: 79 percent of the population is living in urban areas, more than 2 million of them in Amman. Under conditions of growing numbers of urban dwellers the water supply systems are more and more under pressure. One strategy of dealing with water scarcity and growing demand is the re-allocation of water from the irrigated agriculture sector towards other sectors, in particular domestic consumption. However, this transfer strategy might cause a vicious circle (positive feedback-loops): it may intensify the decline of rural areas, increase poverty of peasant farmers and thus might put even more pressure on urban regions due to an increase of migration.



Social-ecological regulation in this example could mean integrating alleviative (negative) feedbacks and a stronger incorporation of multiple stakeholders as an antipole in order to mitigate the vicious circle. Strategies for the dilution of water conflicts imply new forms of resource utilization such as the reuse of water, rainwater harvesting or indigenous forms of water gathering (e.g. cisterns), desalination plants, the introduction of water conserving strategies in household technology etc.

Not only technical and economic structures, but also the social and cultural factors have to be taken into account. One of the most important aspect is the participation of relevant stakeholders in decision-making processes. Referring to this, not only the inter-sectoral level (e.g. agriculture/domestic water sector), but also the intrasectoral and inter-group level (e.g. urban/rural dwellers; small farmers/big landlords etc.) must be considered in regulation.



Outlook

Social-ecological regulation can be regarded both as an analytical concept for a better understanding of complex interactions within societal relations to mature as well as a concept for the development and implementation of appropriate actions. ‚Hard‘ factors are connected with ‚soft‘ factors such as socio-economic, cultural and historical conditions both in the valuation and implementation of measures. Participation of different stakeholders implies the recognition of different interests, knowledge and problem perceptions. By this, former ‚objects of control‘ turn into subjects in the regulation process and thus a better acceptance for regulation measures can be achieved. In sum, social-ecological regulation opens up new approaches to system- and transformation knowledge.

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