Socio-Ecological Conditions of Nature-Based Solutions: Learning From Estonian History

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Background and objectives

History is a great teacher also of Nature-Based Solutions (NBS). Their potential and their limits can be better understood based on earlier experiences. Along with ecological factors, social conditions are central. In Estonia, the development of NBS is shaped by the past interactions of Baltic German elites, peasant populations and Russian overlords1-3.

Methods and Materials

The nature-based largely circular economy of a manor near Viljandi in SW Estonia during the long 19th Century (c. 1760 to 1920) is my case. I retrieved materials from literature, especially Hein (2013).4

Results

The NBS in this manor included e.g. the following (Fig. 1)

- forest management for sawmill timber and firewood production;
- corn and potato distillation to vodka, and tobacco cultivation;
- rearing of merino sheep, imported cattle and fish in ponds;
- utilization of horses along with manual labor for physical work;
- mixed harvesting of forage plants (also innovative use of alfalfa);
- use of springs for drinking water and lake ice for refrigeration;
- local production of textiles, leather and iron goods;
- construction of extensive gardens and parks;
- combined utilization, admiration, study and arts of nature.

The physical processes of the agroforestry system were natural but shaped my man. The system boundaries were confined to the manor, but affected by regional markets.4 Some sustainability was achieved e.g. by famine preparedness and loss insurance systems5.

Importantly, this circular economy was based on physical labor of peasants, whose conditions were harsh though gradually improved. Peasant rights were not always respected and decisions were made and profits reaped mainly by land-owning nobility.1,3 Knowledge, culture and technology played a big role along with political economy.

After the chaos of revolutions and wars, during in 1st independence the manor was turned to public dairy technology school, to be continued inefficiently under Soviet rule.

Discussion and conclusions: Substance and methodology

Also in traditional agroforestry-animal husbandry fueled by renewable energy, by increasing information and by social norms, NBS were used in many ways, even innovative and integrated. Yet, social and more genuine sustainability was limited by lacking equality and cohesion.

NBS alleviated some of these problems, but decisive constraints on its success in the socio-ecological system were political. This was clear as serfdom shifted by enlightenment, nationalism and socialist struggles8 to emancipation and state-building from local and Czarist dominance. Adaptation to modernity in these interactions was a key factor (Fig. 2). If losing sight of these broader contexts also future NBS may go astray.

Solutions to societal challenges are always based also on ‘nature’ in material and immaterial terms. The materiality of nature includes economic and political aspects, and knowledge of nature is fused with that of socio-ecological systems. Humans are also animals, even as beasts of burden. History of nature and society is a crucial guide in this.

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References