Governance responses to tightening environmental requirements for hydropower – Finland, Germany and Sweden

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ABSTRACT: This article analyses how the existing governance systems are reacting, and how they prompt hydropower industry to react on tightening environmental requirements. Particularly, we analyse the incentives for small scale hydropower exits in Finland, Sweden and Germany.

Globally, hydropower provides 17% (4,250 TWh) of the total electricity generated. It is thus a key component of our economic wellbeing. Hydropower, and river damming for other purposes, however, block other economic activities that would depend on free-flowing rivers. These include fishing, white-water sports and other recreational activities. Some of the values hence generated are market-, some are nonmarket-based. Damming of rivers is also one of the main impediments of globally threatened freshwater ecosystems. Many of our economic activities depend directly or indirectly on ecosystem services provision of which depends on biodiversity. Biodiversity loss may thus weaken our economic wellbeing. In the long run, it also poses an existential threat to all human operations.

In addition to economic and ecological pressures, legal framework is of crucial importance for hydropower. The EU Water framework directive and the forthcoming Nature restoration law create pressure for hydropower facilities to undertake costly investments to reconcile hydropower generation with the ecological requirements. As with any industry, there are more and less profitable firms within the industry. In hydropower, profitability is generally worse for small facilities. Tightening requirements may render some of the facilities unprofitable in the long run.

How small facilities may react on increasing costs depends on the governance system. Basically, there are two alternative ways governance system can react on low, and worsening profitability: 1) subsidize small facilities to make them profitable or 2) generate mechanisms that assist them in quitting the operations and exiting the industry. The reaction may be passive: there might be an existing subsidy program that helps the least profitable, small facilities remain in business. There might also be additional subsidies to compensate for the costs of ecological mitigation measures such as fish passages. If such a governance structure, it will be easy to continue utilizing it. That is, it is plausible to expect that tightening regulations will be met with elevated subsidy levels. Germany offers an example of such a governance structure. There are subsidies for small scale hydro, with elevated payments if environmental measures are taken.

Finland and Sweden have governance structures that have a new inbuilt exit mechanism for small scale hydro. The incentives in Swedish program are designed by the industry, and in the Finnish program by government. We discuss the economic logic of these three governance systems, compare their information characteristics, and discuss their potential welfare implications.