

## Icelandic Energy Regimes

### Fossil Fuels, Renewables and the Path to Sustainability, 1940–1990

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During 1940–1990, Iceland's energy supply system gradually changed from previously depending on foreign fossil fuels (~85 % of primary energy in 1940) to being based on domestic hydro- and geothermal power. These changes laid the foundations for Iceland's unique energy system, which has an unmatched share of renewables (~85% today) but also one of the highest rates of per-capita consumption in the world. The case of Iceland is an historical example of a transition away from fossil fuels like many other countries aim to achieve in the coming decades. I therefore ask how the Icelandic turn to renewables can be explained and what conclusions can be drawn for future transitions. In doing so, I seek to examine the historical changes as more than mere transitions from one energy carrier to another. Drawing from environmental history, Actor-Network-Theory and Transition Research, I approach energy as an inextricable part of a system that connects society (users of energy), technology (the means to use energy) and natural environments (sources of energy). When such complex energy systems have become established, they assume *regime* character and remain relatively resistant to change. The key to understanding energy transitions is to examine not only the emergence and stabilisation of a new regime, but also the destabilisation of the existing regime(s). Building on archival records, published primary sources and the extensive secondary literature, I analyse the most important steps on Iceland's "Path to Sustainability" as six phases of energy regime change: (1) electrification based on hydropower and oil generators, (2) the transition from coal to geothermal and oil heating, (3) the transition from steam to combustion engines, (4) the systematic elimination of oil heating in the 1970s, (5) the expansion of electricity production to facilitate energy-intensive industries, and (6) the rise of geothermal power production. The hypothesis under examination is that the Icelandic turn to renewables was not predetermined or inevitable, but the result of an accumulation of regime stabilisation and destabilisation processes. The Icelandic "Path to Sustainability" was not straight forward, but filled with detours and obstacles.



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