

ability to weave these multiple narratives together at each site, creating a book that is informative, enlightening, light-hearted at some places, and depressingly honest at others. While it might not be the most scholarly text available, the book does provide many interesting stories and reflections on the importance of the Arctic to the world today.

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**DROWNING REINDEER, DROWNING HOMES: INDIGENOUS SÁMI AND HYDROELECTRICITY DEVELOPMENT IN SOMPIO, FINLAND.** By KAISU MUSTONEN and TERO MUSTONEN, in cooperation with ANTTI and PEKKA AIKIO. Vaasa, Finland: Snowchange Cooperative, 2010. ISBN 978-952-92-8343-9. 115 p., maps, b&w and colour illus., references. Available from [tero.mustonen@snowchange.org](mailto:tero.mustonen@snowchange.org). US\$20.00 + shipping.

The main goal of this book is to make the international public aware of the history of hydroelectric power construction in northern Finland and its dramatic consequences for local communities. The authors document the social, cultural, and environmental impacts on local people of construction of the Lokka and Porttipahta reservoirs, the two largest reservoirs in Europe. Since the 14th century, the community in the area has included first the Forest Sámi, then the arriving Finnish settlers, who mixed with the Forest Sámi, and in the 1880s, the arriving North Sámi. More Finns have moved into the villages of the community since the Second World War.

A focal theme of the book is the River Kemijoki, the biggest river in Finland, which has been harnessed for hydroelectric power since 1948. During the Second World War, Finland lost much of its hydropower capacity to the Soviet Union. Very quickly national interests were directed towards the natural resources of northern Finland. The standard of living was rising after the war, and the forest industry played an important role in this development. The state had taken over the task of securing the energy supply. By the late 1960s, the construction of dams and the electric industry had reached the headwaters of the river. The cover photo of this book very distinctively describes the last “timberjack” logger in the area just before it was flooded.

This book has four main parts. Part 1, “One River, Many Damages,” was written by Tero and Kaisu Mustonen. Both are human geographers who have worked with northern communities in the North American Arctic, Iceland, Sámi areas, and Siberia. To describe the main events during the construction of the Lokka and Porttipahta reservoirs in northern Finland and the situation in the region, the authors

use Western scientific assessments, indigenous and local oral histories, and literature that is relevant to the themes at hand. The chapter first explores the histories, culture, and major biogeographical features of the region. Juridical and power-related issues are named as key factors in the process of constructing the reservoirs in the 1960–70s. Finally, it discusses recent concerns in the area related to other global changes, such as weather and climate change, and the arrival of new species.

Part 2, “When Electricity was Sown,” was written by Pekka Aikio (MSc, Doctor honoris causa), a reindeer herder and longtime leader of the Sámi of Finland who comes from the reindeer herding community affected by the reservoirs. The chapter begins with an earlier, previously unpublished story by Pekka’s father, the late Sámi leader and reindeer herder Oula Aikio, who kept a diary in the 1960s. His entries include observations of weather and ecosystem changes and reindeer herding events during the time when the community was under pressure from hydroelectric development. These diary entries are no doubt one of the most haunting parts of this book. Oula Aikio (p. 75) shares with readers the views from inside the community as the hydroelectric plans developed and as the situation worsened in the community:

12th February 1967. I listen to the Greek Catholic Church service from the radio and it sounds beautiful. It seems to me that the Government of Finland tends to empty the entire Northern Finland of its old regular inhabitants. Our reindeer are starving and dying. Our best winter pastures on the shores of the big rivers have been spoiled with clear cuttings and soil preparations. They also destroyed the areas by spraying herbicides on deciduous forests and all this was carried out prior to the man-made lake construction. We have no possibility to herd reindeer in an old traditional way. The reindeer have been left on their own. Maybe the Finnish society and authorities again one day [will] realize what mistakes and injustice they have done to us and the damage it has caused to us. The society will however never again be able to save the reindeer herding in Lapin paliskunta [reindeer herding co-operative].

Pekka Aikio concludes his chapter by showing how the Finnish state completely ignored the existence of nomadic Sámi and their reindeer herding. In this hydroelectric development project led by institutions, only technical and economic issues were considered, and local people were neither heard nor taken into account in the planning and implementation.

Similar problems related to questions of indigenous rights and hydroelectric developments have arisen in other circumpolar societies as well. Many of these examples demonstrate how hydroelectric power constructions are planned at the periphery of the Arctic regions, where most of the impacts remain, while the profits are taken by the more populated regions in the south. The authors use

Berger (1977) as a successful example of community-based hearings. In the 1970s, the Canadian government initiated a plan to construct a gas pipeline along the Mackenzie Valley and river in the Northwest Territories. The local Inuvialuit and First Nations voiced their opposition to this process. The government responded by initiating a Royal Commission headed by Justice Thomas Berger (1977) to look into the matter. Berger and his colleagues went into the indigenous communities to listen to what the people had to say in their own terms. Berger recommended the government halt pipeline construction until the grievances of the indigenous peoples were heard. The result of the process was that the government of Canada followed the advice of the Berger inquiry, and the project had to be abandoned. Almost 40 years later, however, after much negotiation with the local residents affected, it is being reconsidered.

What would then be the next step after gaining international attention for the questions of Lokka and Porttipahta reservoirs in northern Finland? In Part III, Antti Aikio, a Sámi scholar at the University of Lapland in Finland, focuses on the legal issue of the Arctic indigenous peoples. He explores the legal processes bringing the Sámi customary law slowly onto an equal footing with the legal framework of the statutory law. In Part IV, written by Pekka Aikio and Tero Mustonen, the conclusions, solutions, and models are offered as next steps to start the long and difficult process of healing and decolonization. The measures suggested here include revisiting all relevant issues and reassessing their impact on the Sámi region, including assessment of further compensation. According to the authors, this process should include recognition of the conflict of interests between the Sámi and the state over land and water ownership, indigenous rights, and governance of the Finnish part of Sámi lands. The further measures would include a state apology regarding the cultural genocide and colonial acts perpetrated against the Sámi in Finland. Following the model of Berger et al. (1977), a full community-based hearing and documentation process regarding the construction of the reservoirs should be initiated and then widened further to address the whole Sámi situation in Finland.

A virtue of this book is that, in addition to republishing interviews with local inhabitants, it includes earlier unpublished material, such as information collected during the last decade in connection with the Arctic Climate Impact Assessment (ACIA; Huntington and Fox, 2005) and unique diary entries of Oula Aikio. Proper description of research methods and more specialized information about the informants would have been valuable knowledge for readers of this book, however. The book is published under the auspices of the United Nations Association of Finland through the "Global Citizens Platform" with Snowchange Cooperative and the local Sámi of Vuotso. Snowchange Cooperative is an independent nonprofit research and cultural organization that was started in 2000 to document and work with local and indigenous communities.

The authors have written a multidisciplinary, review-type book about the catastrophic effects of hydroelectric

development on subsistence economies such as reindeer herding, on languages, and on the traditional, age-old culture of local and indigenous communities in the North. The authors write that their aim is not to provide an extensive review of publications, but to highlight the main events in the region. They use purposefully forceful expressions and repetition as means to get readers to understand the price that local and indigenous communities and northern nature have paid for modernity. In my opinion, the authors have succeeded in doing this. The message of the book is clear. Although a bit repetitive and discursive, the book is a readable case study about the destructive effects of hydroelectric development on local communities for university students and researchers, particularly those in human geography, environmental ecology, and environmental and minority law. It is also good background reading for authorities and companies dealing with the use of land and natural resources. And it provides a good basis for discussion among those interested in issues related to global change, indigenous peoples, power relations, and participatory planning, not only in the Arctic, but elsewhere.

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GLOSSARY OF GLACIER MASS BALANCE AND RELATED TERMS. Prepared by the WORKING GROUP ON MASS-BALANCE TERMINOLOGY AND METHODS OF THE INTERNATIONAL ASSOCIATION OF CRYOSPHERIC SCIENCES (IASC). Paris: UNESCO, 2011. IHP-V11 Technical Documents in Hydrology No. 86, IACS Contribution No. 2. Available online at <http://unesdoc.unesco.org/images/0019/001925/192525E.pdf>. 114 p., colour and b&w illus., appendices, bib., index. Softbound.

People have been interested in glaciers and their behavior for centuries. They have been measuring and observing changes in glacier mass for not much more than a hundred years.

Glacier mass balance, the focus of this glossary, is a measure of the change of mass of a glacier. It is measured and calculated from a strange collection of measurements and observations of mass inputs and outputs on the glacier,