

LIVING WITH ENVIRONMENTAL CHANGE – WATERWORLDS. Kirsten Hastrup and Cecilie Rubow (editors). 2014. London & New York: Routledge. xv + 301 p, illustrated, hardcover. ISBN 978-0-415-74667-0. \$45.00

There are books which are highly addictive and which one just cannot stop reading. In some cases this is because of the suspense in the story, in other cases it is the wealth of information. In some rare cases both are combined. And Hastrup's and Rubow's work belongs to this category of books.

Based on a research project entitled *Waterworlds* at the University of Copenhagen that was launched in 2009, *Living with environmental change – Waterworlds* is some kind of a rough overview of the project which deals with the different methods and social systems that interact with water or the lack thereof, as rain, in rivers, in the seas or as ice, in light of global climate change. The outcome of this endeavour is a gripping account of in situ observations of the effects of climate change beyond the science-based models or predictions. Subdivided into four parts, *Water*, *Technology*, *Landscape*, and *Time*, 13 experts have contributed 65 very short, but highly informative, semi-scientific essays or case studies on these 'waterworlds' from directly water-dependent areas: the Sahel, the Pacific islands, the Andes, the Indian subcontinent and the Arctic. To further deepen the clarity of the case studies, the essays are supported by a wealth of photographs. And I cannot stop reading.

Although my expertise and elevated interest lie with the Arctic region, it is not the examples from Greenland, as the Arctic representative in *Waterworlds*, that fascinated me the most. No, not at all. Because the contributions form a comprehensive whole that show also the similarities and interdependency of water-dependent communities in the Arctic and, for example, in the Pacific. In the brief chapter *Fixed and fluid waters – mirroring the Arctic and the Pacific* as the final reflection of the *Water*-part of the book, Hastrup and Robertson establish a fascinating link between water issues, in this case water shortage, in areas which are surrounded by water, exemplified by the Greenlandic community of Qaanaaq and the island of Tarawa in the atoll nation of Kiribati in the Pacific. In Tarawa, a ground water lens is the main supply of fresh water for the islanders. But due to pollution, overuse and rising sea levels this water is increasingly difficult to access causing water shortage issues. Similarly, Qaanaaq is drying out, because the glacier as the main water supply has receded drastically and a nearby stream is drying out. In order to counter water shortage, water tanks have been built in which iceberg parts are made available by the local authorities. The chapter clearly shows how interlinked these worlds apart are: with an increasingly melting Greenlandic ice sheet both communities increasingly face freshwater concerns. One because it loses access to its main water source, the glacier, the other because rising sea levels contaminate its main water supply.

With changes in the environment come changes in *Technology* as the title of the second part of the book is entitled. While some are deliberately taken to specific areas after change has taken place, such as life jackets to a tsunami-ridden village in southern India by an NGO, others occur over time as an adaptation method to extreme environments: tractor-tubes as

a means for water supply for cattle in Senegal, the role of sprinklers in the local irrigation systems in Peru, cheap, waste-based water pumps in Kiribati or the Greenlandic dog sled stand exemplary for this. And once again the editors mirror rather unlikely areas *Water technologies – mirroring great expectations in Greenland and Ghana*. In this case the Greenlandic plans for constructing a hydro-powered aluminium smelter in Maniitsoq is compared with tree-planting programs in northern Ghana in order to combat climate change. Both are regarded as 'golden solutions to big problems' (page 150) but present themselves as being part of a complex web of socio-ecological contexts. While briefly touching upon it, a narrative spanning through the chapters in *Technology* is the dependency of moral constructs on available technologies. Given the rather descriptive and only brief analyses the chapters in *Waterworlds* conduct an elaboration on this does not occur. Here, the 'Further reading' section at the end of the book is helpful and may enable the reader to further delve into the raised issues.

The second half of the book engages more in a discussion on how waterworld societies perceive their surroundings. Starting off with part III, in *Landscapes* different parameters of change, both climate change-induced or through direct human intervention, are introduced while the knowledge on the socialized landscapes, that is the environment in which the human being operates, constitutes the core of this third part. This part therefore delves into the more abstract elements of water-reliant societies both with regard to the normative role of a landscape and the traditional knowledge attached to it. Many issues are touched upon here which are too numerous to summarize. Suffice it to say that the reader gets a brief, but highly informative insight into the integral role of different 'landscapes' in the social structure of a village or a region. For example, the knowledge on wayfaring in the utmost north of Greenland which is dependent on the ability to interpret icy environments is subject to significant changes with melting sea ice. Once again, mirroring two distant regions, in this case a valley in northern Burkina Faso and the Peruvian city of Arequipa, shows how landscapes and change thereof impacts social structures as well as the sense of identity.

Identity and social practices are closely linked to the rhythms of the environment. The last part of this fantastic journey, *Time*, in essence summarizes the different elements presented in all the chapters and places them in a geographically temporal context. While with three short chapters rather general observations on the changes of all patterns of social life related to environmental change are presented for Greenland, the Peruvian Andes and the Sahel, the second half of this last part deals with more concrete examples on the difficulty of matching local understandings of time with responses to environmental change. For example, how can the fear of the Cook Islands to be uninhabitable by 2050 be brought in unison with the locally used 13-month lunar *Arapo* calendar? Time, in other words, is a distinctly cultural term and individually and socially perceived. Indeed, for the Fulani in northern Burkina Faso it is 'climatic conditions and not the solar or lunar movements [that] determine the annual calendar cycle' (page 269). The mirroring of different regions here appears in the form of the Pacific Cook Islands and Peru where Christianity as the dominant religion prevails. A hybrid of religiously connoted end-of-time attitudes together with a rather secular environmental ethic that aims at being able to provide for oneself and the generations

to come links these two regions. Indeed, *Waterworlds* ends with a sentence which summarizes the entire book very nicely: 'Climate change is framed by particular temporalities; events are connected differently, and different possible futures come into being. How one interprets the past, engages the present and imagines the future are all intimately linked' (page 285).

With this sentence this excellent book ends. After having closed this book I am still baffled by the wealth of information it provided with such little text, compared to other 'scientifically' written books. One of the great assets of *Living with environmental change - Waterworlds* is that it does not engage too broadly in a wider geographical or epistemic framework, but instead focuses on several very distinct areas and places. After having read the book it seems one has gotten to know the main

characteristics of Arequipa in Peru, Maniitsoq in Greenland or Biida-2 in Burkina Faso as the chapters frequently return to these places. One has gotten to know the people, predominant narratives and lifestyles there. Supported by its colourful and personal presentation, both in text and appearance, this a great contribution to easily accessible knowledge and therefore makes it a highly valuable read for all audiences. It opens avenues for further enquiry and calls for further contributions of this type on local and regional life with environmental change. I would sincerely hope that the publishers were to offer the book in an open-access fashion in order to make it widely accessible. (Nikolas Sellheim, Faculty of Law, University of Lapland, PO Box 122, 96101 Rovaniemi, Finland (nikolas.sellheim@ulapland.fi))