

C

Carboni

Eva Lövbrandⁱⁱ and Johannes Strippleⁱⁱⁱ

On a windy February day at the Hyltemossa research station in southern Sweden, two research engineers are walking through long rows of spruce trees. They check the temperature sensors that are strapped to the tree trunks and collect the needles that quietly fall into large cotton baskets placed at the forest floor. At the end of the forest pathway a 150-meter-high flux tower extends to the sky. At the top of the tower a high-precision eddy covariance sensor offers hourly measurements of the carbon dioxide exchanged between the forest ecosystem and lower atmosphere. The Hyltemossa research station is not easy to find on the tourist map. The flux tower and the station buildings are well-hidden in a remote production forest owned and managed by the private company Gustavsborg. Nonetheless, the data produced at Hyltemossa is of highest political significance. As one of 26 European flux stations included in the Integrated Carbon Observing System (ICOS), this small and quiet research site is actively involved in the production and monitoring of the European carbon budget. As such it feeds into the imaginative geographies of climate politics and governance.



Figure 1. Cotton baskets, Hyltemossa (Image: Eva Lövbrand)

Ever since 1958 when George Keeling initiated his famous measurements of atmospheric carbon dioxide at the Hawaiian volcano Mauna Loa, carbon has been the matrix that renders climate change visible, knowable and governable. The iconic Keeling curve of rising carbon dioxide levels in the atmosphere has given political meaning to numbers such as 350 ppm (parts per million), and linked fossil fuel burning to a rising global temperature. The carbon concentrations recorded at Mauna Loa now extend well beyond 400 ppm and remind us of the profound and dangerous effects of fossil-fueled modernity. Dying glaciers, thawing permafrost, irreversible species loss and ravaging wildfires are all dark signatures of a warming world that links peoples and environments in complex and troubling ways.¹ As global mean warming approaches 1.5 degrees C, carbon-intensive ways of life are casting long shadows over distant lands and altering living conditions in the Arctic regions, in the deserts of Africa, in the Amazon rainforest, and in the deep seas of the Pacific Ocean.² Faced with accelerating patterns of climate harm, responsible citizen-consumers are today invited to keep track of their carbon footprints and hereby join forces with states, businesses and cities in the transition to the low carbon society.



Figure 2. Flux tower, Hyltemossa (Image: Eva Lövbrand)

Carbon accounting is a powerful dispositional practice that helps to problematize, shape and order conduct within a shrinking climate space. By measuring, recording and comparing the climate impact of consumer goods, dietary preferences and transportation patterns, carbon

¹ IPCC, *Global Warming at 1.5 Degrees C, IPCC Special Report*.

² Dauvergne, *The Shadows of Consumption. Consequences for the Global Environment*.

accounting techniques make visible the unintended consequences of every-day life and hereby link the individual to the collective, the local to the global, the present to unforeseeable futures. However, carbon accounting is also a formidable tool of environmental distancing and displacement. The power to translate discrete human activities into standardized carbon units – 1 tonne of CO₂ equivalents – has been central to the commodification of climate change and the spread of carbon trading and offsetting schemes. In the carbon marketplace there are few visible links between those who generate climate risks, those who have the expertise to understand them, those who suffer the consequences, and those who are institutionally charged to take responsibility for them.³ By erasing the demarcation between cause and effect, space and place, the haves and have-nots, carbon markets intensify the troubling disassociation between people and environments in a globalized economy.

“Think of yourself as the planet”, says science-fiction author Kim Stanley Robinson in a prologue-film for the exhibition “After the end of the world” at the Barcelona Centre of Contemporary Culture (2017-18). In the film Robinson invites us to imagine carbon as the foundation of all life on earth, from our proteins and DNA, to the food we eat and the energy fueling our economies. Atoms of carbon travel from the atmosphere to the earth and back again. It is a closed cycle. “Feel yourself as a forest, wind blowing through your leaves. Breathing in the world fuels you. Breathing out you fuel the world”. Robinson’s voiceover to moving images of oceans and forests reminds us that our everyday lives are intrinsically interwoven with the rhythms of the biosphere. The breakfasts we eat and the energy that lights the lamp beside our beds form part of the continuous exchange of carbon between the earth’s sediments, rocks, forests, oceans and atmosphere. This breathing of the planet is also strikingly visible in the zigzag shape of the Keeling curve. Carbon dioxide levels drop during the spring and summer in the northern hemisphere as large forests take carbon out of the atmosphere to grow. In the winter, when plants die off and decay, carbon is released back to the atmosphere. It is the precise details of this exchange that keep the two research engineers at the Hyltemossa research station busy.

How we imagine and act upon the findings of carbon infrastructures such as ICOS is not given. In Saci Lloyds novel ‘The Carbon Diaries 2015’ the UK introduces carbon rationing through a system of personal carbon allowances. The protagonist’s life is put under pressure to not overspend her family’s allocation, and the government only allows for limited carbon offsetting. In the history of climate politics, similar carbon rationing systems have been directed to countries (the Kyoto Protocol) and high-emitting industries (e.g. the EU Emissions Trading System). While the latter have been informed by neoliberal economic rationality and thus translated carbon into a tradable currency, carbon accounting can also be mobilized for other political ends. *The carbon budget* is a figure currently used by young climate activists in the mobilization for a rapid response to the unfolding climate emergency. The concept refers to the amount of fossil carbon that can still be emitted into the atmosphere before global mean warming exceeds 1.5 C or 2 C. While the quantification of the remaining carbon budget is debated in scientific circles,⁴ the budget metaphor has become an important political tool for movements such as Fridays for Future. In her address to the French parliament on 23 July 2019, Greta Thunberg reminded political leaders that the

³ Christoff and Eckersley, *Globalization and the Environment*, 13.

⁴ Rogel, et al., “Estimating and tracking the remaining carbon budget for stringent climate targets.”

carbon budget will be gone in 8.5 years if global emissions of carbon dioxide remain at current levels.⁵ The figure of the budget elegantly translates the accumulation of atmospheric carbon into time – urgency – and offers a self-imposed limit on carbon-intensive ways of life. It works like an ATM machine that declines withdrawals that exceed the allowable amount, despite resources available on the account (burning all fossil fuel reserves would make the earth uninhabitable). The decision made by the machine is not a technical one, but ethical and about responsibility. “Sorry, your withdrawal is declined”.

References

- Christoff, Peter. and Robyn Eckersley. *Globalization and the Environment*, Lanham, Boulder, New York, Toronto, Plymouth UK: Rowman and Littlefield Publishers Inc, 2013.
- Dauvergne, Peter. *The Shadows of Consumption. Consequences for the Global Environment*. Cambridge MA: the MIT Press, 2008
- Intergovernmental Panel of Climate Change (IPCC). *Global Warming at 1.5 Degrees C, IPCC Special Report*, Geneva: WMO, 2018.
- Lloyd, Saci. *The Carbon Diaries 2015*. Hodder Children’s Books, 2008.
- Robinson, Kim. *Think of yourself as the planet*. Barcelona Centre of Contemporary Culture (2017), accessed on Oct 22, <https://www.cccb.org/en/multimedia/videos/kim-stanley-robinson-think-of-yourself-as-a-planet/227776>
- Rogel, Joeri, Forster, Piers M., Kriegler, Elmar, Smith, Christopher J. and Séférian, Roland “Estimating and tracking the remaining carbon budget for stringent climate targets”, *Nature* 571 (2019): 335-342.
- Thunberg, Greta “Speech to the French Parliament”, FFF webpage, July, 2019. https://www.fridaysforfuture.org/greta-speeches#greta_speech_july23_2019

© 2020 Eva Lövbrand and Johannes Stripple

This work is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/)



ⁱ Lövbrand, Eva. and Stripple, Johannes. “Carbon.” *An A to Z of Shadow Places Concepts* (2020). <https://www.shadowplaces.net/concepts>

ⁱⁱ Eva Lövbrand is Associate Professor of environmental change at Linköping University, Sweden. <eva.lovbrand@liu.se>

ⁱⁱⁱ Johannes Stripple is Associate Professor of political science at Lund University, Sweden. <Johannes.strippl@svet.lu.se>

⁵ Thunberg, “Speech to the French Parliament.”