

CHANGING
THE EUROPEAN DEBATE DAHRENDORF SYMPOSIUM

FOCUS ON CLIMATE CHANGE | 2013

Felix Creutzig et al

**CATCHING TWO EUROPEAN BIRDS
WITH ONE RENEWABLE STONE:
MITIGATING CLIMATE CHANGE,
RELIEVING RECESSION**

Dahrendorf Symposium Paper Series

Summary

About the authors

Felix Creutzig, Jan Christoph Goldschmidt, Paul Lehmann, Eva Schmid, Felix von Blücher, Christian Breyer, Blanca Fernandez, Michael Jakob, Brigitte Knopf, Steffen Lohrey, Tiziana Susca

Dr. Felix Creutzig is principal investigator of the Land Use, Infrastructures, and Transport group at the Berlin-based Mercator Research Institute on Global Commons and Climate Change. His research focuses on the low-carbon urban infrastructures, land rent and the challenges of comprehensively assessing large-scale bioenergy. Felix studied various aspects of climate change mitigation as postdoc in Beijing, Berkeley and Princeton, holds a Ph.D. in computational neuroscience from Humboldt Universität zu Berlin, and graduated with the Master of Advanced Studies from the University of Cambridge. His most recent book, *Sustainable Low Carbon Transport*, complements his contribution to the IPCC as lead author of the upcoming assessment report.

This paper was developed for the 2013 Dahrendorf Symposium, a joint initiative of the Hertie School of Governance, London School of Economics and Political Science (LSE) and Stiftung Mercator.

Abstract

**CATCHING TWO EUROPEAN BIRDS WITH ONE RENEWABLE STONE:
MITIGATING CLIMATE CHANGE, RELIEVING RECESSION**

Anthropogenic climate change – but also other far-reaching risks, such as further dangers to eco-systems and human health from using fossil and nuclear fuels as well as poverty and limited access to modern energy sources – call for a thorough transformation of the global energy systems towards more sustainable pathways. Sustainability criteria translate into multiple policy targets for the energy sector, such as climate change mitigation, reduction of local environmental damages, energy security, “green” economic growth associated with green jobs and poverty reduction, as well as maintaining or achieving a sufficient food supply. In this multiple-objective, multiple-externality framework, climate change mitigation is usually perceived as the primary policy target, even on a local or regional scale. The primary measures to address this policy target include the massive deployment of renewable energy sources, an increase in energy efficiency, and the associated changes in distribution, storage and usage patterns, shortly also referred to as *energy transition*.

The European Union’s (EU) climate and energy strategy rests on explicit targets for reducing greenhouse gas emission, promoting renewable energy sources and increasing energy efficiency (the so-called 20-20-20 targets). These targets have been underpinned by a variety of EU and Member State policy instruments, most notably the EU Emission Trading Scheme (EU-ETS) in the utility sector and country-specific support schemes for renewable energies. These efforts notwithstanding, the political reality places the long-term challenge of climate change mitigation on the backburner. The Eurozone crisis, which involves a sovereign debt crisis, a banking crisis and a severe and enduring recession, dominates the European discourse. The crisis has affected all EU Member States but particularly those in the periphery. Against this background we explore the question of whether the Eurozone crisis necessarily renders climate change

mitigation (i.e. a European energy transition) as second-order priority – or whether there are synergies, which can be generated when addressing both challenges simultaneously.

To date, the question of how to design a European energy transition and how to help the European periphery overcome the debt crisis have been analysed in entirely separate strands of literature, focusing either on technical or economic climate change mitigation potential, or an analysis of effective policy instruments. In contrast, here we contextualise a European transition of the energy system – driven by climate change mitigation concerns – in the broader framework of European challenges, notably the deep recession and debt crisis in the European periphery and its lack of solidarity. Similar to Leggewie, we see an opportunity in fostering renewable energies in the European periphery and underpin the argument here with a formal analysis.

We claim that a certain degree of freedom in designing an energy transition offers significant leeway to maximise welfare from co-effects of renewable deployment, thus simultaneously addressing other public policy targets than climate change mitigation. Model-based analyses suggest that a cost-effective decarbonisation of the European electricity production and distribution system can be achieved by transitioning on different pathways in terms of technology choice, spatial distribution of production capacity, and the degree of connectivity between different Member States (see also “Quantifying Long-Term Economic Benefits of European Electricity System Integration” by Schmid and Knopf). We therefore suggest that, depending on its design, a European energy transition may also help European economies to recover. Associated co-benefits may involve economic growth, job creation, and a levelised trade balance. In fact, a holistic understanding of sustainability always requires the concurrent consideration of welfare effects in other dimensions, including those that are not

well quantifiable, as well as the acknowledgment of potentially considerable uncertainties also in quantifiable dimensions.

We then argue that European renewable policy should be designed such that the respective co-benefits are realised predominantly in peripheral countries, e.g. Ireland, Spain, Greece or Bulgaria. This argument rests on three rationales. 1) An argument of economic efficiency: A crash of economies in the periphery will also affect those countries that are currently well-off. If the use of direct means of economic policy, such as fiscal and monetary instruments, is limited (e.g. for political reasons), the promotion of renewable energy investments in the periphery may be understood as a surrogate for such policy. Furthermore, the joint support for such investments may also generate co-benefits in terms of solidarity within Europe. 2) An argument of justice and fairness: A joint European effort to promote renewable energy investments in the periphery may provide a fairer distribution of wealth within Europe. This is especially relevant in a unified European economy where central states such as the Benelux countries, Germany and Northern Italy profit from agglomeration dynamics and without the periphery the centre would not boast such impressive agglomeration dynamics. 3) An argument of political feasibility: Co-benefits in terms of economic development may be a precondition for governments to be willing to support a European energy transition.

We indicate that increasing the focus of a European transition on peripheral countries is unlikely to reduce the cost-effectiveness of the energy transition as a whole. Investments in these countries, however, would relieve the deep recession in those countries, and could contribute to stabilising the Eurozone's economy. While total net employment benefits are difficult to calculate and are potentially ambiguous, the regional benefits would be significant. Reducing import dependency of electricity and potentially other energy markets would more unambiguously support regional economies. Non-quantifiable but perhaps most significant: Understanding climate change mitigation as a pan-European project could result in renewed

solidarity between European countries that have increasingly behaved antagonistically.

Our analysis suggests that policy instruments beyond the EU-ETS might be equally important in fostering a successful energy transition. If renewable deployment results in benefits beyond climate change mitigation, further renewable-specific support might be warranted. As crucial barriers are regional in nature (lack of human capacity, institutional support, or financing), policies to support renewable energy deployment could also be stratified across regions and be mainstreamed within European regional funds. A transfer from relatively well-off central Europe to Southern Europe and other recession countries could be realised not only in monetary terms, but equally in institutional support. These recommendations can be further scrutinised in more detailed studies. But, as both the uncertainty in crucial parameters, and the complexity of the issue prohibit a formal cost-benefit analysis, it is important to realise that decisions on a pan-European energy transition not only depend on quantifiable analysis but also on systemic qualitative understanding.