

# Preface

It has been a long 150 years since English economist William Stanley Jevons identified the potential rebound paradox created by technology advances that both improve resource efficiency and make uses of those technologies more economically. His impressive feat of systems thinking came to him already during the early stages of the fossil fuel age. He witnessed the onset of the current era through the emergence of the coal-fuelled Industrial Revolution. But his insight was mostly forgotten during the era of fossil fuel.

The interest is reawakening just at the onset of a new era ushered into being December 12, 2015 in Paris, where more than 190 countries joined together to commit to “aggregate[ing] emission pathways consistent with holding the increase in the global average temperature to well below 2 °C above preindustrial levels and [the need to pursue] efforts to limit the temperature increase to 1.5 °C.” This astonishing landmark means that this book is not only incredibly timely, but very necessary. It is about time indeed we lay out fully the issues that amplify, or moderate, the coupling of energy consumption and economic performance.

What does the Paris goal of staying well below 2 °C mean? Translating temperature into carbon speak is pretty straightforward. According to IPCC reports, holding the increase in the global average temperature to well below 2 °C above preindustrial levels means that there is only little carbon left to emit. In other words, it acknowledges the need to move out of the fossil fuel economy. To be specific starting from December 2015 until eternity, there are a maximum of 800 gigatonnes of carbon net emissions left, and possibly much less if we want to reach the goal with a high level of certainty. Currently we, the people living on this planet, emit more than 35 gigatonnes of carbon a year.

Now, to put this in perspective, if you were on vacation with just 800 Euros left in your pocket, and you knew you needed to spend 35 Euros a day to pay for food and board, how many more days could your vacation last until you have to return home? Obviously the analogy has its limitations. On the carbon front, in contrast to vacations, we want to phase out carbon softly to avoid disruption and chaos. If we are careful, we could wean ourselves over the next 35 years and make the transition

manageable. We would need to get net emissions down to zero before 2050, all the while making sure that the journey does not compromise the rest of the biosphere as we are looking for alternative energies to power us. And more food and amenities, because I hear the world population is still expanding.

In this context, the design challenge before us is undoubtedly formidable. We need the best tools available to figure out, and walk, the path. Simplistic and naïve energy efficiency strategies are just not going to cut it. Only by understanding the dynamics of our interventions reasonably well can we discover effective pathways that secure human wellbeing while allowing us to grow rapidly out of our fossil fuel dependence. This is the reason why this book edited by Tilman Santarius, Hans Jakob Walnum and Carlo Aall is essential.

If indeed we want to succeed with decoupling energy use and economic prosperity, and to live within the resource and carbon budget that our one planet provides, thoughtful and innovative ways forward are required. An essential step toward a sustainable world is for decision makers to recognize the possibilities of rebound effects in order to design public policies and initiatives that are truly effective. As this book reminds us very well, the challenge doesn't stop at climate and energy policy, but affects transportation, urban planning, the Internet, tourism, even labour-market policy and more. In fact, rethinking sustainability policies in order to make them impactful requires identifying—and eventually containing—rebound effect risks in virtually all fields of policy-making.

This book marks the long overdue beginning of a new chapter in the history of mankind. It provides insights we so dearly need if we truly want to succeed. Emancipating ourselves from fossil fuels while learning to prosper within the resource budget of our planet is worth the effort of every waking moment. Simply said, *Rethinking Climate and Energy Policies—New Perspectives on the Rebound Phenomenon* points the way.

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Rethinking Climate and Energy Policies

New Perspectives on the Rebound Phenomenon

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