

Paper Proposal:

Future resource use – where are we heading? Global material use scenarios in the context of resource efficiency programs and targets

For the special session “Target setting in a resource constraint world”

Summary

Despite our knowledge of ‘planetary boundaries’, the palpable impacts of climate change, and national and international commitments to environmental protection and resource efficiency, global material use is currently increasing at unprecedented rates. Out of the 57 Gigatonnes (Gt) by which annual material use grew between 1950 and 1960, 23 Gt were added in the last decade alone. Since 2000, global material use has risen even at a faster pace than GDP: material efficiency is decreasing. Based on global material flow data spanning 6 decades from 1950 to 2010 and 6 country groupings and world regions, we investigate the dynamics which characterized past growth in global material use. We show that even if those countries with defined resource efficiency targets (continue to) meet their goals, this would not translate into a feasible long-term scenario if it is not accompanied by a fundamental transformation of global resource use.

Extended Abstract

Despite our knowledge of ‘planetary boundaries’, the palpable impacts of climate change, and national and international commitments to environmental protection and resource efficiency, global material use is currently increasing at unprecedented rates. Globally, material use has risen from under 13 Gigatonnes per year (Gt/a) in 1950 to over 70 Gt/a in 2010. Out of the 57 Gigatonnes (Gt) by which annual material use grew during this period, approximately 23 Gt were added in the last decade alone. Since 2000, global material use has risen even at a faster pace than GDP: material efficiency is decreasing. A continuation of these growth patterns is constrained by planetary boundaries, but even before such limits are met, environmental and socio-economic impacts are likely to make a scenario of continued growth highly unpleasant to say the least. Based on global material flow data spanning 6 decades from 1950 to 2010 and 6 country groupings and world regions, we investigate the dynamics which characterized past growth in global material use. We show that even if the observed stagnation since the 1970s and the more recent decline of material use in the industrialized countries is prolonged into the future, none of the past trends can be translated into a feasible long-term scenario. Taking into account the relationship between population and economic growth and the development of material stocks and flows (by main material types), we develop scenarios for global material demand by world regions and we explore options for and conditions of stabilization and degrowth of global material use until 2050. We show that the required changes go well beyond slight increases in resource efficiency and that even if those countries with defined resource efficiency targets (continue to) meet their goals, this would not translate into global material degrowth unless these measures are accompanied by a fundamental transformation of global resource use.