Resource Efficiency potentials for climate mitigation along the value chain

Initiative Resource Efficiency and Climate Action

The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) supports efforts to promote resource efficiency and climate protection in G20 emerging countries through the International Climate Initiative (IKI). The IKI global project Initiative Resource Efficiency and Climate Action strengthens the capacities of key actors from the political and private sector in selected G20 emerging countries, to develop measures and strategies to increase resource efficiency and promote climate protection.

Background & purpose

Climate change and resource efficiency are long-standing areas of activity in their own right. However, a debate about the contribution of resource efficiency and especially material efficiency measures to climate protection, with a focus on methods of quantification, has only intensified in recent years and is not yet sufficiently conducted in both industrialized and emerging countries.

The impact of resource efficiency on emission savings depends on the addressed sector and the applied resource efficiency measures. Methodologies for estimating and calculating emission savings of technical improvements exist and are frequently applied. Yet, there is a lack of scientific based methodology to estimate the impact of resource efficiency measures on emissions in a sector (considering its value chain as far as possible) in countries where required empirical data are not or only partly available.

The study entitled *The potential of resource efficiency for climate mitigation action along the value chain in selected industrial sectors: The textile industry (Indonesia) and the food industry (Argentina, Mexico)* addresses this challenge and contributes to this debate by proposing an **easy-to-**

Study structure

The study features chapters

- discussing the current debate on methodologies and accounting tools to determine the potential of resource efficiency for climate mitigation action along the value chain;
- analysing the data requirements and available data in the selected sectors;
- identifying a methodological approach and
- developing policy recommendations and concrete steps to socialize the methodology and recommendations into the policy processes of the sectors.

Published by

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

On behalf of:

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

of the Federal Republic of Germany

INTERNATIONAL CLIMATE INITIATIVE (IKI)

use methodological approach to determine the ecological potential of resource efficiency measures for climate action from a value chain perspective. The study was carried out by the *Institute for Energy and Environmental Research Heidelberg (ifeu), Germany.*

Target group

The proposed methodological approach aims at closing a gap between specific instruments for individual companies and highly aggregated methodological approaches at the country level. It can be used for strategic planning by both government and non-governmental organizations (e.g. ministries, federal authorities, associations, scientific institutions, etc.).

Methodological guidance

The study offers methodological guidance on the use of the available data and shows possibilities for the use and quantification even under the premise of data incompleteness (Chapter 6).

Step-by-step guide

- Definition of baseline year
- Gathering of information regarding the sector structure
- Data regarding material input and greenhouse gas emissions
- Filling of data gaps and validation
- Future base line
- Future modelling including resource efficiency measures

► Various pragmatic approaches to dealing with these challenges are explained. For example, how additional knowledge can be generated by filling in gaps from of incomplete data with own estimates or assumptions.

► This approach can also help users to identify and justify priorities for resource efficiency measures in the value chain.

Approach

The proposed methodological approach is based on three case studies reviewing selected value chains in two industrial sectors in three emerging economies: the textile sector (Indonesia) and the food and beverage sector (Argentina and Mexico). The study examines data availability and quality for these sectors, identifies and analyses measures for resource efficiency and calculates, where possible, their savings potential for materials and greenhouse gases.

Fragmented data sets are still often an obstacle to the further development of quantification approaches. In most countries data are available, but in most cases neither complete nor comprehensive or specific enough. Through the case studies, the study explores these common data challenges for selected sectors and employs different approaches in addressing these challenges.

Results & lessons learned

A key result of the study is that, even with insufficient empirical data, initial results can be achieved that offer orientation and new perspectives for the use of resource efficiency potential for further climate protection measures. The study demonstrates that even low-quality data may provide a first orientation and conclusions if they are used and interpreted wisely. Starting with low quality data can be reasonable as data can be improved stepwise and thus, improve the certainty of results. Results and policy recommendations were discussed with and verified by local experts.

How to engage different stakeholders

Different institutions can be addressed in order to improve both data availability and management and strategic planning in order to foster resource efficiency including its additional impact on climate mitigation:

► **National statistical bodies** could support the process by implying and/or improving the economy-wide environmental - economic accounting (in the framework of System of Economic and Environmental Accounting) including economy-wide material flow analysis; these data could provide indispensable information for political strategic planning and decision;

► **Ministries and national governmental institutions** could support by identifying and fostering national and strategic opportunities where resource efficiency and climate mitigation goes hand in hand; therefore, they could engage respective studies in their field of action;

► **National researchers** in the field of environmental accounting (life-cycle assessments, input-output analysis, material flows analysis) could support the process by amplifying national empirical data basis. International data and information are useful only in a first step while national empirical data are more reliable and thus applicable;

► **Industry associations** could support the process with information on average input structures of the companies of their industries or branches; this contributes to a reliable, national information base without forcing single companies to disclose company secrets;

► **Companies** could share good practices where resource efficiency measures improved the greenhouse gas emission performance and economic costs; good examples encourage other companies;

► **International researchers** could contribute knowledge and open source data wherever feasible in order to support international exchange of knowledge;

Published by:
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
Registered offices Bonn and Eschborn, Germany

Address Köthener Straße 2–3, 10963 Berlin, Germany, www.giz.de

Project: Initiative Resource Efficiency and Climate Action

This project is part of the International Climate Initiative (IKI).
The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) supports this initiative on the basis of a decision adopted by the German Bundestag.

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Design/layout: Additiv. Visuelle Kommunikation, Berlin

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Berlin, 2021