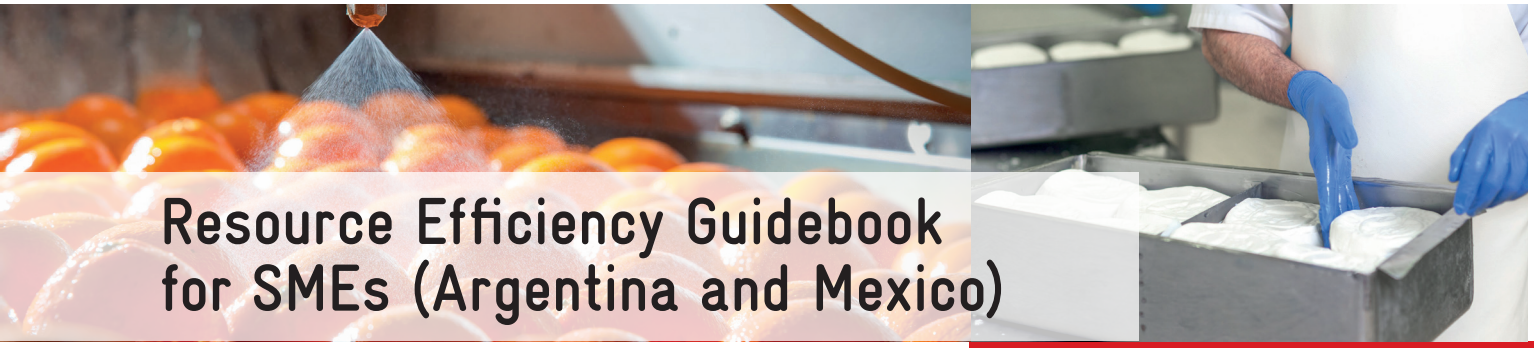

Resource Efficiency Guidebook for SMEs (Argentina and Mexico)

Background

On behalf of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and under the International Climate Initiative (IKI), the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) commissioned the German Center for Resource Efficiency (VDI ZRE) with the development and implementation of a three-day Train-the-Trainer course for Resource Efficiency in small and medium sized enterprises (SMEs) in Argentina, Indonesia, and Mexico, to be followed by train-of-industry resource efficiency courses for SMEs.

Rationale for Handbook

Decoupling economic growth from resource use provides companies with opportunities to reduce operating costs and vulnerability to resource shortages and price volatilities; however, at the same time, it requires commitment and know-how. Small- and medium-sized enterprises (SMEs) often lack even basic knowledge about concepts and opportunities linked to a more efficient use of resources. Especially in developing and emerging countries, training and consultancy services focusing on resource efficiency are rarely available to them.

For SMEs who could not take part in the training and for further dissemination of basic concepts and practical pointers for implementing resource efficiency, this manual is written based on the course content. It is intended as an introduction to resource efficiency and, through specific application examples and case studies, makes a direct reference to the respective industrial sector addressed. The modular structure and comprehensive language allow the greatest possible flexibility regarding the addressees.

The first "pilot" manual has been developed in cooperation with the Argentine Food Processing Association (COPAL) and distributed online in a digital format. With this first edition, questions of acceptance and content orientation are tested in order to identify and remedy the need for improvement and optimisation before it is used as a publication

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"platform" for other sectors and projects. A similar manual is being created in Mexico together with the Mexican Ministry of the Environment, MEDIO AMBIENTE.

What is the motivation to publish such a guidebook?

Using natural resources such as raw materials, fossil fuels or fresh water in industries as efficiently as possible is not a new idea, as these goods have always been a cost factor and in short supply. In light of climate change, resource consumption takes on a new meaning. Recently, its share of the emission of greenhouse gases has been assessed as relevant in a rising number of studies. This approach is new for SMEs in Argentina, most of which are not familiar with the topic and do not have the necessary methodological or specialist knowledge to evaluate resource efficiency within their respective companies and initiate the necessary measures for improving resource efficiency.

What is the purpose of the manual?

It should:

- Introduce readers to the topic of resource efficiency and familiarise them with the essential terms and actors in the landscape.

- Explain the basic concepts of resource efficiency such as gate-to-gate or circular economy, as well as demarcation from other issues related to climate change.

- Introduce readers to simple methods for a self-evaluation of resource efficiency in their company, such as the ABC or input-output analyses, resource efficiency related standards, and simplified process models to develop resource efficiency measures and activities.

- Identify relevant potentials for improved productive use of natural resources in order to remain competitive in the market.

- Exemplify how resource efficiency is used and implemented successfully in the respective sectors, based on specific application areas and case studies.

The handbook serves as a multi-layered medium to carry resource efficiency across the entire industrial spectrum with comparatively few resources and yet, thanks to its modular structure, to show very sector-specific, practical options for action for SMEs.

Who is this manual for?

The manual is intended for readers with prior technical knowledge as well as non-technicians, managers, decision-makers and others interested in resource efficiency for industrial SMEs in developing countries and emerging economies. An English-language edition for further international use is possible. The first pilot manual was developed in collaboration with the Argentine Food Processing Association and tailored to its members.

The guidebook is written in clear language, with little use of jargon, to make it easy for all kinds of readers to understand. This makes the specific and partially complex content readily accessible to a wide range of actors. Unavoidable technical terms are explained in sidebars.

What are the process models and tools described in the manual?

The overriding question "How do I implement resource efficiency in my company?" is broken down into manageable chunks through structured questions about the consumption and potential savings of resources. A distinction is made between product development and product manufacture, and various basic strategies of resource efficiency are presented, such as material savings through improved design, recycling, and optimal use of resources.

The manual presents in detail the material flow analysis (MFA), an analytical method to quantify flows and stocks of resources in a well-defined system, the input-output analysis (I-O), and the ABC analysis. Thereby, it provides a mechanism for identifying resource flows that will have a significant impact on overall consumption and costs, and, at the same time, a mechanism for identifying different categories of resource flows that require different management and controls.

The manual also introduces a new *online tool* from the VDI ZRE, which companies can use to evaluate the resource efficiency of their product developments. Users only have to answer six questions: for example, whether product components and materials are reused, or reused after the end of their product life, or recycled.

After answering the questions, the user receives an evaluation of how resources are used in their own product development. Detailed checklists are listed for each answer that show how existing savings potential can be used. In some cases, methods are recommended for how the products can be designed in a resource-efficient manner.

What makes the manual modular, and what are the modules?

For SMEs to use resources more efficiently, they require methodical product- and production-related knowledge. The methodical know-how, such as the input-output analysis, can be used across sectors. On the other hand, subject-specific knowledge and areas of application related to the product or the production process differ greatly from one another. For example, cement as a building material can be recycled, substituted or used more efficiently through a leaner design. However, this knowledge cannot be transferred to other industries, such as metal or food processing. Cross-sectoral and sector-specific content is listed separately in the manual and can be put together variably along defined points, depending on requirements, thus allowing for easy development of manuals for specific industrial sectors based on the cross-sectoral content.

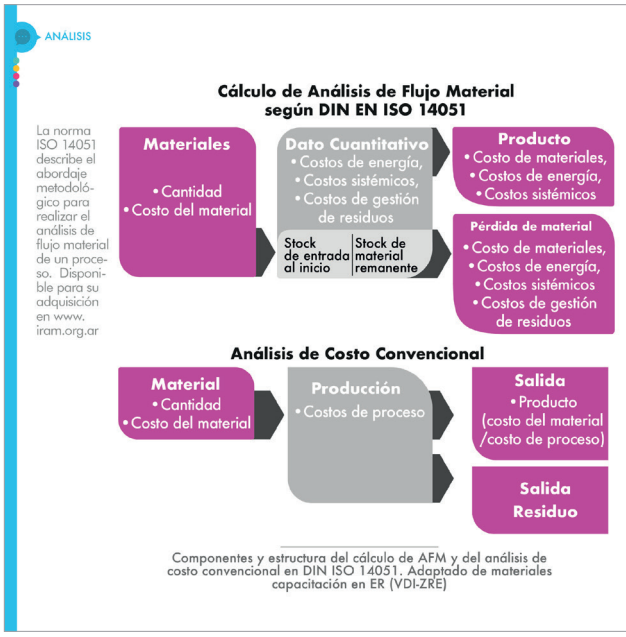
A division into main text and a lateral, secondary text allows for a quick reading along the actual content and for a deepening of the terminology, actors involved, explanations of standards and information about the project. Depending on prior knowledge, needs and interests, the reader puts together their own "reading material" and determines in which areas they would like to deepen his or her knowledge.

How is the manual distributed?

The same partners who contributed to the development of the manuals are responsible for promoting and distributing them. The manuals are hosted in PDF format on the partners' servers and are accessible to members or visitors to the website at any time, free of charge.

Development of an introductory manual in Mexico

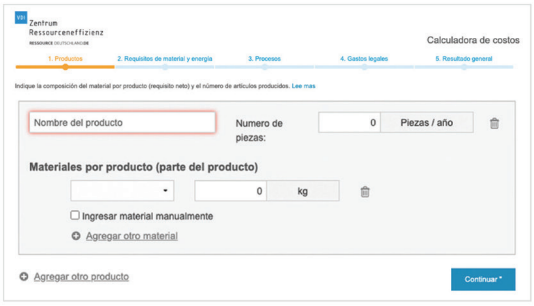
Upon the initiative of the Mexican Ministry of the Environment (Secretaría de Medio Ambiente y Recursos Naturales, MEDIO AMBIENTE), the Ministry and GIZ cooperated in the creation of an introductory guidebook to resource efficiency for SME; with a focus on the processing and manufacturing sectors. Its objective is to introduce the concept of resource efficiency (RE) and guide companies with a simple methodology and steps for developing RE projects. The manual contains the following five sections: An introduction to RE and climate change; incentives and barriers for the implementation of RE; a roadmap for RE that includes a methodology for developing resource efficiency projects; the description of the individual steps presented in that roadmap; and examples of successful RE projects. In order to facilitate the integration of the guidebook into programs developed and implemented by the Mexican Ministry of the Environment, an additional focus on the links with circular economy, sustainable production and consumption, and the SDGs of the Agenda 2030 is included.



Componentes y estructura del cálculo de AFM y del análisis de costo convencional en DIN ISO 14051. Adaptado de materiales capacitación en ER (VDI-ZRE)

Calculador de costos online

El Centro de Competencias para la eficiencia de recursos de la VDI-ZRE desarrolló un módulo online denominado "calculador de flujos materiales", que puede representar gráficamente los costos de las pérdidas de cada etapa del proceso, a partir de los siguientes datos:



Calculador de costos de flujos materiales. Disponibles en ingles y alemán (aquí expuestos con función de traducción automática del navegador Web. Publicados en http://kostenrechner.ressource-deutschland.de/#/materialverluste

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