

ENERGY EFFICIENCY NAVIGATOR **METHODOLOGY**

Manufacturing Reference Scenarios

Guideline for applying the methodology

This document presents a summary of the holistic methodology for analysing Manufacturing Reference Scenarios (MRS). It is meant to be a guideline for applying the methodology to a specific analysis. The main goal of this methodology is being able to analyse and compare different branches within a company or different companies within a specific industry sector. The methodology contains a scoring system, which makes it possible to make very quick decisions and comparisons. At the same time the methodology is very flexible and can be adapted to the needs of every specific analysis.

This methodology for MRS is developed within the FP7 European Commission funded research project REEMAIN. For more information about the REEMAIN project please visit www.reemain.eu.

Overview of the Methodology

Figure 1 presents an overview of the scoring system on which the methodology is build. To perform a comprehensive benchmarking analysis using the MRS-Methodology it is recommended to follow this guideline.

- Step 1: Defining Goals
- Step 2: Collecting Data
- Step 3: Calculating Scores
- Step 4: Analysing and interpreting Scores
- Step 5: Create decisions and actions

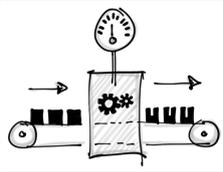
	Modules	Data Analysis	Calculation		
	Renewability	<i>Location</i> - Climate conditions - Energy costs	Electrical score	Subscore Renewability	MRS Score
			Thermal score		
	Company	<i>Benchmarking</i> - Production - Consumption	Electrical score	Subscore Company	
			Thermal score		
	Environmental Effects	<i>Energy Source</i> - CO2	Electrical score	Subscore Environmental Effects	
			Thermal score		

Figure 1: Overview of the MRS Scoring System (Source: Dr. Jakob energy research GmbH & Co. KG)



Step 1: Defining Goals

In the very beginning of the analysis one should define precise goals for the analysis. Why do you want to do this analysis? What do you want to compare (different factories or branches within one company, different companies within one industry sector or even different companies from different sectors)? Depending on these goals the methodology can be adapted or used to focus on specific topics.

Step 2: Collecting Data

The baseline for every MRS-analysis is a huge amount of data. This data usually originates from three areas, i.e. location related data, benchmarking related data and energy source related data. In order to get a plausible analysis, more data mostly means better and more precise results.

Step 3: Calculating Scores

For each area one subscore is created (see also

Figure 1). Each subscore usually has its own electrical and thermal score. The three subscores are compiled into one final MRS Score.

- Step 3.1: Define weighting factors for data points and electrical or thermal scores depending on analysis goals from Step 1.
- Step 3.2: Compile scores from data points in each data source using linear interpolation. Apply weighting factors where preferred or necessary.
- Step 3.3: Compile electrical and thermal Renewability-, Company- and Environmental Effects-subscores from Step 3.2 and generate a total subscore for each area.
- Step 3.4: If preferred apply further weighting factors on total subscores and use them to compile a final MRS score.

Step 4: Analysing and interpreting Scores

The generated scores need to be analysed and interpreted as a preparation for Step 5. Table 2 presents a summary of how the significance of the calculated subscores can be understood.

Table 2: Significance of subscores

	Renewability	Company	Environmental Effects
low score (min. 5)	less potential for RES	lower need for improving efficiency / energy consumption per product (KPI)	low need to change energy source
high score (max. 10)	high potential for RES	high potential for improving efficiency / energy consumption per product (KPI)	high need to change energy source (→ potential for RES)

It is very important to keep in mind that the whole analysis is based on a benchmarking approach which is used to compare and not to judge. The three subscores are most useful to consider for meaningful analyses for a specific company or a specific location. For comparisons between companies and locations or even across sectors the total MRS Score is helpful.

Step 5: Create decisions and actions

It is recommended to make a summary of the main findings from Step 4 and conclude from those to specific decisions for the company or factory. Those decisions should contain precise actions to be undertaken until a specific date.

