

User Guide

IFC Food Benchmark Tool

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Project: Food Benchmark Tool
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Version: 1.7
Date: 2012.09.10

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Abbreviations

| | |
|------------|---|
| CP/RE | Cleaner Production/resource efficiency |
| Data | Benchmark value on resource efficiency included in publications within scope |
| Meta data | Group of data about the individual benchmarks in this application. |
| Segment | In this application, segment refers to the nature of the processing within the sub sector, e.g. “Frozen vegetables” in the sub sector “Fruit and vegetables processing” |
| Sub sector | In this application sub sector is defined as a specific sector (e.g. dairy) within the food industry. |
| Super User | User with extended user rights for managing content and version control of this application. |
| User | End user staff using this application. |

Introduction

The key information supporting management decision for CP is the estimate of how much of resources can be realistically saved, and what impact improved resource efficiency can bring to cash flow.

The most straightforward way to acquire this information is the comparison of Client's material and energy consumption data per unit of production, (such as energy, water, raw material) and pollution generation data (such as waste water generation, wastes generation per unit of production) with industry/sector average, maximum and best practices values, e.g. benchmarking.

Benchmark for purpose of this assignment is understood as quantified measure of resource (material and energy) efficiency of the production process related to unit of produce. Benchmark links either to input or output side of production.

Nature and levels of benchmarks and benchmarking can vary extremely and would depend on the purpose: from global (such as energy consumption per global GDP), national, industry specific down to the benchmarking of particular piece of technology/equipment. This work is scoped down to selected subsector of food processing industry and in most cases collects information related to typical/not specifically detailed processes. The detail level corresponds with the IFC Environmental and Social performance guidelines. The more detailed data (such as benchmarks for particular part of production process) were also included, if available.

The IFC solicited a consultant to collect and process available resource efficiency benchmarks of those subsectors which are relevant to the region, and organize the collected information into benchmarks reference software file to be used by IFC internal and selected external technical experts.

Relation to E&S guides and other IFC benchmarking instruments

In comparison to the other IFC benchmarking instruments, this tool does not focus only on best performance. There are two reasons: i) in real application, often reaching the average or "worst in the interval" levels can bring interesting benefits to client with low cost and organizational measures; ii) to reach the best performance is mostly linked to change of technologies, extensive modernisation and/or even building a new factory, availability of which, and capability to operate it, might be limiting factor in many countries.

About the IFC Benchmark Tool

What it is

This benchmark tool is a collection of environmental performance benchmarks for food industry compiled from various selected publications. The tool enables the user to search for collected benchmarks within industry sub sectors such as:

- Meat processing
- Fish processing
- Fruit and vegetables processing
- Milk processing
- Bakeries and pasta processing
- Drinks and beverages including mineral and drinking water
- Sugar (beet)
- Sugar (cane)
- Coffee, Cocoa and Tea processing
- Vegetable oil and fat manufacturing (soy, sunflower and palm)
- Grain processing (milling, starch flour and malt)
- Alcohol production (as part of food processing units, excluding biofuels)

For each sub-sector, collected benchmarks have been sorted into industry segments whenever applicable. A segment is a food industry segment of a specific sub-sector. An example, “Poultry” is a segment of the sub-sector “Meat processing”.

Users

Benchmark reference software file is aimed for using by IFC internal and selected external technical experts.

Purpose

- Provide instrument allowing fast access to relevant environmental benchmark data;
- Provide instrument to enter, store, and use analogical data obtained by technical experts from different resources including clients;
- Provide instrument to share collected data within IFC.

Functionality

Tool allows using already collected information in more comfortable way as compared to the book/brochure or other more traditional way. The user can:

- see,
- filter,
- group,
- see details on data sources, and
- print selected data.

The tool is also intended for dynamic use and thus enables the user to:

- Add own benchmarks;
- Include new benchmark types;
- Add benchmarks or comments to individual benchmark figures.

This upgraded version 1.7 of the FBT tool, which has been extended to additional subsectors in 2012, is considered to be “beta testing” for a period of 6 months. The tool will be distributed to targeted internal and external IFC professional audience with the request of feedback provision after 3 and 6 months. The feedback will provide base for decisions on next steps.

Source and quality of information

The information included in the tool originates from selected publicly available sources (always referred), but there was no specific quality checks on benchmark values.

The sources include IFC E&S guidelines, EU BREFs and content of “Benchmarking guide (Ecofys)” and some internet sites. Sources are listed in the attachment of this guide. Benchmark can “repeat” - e.g. the same type of information from different sources can appear, as well as the same issue can be covered by different types of benchmarks.

How to apply this tool

The proper¹ application of data collected in this tool:

- requires critical technical assessment;
- must take into account reliability of data;
- must take into account uncertainties, when it comes to detailed specification of what the data cover and what not;
- preferably calculates intervals and compares/analyses different types of information.

The tool can be more user friendly at higher costs. Since the software is to be used by technical specialists, and is meant to pilot and test the approach and usefulness, we decided to limit these costs. This also leads to the necessity to read this guide and refer to it to perform some of less frequent tasks or fully utilize its possibilities.

Data about benchmarks (*Meta data*)

Each resource efficiency benchmark has additional information attached. This information describes the source from where the benchmark figure was found but it also contains process related information and user comments where applicable.

This application includes the following meta data attached to each benchmark:

| Meta data | Description |
|----------------|--|
| Benchmark type | Types of benchmarks included in this tool. E.g. energy consumption per unit produced. |
| Sub sector | Industry sector with the food industry for which the benchmark is applicable. E.g. meat processing, fish processing etc. |
| Segment | Industry segment within sub sector to which the benchmark value applies. E.g. Cheese production is a segment of the milk processing sub sector. If no segment applies due to lack of information in the source of publication, this meta data has the value ‘No information’. |

¹ Conclusions of CP potential should be conservative

| Meta data | Description |
|--|--|
| Record ID | Unique record identification number in the benchmark tool. |
| Value_low | Benchmark value. If the benchmark value is not a value but a range, this meta data equals the lower value of the range. |
| Value_high | If the benchmark value is not a value but a range, this meta data equals the high value of the range. |
| Unit | Unit of the benchmark value. E.g. kWh per kg of product. |
| Production process or its part where it applies | This meta data contains information about the process or part of the manufacturing process where the benchmark value is applied. If the meta data is left empty, the source of information does not contain detailed information about the production process. |
| Technology info related to benchmark | This meta data is used for specifying information about equipment or technology applied. |
| Information on measurement units | Includes additional information about the benchmark unit. |
| Year of publication (source) | Year of publication of the information source containing the benchmark figure. |
| Source of information | Title of the information source containing the benchmark. |
| Publisher | Name of the organisation. |
| ISBN | International code for identification of publications. |
| Region/Country | Country or region in which the benchmark value applies. |
| Reference/link to other relevant information | This meta data contains links or references to other sources mentioned in the publication related to the specific benchmark. |
| Remarks to calculation | User editable field. |
| Copyright/usage restrictions/conditions where applicable | Information about copyright, restrictions or conditions for use of the information including benchmark value and related meta data. |
| Notes | User editable field. |

Types of benchmarks

The benchmark tool includes the following types of benchmarks.

| Benchmark type | |
|-----------------------|--|
| 1 | Water consumption per unit of production |
| 2 | Energy consumption per unit of production |
| 3 | Waste water generation per unit of production |
| 4 | BOD generation per unit of production ² |
| 5 | COD generation per unit of production ³ |
| 6 | Waste generation per unit of production |
| 7 | Organic waste generation per unit of production |
| 8 | Packaging waste generation per unit of production |
| 9 | Other benchmarks (e.g. raw material consumption, other wastewater pollution loads or air emissions, etc.- where available) |

Industry sub sectors included

The benchmark tool includes benchmark figures from the following industry sub sectors of the food industry (Other sub sectors may be added by user)

| Sub sectors | |
|--------------------|--|
| 1 | Meat processing |
| 2 | Fish processing |
| 3 | Fruit and vegetables processing |
| 4 | Milk processing |
| 5 | Bakeries and pasta processing |
| 6 | Drinks and beverages including mineral and drinking water |
| 7 | Sugar (beet) |
| 8 | Sugar (cane) |
| 9 | Coffee, cocoa and Tea processing |
| 10 | Vegetable oil and fat manufacture (soy, sunflower, palm) |
| 11 | Grain processing (milling, starch, flour and malt) |
| 12 | Alcohol production (as part of food processing, excluding bio fuels) |

Using the Tool

This section describes the basic functionality of the tool.

² Data collected and reported under this benchmark type also include BOD concentration values [e.g. expressed in mg/l] in wastewater (before or after treatment/BAT)

³ Data collected and reported under this benchmark type also include COD concentration values [e.g. expressed in mg/l] in wastewater (before or after treatment/BAT)

Finding benchmarks

1. Go to the worksheet ‘Application’ and place ‘X’ in the matrix for each combination of benchmark types and industry sub-sectors.
2. Press the button ‘Show benchmarks’
3. The tool will show a list of available benchmarks including selected metadata matching the selection criteria.
4. The metadata presented in the search result table may be customized by using the Excel ‘hide’ or ‘unhide’ function for selected meta data (columns). See Excel help function for more details about the ‘hide’ function.
5. Detailed information on each benchmark is available upon pressing the first in a row, highlighted in blue.
6. Search results may be sorted by segment, year of publication or by the name of publication from which the benchmarks were taken.
7. Press the ‘<< Go back’ button to return to the main menu and press the ‘reset’ button to clear the matrix.

Adding Notes to individual benchmarks

1. Upon identifying the benchmark in the worksheet ‘Benchmark results’, press the appropriate segment (highlighted in blue).
2. In the worksheet ‘Meta data details’ scroll down to the cell ‘Notes’ and add text as appropriate.
3. Press the ‘Save notes and remarks’ to save changes
4. Save the application with a new version number in order to keep track of changes
5. Go to the worksheet ‘Log’ and insert a description of the changes made to the content of the benchmark data (see section about change log below).
6. Save the changes to the application in the Excel file menu.

Use of Change log

By default, the change log is not visible for users. In order to modify the change log follow the sequence described below:

1. Go to the Excel drop down menu Format and choose ‘Unhide’ in the Sheet sub menu
2. Choose the sheet ‘Log’ to make the change log visible.
3. Modify the change log as appropriate
4. Go to the Excel drop down menu Format and choose ‘Hide’ in the Sheet sub menu.
5. Save the changes to the application in the Excel file menu.

Adding Remarks to calculations

1. Upon identifying the benchmark in the worksheet ‘Benchmark results’, press the appropriate segment (highlighted in blue).
2. In the worksheet ‘Meta data details’ scroll down to the cell ‘Remarks to calculation’ and add comments as appropriate.
3. Press the ‘Save notes and remarks’ to save changes.
4. Save the application.
5. Go to the worksheet ‘Log’ and insert a description of the changes made to the content of the benchmark data (follow the sequence described in the section above).
6. Save the changes to the application in the Excel file menu.

Deleting a benchmark entry

1. Upon identifying the benchmark in the worksheet ‘Benchmark results’, press the appropriate segment (highlighted in blue).
2. In the worksheet ‘Meta data details’ press the button ‘Delete benchmark’ to delete the selected benchmark from the application.
IMPORTANT: No undo function is available for restoring deleted benchmarks
3. Save the application with a new version number
4. Update the application change log with a description of the changes made to the content of the benchmark data (See separate section for modifying the change log).
5. Save the changes to the application in the Excel file menu.

Printing

Print list of benchmarks

From the worksheet ‘Benchmark results’ it is possible to print a list of benchmarks for selected sub sectors and benchmark types by pressing the button ‘Print’. The printout will include the following meta data:

Benchmark
Sub sector
Segment
Value_low
Value_high
Benchmark unit
Production process or its part where it applies
Technology info related to benchmark
Information on measurement units
Year of publication (source)

Print individual benchmarks

When reviewing the details of a benchmark in the ‘Meta data Details’ window, it is possible to print the details of the selected benchmark.

1. Upon identifying the benchmark for print in the worksheet ‘Benchmark results’, press the appropriate segment (highlighted in blue).
2. In the worksheet ‘Meta data details’, press the button ‘Print’ to print the selected benchmark including all meta data and notes.

Maintenance

This section is intended for (super) users for content management purposes.

System requirements

This application is developed for Microsoft Excel 2003 and above and requires the use of macros enabled.

Content Management

Only (super) users with valid password may access the complete set of benchmark data and meta data. However, individual users may customise the tool as appropriate by adding comments and remarks to calculations for the individual benchmarks as described in the user guide.

The benchmark tool includes a Change log which enables users and super users of controlling changes to the content. The use of Change log is described in the section ‘Use of change log’ above.

Responsible person for content management is Viera Feckova vfeckova@ifc.org. If you intend to incorporate your own data, you would need (super) user access. Please contact her with the request and detailed content management instructions.

Adding new Benchmark types

The application may be extended with new benchmark types and benchmark data with related meta data as user and (super) users become aware of relevant or new data and performance indicators. In order to extend the benchmark types, please use the following work flow:

1. Go to the worksheet ‘Application’ and press the button ‘Add new benchmark type’
2. Enter valid password and type the name of the new benchmark type in the appearing window.
3. If any change is required to the newly introduced benchmark type (e.g. mistyping error), you need to unprotect the sheet with the valid password to make the necessary changes. Afterword remember to protect the sheet again.
4. Save the application with a new version number
5. Update the change log with a description of the changes made to the content of the benchmark data (see separate section for modifying the log).
6. Save the changes to the application in the Excel file menu.
7. The new benchmark type will extend the selection matrix by a new row with the chosen name and benchmark data may now be added by following the work flow described in the section below.

Adding new benchmark values

Upon identifying new benchmark data for existing or new benchmark types, it is possible to include new data and meta data to the benchmark tool, with the following steps:

1. Unhide the sheet ‘Meta data’ in the Excel Format → Sheet sub menu.
2. Unprotect the sheet ‘Meta data’ in the Excel Tools → Unprotect sub menu using a valid password.
3. In the worksheet ‘Meta data’, locate the first empty row at the bottom of the data table and enter the benchmark data and related meta data.
Be aware to use correct identifier integers for denominating Sub-sectors and Benchmark types as indicated in the worksheet ‘Application’ matrix.
4. Protect the sheet ‘Meta data’ in the Excel Tools → Unprotect sub menu using a valid password.
5. Hide the sheet ‘Meta data’ in the Excel Format → Sheet sub menu.
6. Update the change log with a description of the changes made to the content of the benchmark data.
7. Save the changes to the application in the Excel file menu.

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