Commission modelling inventory and knowledge management system (MIDAS)
Report generation date 14/10/2020

MIDAS includes the descriptions of models in use by the Commission in support to the policy cycle. MIDAS is developed and managed by the **Competence Centre on Modelling** of the European Commission.

Find out more at https://ec.europa.eu/knowledge4policy/modelling_en
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Factsheet

SWD/2019/0340 final

COMMISSION STAFF WORKING DOCUMENT IMPACT ASSESSMENT Accompanying the document Commission Regulation laying down ecodesign requirements for welding equipment pursuant to Directive 2009/125/EC of the European Parliament and of the Council

Supporting model(s)

PEPSIT

Impact assessment
SWD/2019/0340 final

Fact sheet on model contributions

Source: Commission modelling inventory and knowledge management system (MIDAS)

Date of Report Generation: 14/10/2020

Overview

Title
COMMISSION STAFF WORKING DOCUMENT IMPACT ASSESSMENT Accompanying the document Commission Regulation laying down ecodesign requirements for welding equipment pursuant to Directive 2009/125/EC of the European Parliament and of the Council

Document ID
SWD/2019/0340 final

Year of publication
2019

Led by
GROW

Model(s) used
PEPSIT

PEPSIT

Full title

Product Environmental Policy Stock and Impact Tool

Run for this impact assessment by

European Commission

Contributed to

Baseline and assessment of policy options

Helped to assess the following impacts

Impact area	*Impact category*	*Impact subcategory*
Environmental	Sustainable consumption and production	Sustainable production and consumption

PEPSIT Product Environmental Policy Stock and Impact Tool

Fact sheet

Source: Commission modelling inventory and knowledge management system (MIDAS)

Date of Report Generation: 14/10/2020

Overview

Acronym PEPSIT
Full title Product Environmental Policy Stock and Impact Tool

Main purpose
To model stock and impacts of products, in the context of environmental product policy formulation. To perform objective, quality-controlled socio-economic analyses of technology options of, products and processes to support eco-design, energy label, ecolabel, green public procurement (GPP) policies.

Summary
The Product Environmental Policy Stock and Impact Tool– PEPSIT is a quantitative tool developed to support EU environment and sustainability policies through socio-economic analyses of technology options of products and processes,at EU-level.

The tool has three main goals:

1. To carry out techno-economic characterization of products
2. To estimate the sales and stocks of given products over time, in the EU
3. To perform quantitative environmental and economic impact assessments of different technology options

The tool is based on a bottom-up stock and cash flow model, that provides the quantitative information underpinning the impact assessments for product policies. It integrates calculations at the unit level (i.e. one unit of a product) such as the product lifetime, utilities consumption and cost breakdown, life cycle costing and life cycle impacts. This is extrapolated to EU-level using the stock and sales information, allowing the estimation of economic or environmental impacts at EU level.

The policy areas of potential use of the model are eco-design, energy label, ecolabel, green public procurement (GPP) extended product responsibility and product end of life policy. It has been successfully used in a number of EC impact assessments.

Keywords
stock model , sustainable consumption , ecomodelling , eco-design , energy label , ecolabel , green public procurement

Model category (thematic)
Environment, Energy

Ownership & license

Ownership
Sole copyright [3rd party]

Ownership details
The model has been developed by PRé Consultant BV 2017. It has been implemented using Microsoft Excel.

Licence type
Non-Free Software licence. The license has one or more of the following restrictions: it prohibits creation of derivative works; it prohibits commercial use; it obliges to share the licensed or derivative works on the same conditions.

Details

PEPSIT structure and approach

1. To start the modelling of a new product, one can start from scratch, introducing all parameters, or use default values. A dashboard intro sheet describes the main step of the model and the parameters and calculations to be used

2. The main results are presented in an output sheet

Input and parametrization

For each new product analysed, the Inputs are:

- Sales, or stock, or ownership ratio of the population of the product
- Lifetime of the product (stochastic or deterministic: average lifetime, Weibull parameters
- Information on End-of-Life (EoL) (percentage reused, recycled, disposed of)
- Sales distribution of different subtypes of the product
- Utilities consumption (energy, gas, water, etc) per subtypes of the product (e.g. energy efficiency class)
- Categorization of technologies (mature or emerging)
- Manufacturer production cost or the base case
- Increase pf the Manufacture Production Costs (MPC) per energy efficiency class
- Breakdown of the Manufacture Production Costs (MPC). Learning curve parameters
- Sales mark-ups

Main output

The tool can calculate for each product one or more of the following outputs:

- Average product lifetime
- Average product utility consumption
- Sales and stock in the EU
- Life Cycle Costing (LCC) at unit level and at EU level :
    - Installation costs
    - Repair & maintenance

- Operation costs (auxiliaries)
- Operation costs (utilities (energy and water)
- Purchase price (ORP)

Spatial - temporal extent

The output has the following spatial-temporal resolution and extent:

Parameter	Description
Spatial Extent / Country Coverage	European Union
(Spatial) resolution	European Union
Temporal extent	Up to 2050
Temporal resolution	Yearly

Quality & transparency

Quality

Question	Answer	Details
Models are by definition affected by uncertainties (in input data, input parameters, scenario definitions, etc.). Have the model uncertainties been quantified? Are uncertainties accounted for in your simulations?	yes	To a limited extent. The model is deterministic. Simulation of ranges of inputs is possible, but not an intrinsic part of the model. Only the calculation of lifetime of products is stochastic, but it is a separate module that does not carry the stochastic nature to the rest of the model.
Sensitivity analysis helps identifying the uncertain inputs mostly responsible for the uncertainty in the model responses. Has the model undergone sensitivity analysis?	no	The model is deterministic. Simulation of ranges of inputs and of scenarios and options is possible, and an essential part of the use of the model.
Has the model undergone external peer review by a panel of experts, or have results been published in peer-reviewed journals?	no	
Has model validation been done? Have model predictions been confronted with observed data (ex-post)?	no	

References related to external peer-review and publication in scientific journals:

- No references provided in MIDAS

Transparency

Question	Answer	Details
Is the model underlying database (i.e. the database the model runs are based on) publicly available?	yes	Data are directly visible in the model.
Can model outputs be made publicly available?	yes	Follows the same availability rules as IAs from the Commission.
Is the model transparently documented (including underlying data, assumptions and equations, architecture, results) and are these documents available to the general public?	yes	Data and calculations are directly visible in the model
Is the model source code publicly accessible or open for inspection?	yes	The model itself is built in excel, with all equations being fully transparent. Though the model itself is not shared under a license scheme with the public, it can be shared during the process it supports, e.g. with stakeholder or scrutinizing bodies.

References related to documentation:

- No references provided in MIDAS

The model's policy relevance and intended role in the policy cycle

The model is designed to contribute to the following policy areas

- Energy
- Environment
- Consumers
- Business and industry

The model is designed to contribute to the following phases of the policy cycle

- Formulation

The model's potential

The model is designed for use in policy formulation , specifically for economic and technical characterisation of policy options, and for impact assessments.

Previous use of the model in ex-ante impact assessments of the European Commission

Use of the model in ex-ante impact assessments since July 2017.

In the Year	PEPSIT contributed to the Impact assessment called	Led by	By providing input to the	The model was run by	Details of the contribution
2019	COMMISSION STAFF WORKING DOCUMENT IMPACT ASSESSMENT Accompanying the document COMMISSION REGULATION (EU) .../... laying down ecodesign requirements for household dishwashers pursuant to Directive 2009/125/EC of the European Parliament and of the Council amending Commission Regulation (EC) No 1275/2008 and repealing Commission Regulation (EU) No 1016/2010 and COMMISSION DELEGATED REGULATION (EU) .../... supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council as regards energy labelling of household dishwashers and repealing Commission Delegated Regulation (EU) No 1059/2010 SWD/2019/0347 final	ENER	Baseline and assessment of policy options	*European Commission*	The model was used to quantify for the EU the impacts of different policy options: energy and CO2 savings, costs for industry, savings for consumers, employment.
2019	COMMISSION STAFF WORKING DOCUMENT IMPACT ASSESSMENT Accompanying the document COMMISSION REGULATION (EU) .../... laying down ecodesign requirements for household washing machines and household washer-dryers pursuant to Directive 2009/125/EC of the European Parliament and of the Council, amending Commission Regulation (EC) No 1275/2008 and repealing Commission Regulation (EU) No 1015/2010 and COMMISSION DELEGATED REGULATION (EU) .../... supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of household washing machines and household washer-dryers and repealing Commission Delegated Regulation (EU) No 1061/2010 and Commission Directive 96/60/EC SWD/2019/0349 final	ENER	Baseline and assessment of policy options	*European Commission*	The model was used to quantify for the EU the impacts of different policy options: energy and CO2 savings, costs for industry, savings for consumers, employment.
2019	COMMISSION STAFF WORKING DOCUMENT IMPACT ASSESSMENT Accompanying the document Commission Regulation laying down ecodesign requirements for welding	GROW	Baseline and assessment of policy options	*European Commission*	The model helped to assess the following impacts: - Sustainable production and consumption

	equipment pursuant to Directive 2009/125/EC of the European Parliament and of the Council SWD/2019/0340 final

Bibliographic references

- *No references provided in MIDAS*