



# newTRENDS

## Open Data Report

Deliverable D3.5





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## Introduction - Data Summary

Following the data management plan (D8.4), this Deliverable 3.5 summarizes the datasets used and generated in the newTRENDS project, as well as the model development to capture and quantify the new societal trends.

All the data or code are listed and described in Table 1 - Table 28 per work package. For those which the project team is allowed to publish, links are provided. For the closed datasets, explanations are given.



# 1. WP3 - Transition Pathways for New Societal Trends and Methodological Improvement in Modelling such Trends

## 1.1 Macro-economic Modeling

Table 1 Input & Output Data in GEM-E3 model

<b>Name</b>	Input & Output Data in GEM-E3 model
<b>Type</b>	Received and Generated data
<b>Description</b>	FED in industry, tertiary, households, macroeconomy indicators and sectoral production data for the four defined scenarios.
<b>Source</b>	<a href="#">H2020-newTRENDS · GitHub</a>
<b>Note</b>	Update to include the input from the transport model.

Table 2 Code development in the GEM-E3 model

<b>Name</b>	Code development in the GEM-E3 model
<b>Type</b>	Open code
<b>Description</b>	New development of the code in the GEM-E3 model to capture heterogeneity among households.
<b>Source</b>	<a href="#">H2020-newTRENDS · GitHub</a>
<b>Note</b>	Update to include the input from the transport model.



## 1.2 Industry Modeling

Table 3 Input data for the simulation of the industry sector results with FORECAST

<b>Name</b>	Input data for the simulation of the industry sector results with FORECAST
<b>Type</b>	Collected closed/open data
<b>Description</b>	Input data for simulation of the industry results including driving factors, e.g. production projections, policies, energy and CO <sub>2</sub> prices, structural information and sector-specific techno-economic assumptions.
<b>Source</b>	Data set was collected and compiled before the newTRENDS project and are partly underlying third party rights, the data that can be made available are presented in deliverable D3.3: <a href="#">Publications - newTRENDS (newtrends2020.eu)</a>
<b>Note</b>	Data set partly confidential, no updates foreseen

Table 4 Final energy demand (FED), total energy demand (TED) and greenhouse gas emissions of the industry sector until 2050 simulated with FORECAST

<b>Name</b>	Final energy demand (FED), total energy demand (TED) and greenhouse gas emissions of the industry sector until 2050 simulated with FORECAST
<b>Type</b>	Generated data
<b>Description</b>	Industry sector results for FED, TED and GHG emissions until 2050 in the four defined scenarios differentiated by energy carrier, process and/or sub-sector
<b>Source</b>	Deliverable 3.3: <a href="#">Publications - newTRENDS (newtrends2020.eu)</a>
<b>Note</b>	No updates foreseen





### 1.3 Building Modeling

Table 5 Final energy demand of buildings of the residential sector produced by INVERT

<b>Name</b>	Final energy demand of buildings of the residential sector produced by INVERT
<b>Type</b>	Generated data
<b>Description</b>	This dataset contains the results of residential building final energy demand under different scenarios produced by the INVERT model.
<b>Source</b>	<a href="#">H2020-newTRENDS · GitHub</a>
<b>Note</b>	no updates planned

Table 6 Final energy demand of buildings of the tertiary sector produced by FORECAST

<b>Name</b>	Final energy demand of buildings of the tertiary sector produced by FORECAST
<b>Type</b>	Generated data
<b>Description</b>	By country, yearly resolution, period 2019 - 2050
<b>Source</b>	<a href="#">H2020-newTRENDS · GitHub</a>
<b>Note</b>	no updates planned

Table 7 Investments into heating systems and envelope of buildings of the tertiary sector produced by FORECAST

<b>Name</b>	Investments into heating systems and envelope of buildings of the tertiary sector produced by FORECAST
<b>Type</b>	Generated data



<b>Description</b>	By country, yearly resolution, period 2019 - 2050
<b>Source</b>	<a href="#">H2020-newTRENDS · GitHub</a>
<b>Note</b>	no updates planned

## 1.4 Transport Modeling

Table 8 Model results for the impact of teleworking in Transport

<b>Name</b>	Model results for teleworking in Transport
<b>Type</b>	Generated data
<b>Description</b>	EU model results by country for the scenarios reference and decarbonisation with and without the new trend teleworking in transport. Results focus on energy demand reduction in transport.
<b>Source</b>	Results: <a href="#">H2020-newTRENDS · GitHub</a> Deliverables D7.3 <a href="#">Publications - newTRENDS (newtrends2020.eu)</a>
<b>Note</b>	Confidential until journal submission and publication



## 2. WP5 - Focus Study: Prosumagers and big data (new data sources) in energy demand models related to the built environment

Table 9 Smart meter data

<b>Name</b>	Smart meter data
<b>Type</b>	Collected closed data
<b>Description</b>	This dataset contains the smart meter data collected from the households in Italy and Poland. The data is used in Task 5.1 to analyze the demand patterns.
<b>Source</b>	n/a
<b>Note</b>	Commercial, third party data

### 2.1 INVERT-FLEX Coupling

Table 10 Load-shifting indicator from INVERT-FLEX coupling

<b>Name</b>	Load-shifting indicator from INVERT-FLEX coupling
<b>Type</b>	Generated data
<b>Description</b>	This dataset includes the results on energy consumption and load shifting indicators of four scenarios from the INVERT-FLEX coupling.
<b>Source</b>	<a href="#">H2020-newTRENDS · GitHub</a>
<b>Note</b>	No update planned.

Table 11 Code of FLEX modeling suite

<b>Name</b>	Code of FLEX modeling suite
<b>Type</b>	Open code



<b>Description</b>	The code developed for the FLEX modeling suite in the project.
<b>Source</b>	<a href="#">H2020-newTRENDS · GitHub</a>
<b>Note</b>	Will be updated during further development.

Table 12 Survey results on heating behavior

<b>Name</b>	Survey results on heating behavior
<b>Type</b>	Collected closed data
<b>Description</b>	Dataset containing data collected through an online survey conducted in four European countries. It includes data on the heating behavior of households. The result of the data analysis together in combination with the results of the INVERT/EE-Lab modelling of residential heating energy consumption will be published as scientific papers.
<b>Source</b>	The data will be made publicly available after the publication of the scientific paper
<b>Note</b>	The dataset will be partially released after the publication of the first paper and gradually updated

Table 13 Survey results on residential space use and home office pattern

<b>Name</b>	Survey results on residential space use and home office pattern
<b>Type</b>	Collected closed data
<b>Description</b>	Dataset containing data collected through an online survey conducted in four European countries. It includes data on residential space use and home office patterns. Part of the data will be partially used as input for the FLEX model. The results of the modelling and further data analysis will be published as scientific papers
<b>Source</b>	The data will be made publicly available after the publication of the scientific papers



<b>Note</b>	The dataset will be partially released after the publication of the first paper and gradually updated
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## 2.2 PRIMES-Prosumager Modeling

Table 14 FED, GHG emissions and derived indicators of the residential sector until 2050 simulated with the PRIMES-Prosumager model

<b>Name</b>	FED, GHG emissions and derived indicators of the residential sector until 2050 simulated with the Prosumager model
<b>Type</b>	Generated data
<b>Description</b>	Residential sector results for FED, GHG emissions and derived indicators until 2050 in the four defined scenarios
<b>Source</b>	<a href="#">H2020-newTRENDS · GitHub</a>
<b>Note</b>	No updates foreseen

Table 15 Code of PRIMES-Prosumager module

<b>Name</b>	Code of PRIMES-Prosumager module
<b>Type</b>	Open code
<b>Description</b>	<p>This module introduces the prosumager model, developed within the newTRENDS project. The model describes the decision-making processes of individual households, exploring investments in building envelope renovation, appliances, equipment, onsite generation units (solar photovoltaic – PV), and battery energy storage systems (BESS).</p> <p>The prosumager model provides a mathematical formulation for the management of the hourly operations of appliances, equipment, onsite PV, and BESS. It strategically determines the optimal configuration for a household's energy system, balancing the occupants' energy demand with cost-effectiveness. The model considers bidirectional power transfer</p>



	between the distribution electricity network and the household.
<b>Source</b>	<a href="#">H2020-newTRENDS · GitHub</a>
<b>Note</b>	No updates foreseen



## 3. WP6 - Focus Study: Circular economy and digitalisation in energy demand models related to the sectors industry and tertiary

### 3.1 Circular Economy Modeling

Table 16 Material flow model of steel and concrete in EU buildings

<b>Name</b>	Material flow model of steel and concrete in EU buildings
<b>Type</b>	Open code
<b>Description</b>	Stock-driven material flow analysis developed within task 6.1 soft linking Invert/EE-Lab and FORECAST-Industry to assess endogenously the impact of selected circular economy actions
<b>Source</b>	Model code: <a href="#">H2020-newTRENDS · GitHub</a> Deliverables D6.1 and D6.4: <a href="#">Publications - newTRENDS (newtrends2020.eu)</a>
<b>Note</b>	Publicly available soon, no updates foreseen

Table 17 Material intensity data base of steel and concrete in EU buildings

<b>Name</b>	Material intensity database of steel and concrete in EU buildings
<b>Type</b>	Generated data
<b>Description</b>	Database indicating the use of steel and concrete per square meter in residential and non-residential buildings depending on age cohort and region according to the characteristics of the Invert/EE-Lab data structure, used for stock-driven material flow analysis
<b>Source</b>	Database: <a href="#">H2020-newTRENDS · GitHub</a> Deliverables D6.1 and D6.4: <a href="#">Publications - newTRENDS (newtrends2020.eu)</a>
<b>Note</b>	Publicly available soon, no updates foreseen



Table 18 EU building stock development

<b>Name</b>	EU building stock development
<b>Type</b>	Generated data
<b>Description</b>	Floor space development differentiated by building type, age cohort and country extracted from Invert/EE-Lab, used for stock-driven material flow analysis
<b>Source</b>	Database: <a href="#">H2020-newTRENDS - GitHub</a>
<b>Note</b>	Publicly available soon, no updates foreseen

Table 19 Circular economy action parametrization

<b>Name</b>	Circular economy parametrization
<b>Type</b>	Collected open data
<b>Description</b>	Data for the parametrization of circular economy actions in the stock-driven material flow analysis
<b>Source</b>	Database: <a href="#">H2020-newTRENDS - GitHub</a> Deliverables D6.1: <a href="#">Publications - newTRENDS (newtrends2020.eu)</a>
<b>Note</b>	Publicly available soon, no updates foreseen

Table 20 Model results for a circular economy in EU buildings

<b>Name</b>	Model results for a circular economy in EU buildings
<b>Type</b>	Generated data
<b>Description</b>	National model results for the scenarios reference, lifestyle, construction and mix as well as for individual circular economy actions including steel and concrete demand, steel, cement and clinker production as well as available secondary material
<b>Source</b>	Results: <a href="#">H2020-newTRENDS - GitHub</a>





	Deliverables D6.1 and D6.4: <a href="https://newtrends2020.eu">Publications - newTRENDS (newtrends2020.eu)</a>
<b>Note</b>	Publicly available soon, no updates foreseen

Table 21 Statistical data on steel production and consumption

<b>Name</b>	Statistical data on steel production and consumption
<b>Type</b>	Collected closed data
<b>Description</b>	Access to the database of the World Steel Associations, data used to estimate in-use stocks of steel and future availability of secondary material
<b>Source</b>	n/a
<b>Note</b>	Commercial, third party data

Table 22 Code development in the Invert model: Insulation volume

<b>Name</b>	Code development in the Invert model: Estimated insulation volume for refurbishment activities, derived from Invert Scenarios
<b>Type</b>	Open code
<b>Description</b>	Post-simulation analysis code in the Invert model to extract the estimated insulation demand, stemming from renovation activities.
<b>Source</b>	<a href="#">H2020-newTRENDS · GitHub</a>
<b>Note</b>	No updates planned



## 3.2 Digitalization Modeling

Table 23 Share of employees working remotely

<b>Name</b>	Share of employees working remotely
<b>Type</b>	Generated data
<b>Description</b>	By country, yearly resolution, period 2019 - 2050
<b>Source</b>	<a href="#">H2020-newTRENDS · GitHub</a>
<b>Note</b>	no updates planned

Table 24 Data Centers

<b>Name</b>	Data on data centers
<b>Type</b>	Collected closed data
<b>Description</b>	Per EU country, period 2017-2021: number of data center, floor area, installed capacity and consumption, PUE
<b>Source</b>	Grand View Research
<b>Note</b>	Commercial, third party data

Table 25 Code extension to model teleworking in FORECAST

<b>Name</b>	Code extension to model teleworking in FORECAST
<b>Type</b>	Open Code
<b>Description</b>	This method is called as a pre-process in the course of the FORECAST simulation. It programs the calculation of the share of teleworking and of the specific floor area per employee in the tertiary sector.
<b>Source</b>	<a href="#">H2020-newTRENDS · GitHub</a>
<b>Note</b>	No updates planned, creativecommons: created by, non commercial, share alike



Table 26 Code extension to model co-working in FORECAST

<b>Name</b>	Code extension to model co-working in FORECAST
<b>Type</b>	Open Code
<b>Description</b>	This method is called as a pre-process in the course of the FORECAST simulation. It programs the impact of co-working spaces on the floor area and on the energy demand for data center services in the tertiary sector.
<b>Source</b>	<a href="#">H2020-newTRENDS · GitHub</a>
<b>Note</b>	No updates planned, creative commons: created by, non commercial, share alike



## 4. WP7 - Focus Study: New Societal Trends in Transport and Tertiary Sector – The Impact of the Shared Economy

Table 27 Model results for shared mobility in Transport

<b>Name</b>	Model results for a shared mobility in transport
<b>Type</b>	Generated data
<b>Description</b>	EU model results by country for the reference scenario, and a decarbonisation scenario with and without shared mobility policies on car-pooling, car-sharing and car-services. Generated data are on the activity shares of shared mobility options in passenger cars
<b>Source</b>	Results: <a href="#">H2020-newTRENDS · GitHub</a> Deliverables D7.1 <a href="#">Publications - newTRENDS (newtrends2020.eu)</a>
<b>Note</b>	Will be updated during further development

Table 28 Code development for modeling shared mobility in Transport

<b>Name</b>	Code development for modeling shared mobility in Transport
<b>Type</b>	Open code
<b>Description</b>	To capture the shared mobility and its impact on the energy demand in the transport sector, we developed the PRTRANS model. The code of the model is published here.
<b>Source</b>	<a href="#">H2020-newTRENDS · GitHub</a>
<b>Note</b>	Will be updated during further development



## Imprint

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