

EU Calculator

Factsheet

At a glance:

Title: EU Calculator: Trade-offs and pathways towards sustainable and low-carbon European

Instrument: Research and Innovation Action (RIA)
Total EU contribution: 5,283,351.25€

Duration: 3 years

Start Date: 1st November 2016

Team:

- Potsdam Institute for Climate Impact Research, D
- Imperial College of Science Technology & Medicine, UK
- Climact SA, B
- Buildings Performance Institute Europe ASBL, B
- Austrian Society for Environment and Technology, AT
- University of Copenhagen, DK
- Swiss Federal Institute of Technology of Lausanne, CH
- University of East Anglia, UK
- PANNON Pro Innovations Ltd., H
- Climate Media Factory UG, D
- T6 Ecosystems srl, IT
- SEE Change Net, BIH
- Delft University of Technology, NL

Keywords:

Low-carbon society and economy, technology innovation, interactive pathway exploration tool, transparent modelling, climate service

Website:

<http://www.european-calculator.eu>

The mission:

The European Calculator aims to provide decision makers with a highly accessible, user-friendly, dynamic modelling solution to quantify the sectoral energy demand, greenhouse gas (GHG) trajectories and social implications of lifestyle and energy technology choices in Europe.

Its scientific mission is to develop a sophisticated, yet accessible, model to fill the gap between integrated climate-energy-economy models and the practical needs of decision-makers.

The outcomes:

A model that facilitates the evaluation of trade-offs and synergies arising from interventions at sectoral (buildings, transport, agriculture, etc.), behavioral, country or incremental levels of emissions and warming. An easy to use web-version that allows users to construct transformation pathways, explore their impacts and compare them to existing policy pathways from other institutions.

A trusted modelling approach with inputs and assumptions co-created through a consultation process between academia, public and business sectors.

A common platform and arena where scientific, policy and civil society stakeholders share and test their understanding of the interaction between climate change, resource utilisation and evolving policy targets.

The approach:

The novel and pragmatic modelling approach is rooted between pure complex energy system and emissions models and integrated impact assessment tools. It introduces an intermediate level of complexity and a multi-sector approach that is based on co-design with scientific and societal actors.

The model relates emission reduction with human lifestyles, the exploitation and / or conservation of natural resources, job creation, energy production, agriculture, costs, etc. in one highly integrative approach and tool which enables decision makers to get real-time policy support underpinned by comprehensive trade-off analyses.



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Objectives in detail:

Introducing a model framework of intermediate complexity

- Implement a fast and novel energy-society model allowing for users to autonomously calculate and visualize European and Member State greenhouse gas emissions and their relation to current and future climate development and policies.
- As a starting point the Global Calculator Model (www.globalcalculator.org/) is used and will be scaled down to a generic EU28+Switzerland resolution considering trans-boundary effects and exchange with the rest of the world.
- Transparent derivation and Definition levers of ambition representing desirable futures in different sectors as main forcing component of the model instead of a fully dynamic representation of the real world
- The model approach keeps simplicity if possible, but considers feedbacks and interdependencies between sectors and countries when needed.
- Development of a Transitions Pathways Explorer usable for non-experts and allowing for multi-sectoral tradeoff and synergy analyses

Extending the “model world” to achieve a better representation of European and Member State facts

- Development of a water module representing the water-energy-food nexus.
- Inclusion of a raw materials module to evaluate resource efficiency issues and the prospects for an increasingly circular economy.
- Explicit consideration of land use and development of a land use change module aligned to the post-Paris reporting requirements.
- Development of a socio-economic module to assess the impacts of de-carbonization pathways on society and its economy (GDP, competitiveness, social impacts, energy security).
- Establishing a module which allows inclusion of low-carbon technologies and assesses their impacts.
- Development a storage module coupled with seasonal granularity to account for the critical variation of energy demand and renewable energy supply throughout the year.

Sound underpinning of European policy making by an advanced outreach strategy which allows co-creation of knowledge

- Support the European 2050 Road Map towards low carbon economies by delivering an integrated interactive tool which is built up from an inclusive and evidence-based approach with stakeholders.
- Promote informed debate around the European competitive low-carbon economy in 2050 and a resilient Energy Union with a forward-looking climate change policy.
- Set up and maintain an open-source energy modelling wiki as the knowledge base to facilitate decision makers, businesses, the public and countries setting up their own energy modelling capabilities.
- Engage stakeholders from short-term participation to long-term research participation/collaboration.
- Develop the My Europe 2050 e-learning tool which can be used in secondary and tertiary education and by lay people, which will empower citizens to engage in the shaping of the European low carbon societies and future transition pathways.

