

2050 Calculator

What's happening in the 2050 Calculator community

Welcome to the 2050 Calculator quarterly newsletter. This newsletter aims to provide information and updates to connect our ever-growing Calculator community.

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Background

Brief overview for those new to the community

Earlier this year, the UK Government launched the next phase of its **International 2050 Carbon Calculator programme**. Run by the UK Department of Business, Energy & Industrial Strategy (BEIS), this £3M,

3-year programme will run to the end of 2021 and support up to 15 countries around the world to upgrade and/or develop new 2050 Calculators. The ultimate objective is to support governments to deepen their domestic action on climate change and strengthen ambition under the 2015 Paris Agreement.

The urgent need to transition economies to low-carbon pathways to mitigate climate change was the key driver for the development of the UK's Calculator, and the subsequent growth of Calculators around the world. Policy design is a complex exercise that poses a multitude of confounding options to legislators and often requires a balancing act between competing priorities. These challenges are especially more pronounced in the energy sector, which is undergoing significant transformations across the value chain with the arrival of disruptive technologies and business intermediaries. One way to tackle these challenges and uncertainties is to adopt a holistic data-based approach, wherein impacts of different policy choices on emissions, energy security, electricity systems, amongst others, are analysed and weighed against each other to arrive at the most effective decision.

It is with this in mind that the UK developed its own 2050 Calculator in 2010 – an open source, transparent and interactive energy model that uses a 'pathways' and 'scenarios' approach to help understand the impact of interventions in select energy demand and supply sectors on key macro parameters such as energy cost, energy supply, demand balance, emissions, carbon footprint, land-use, agriculture, forestry etc. Owing to its tremendous success in contributing to climate mitigation commitments and facilitating informed policymaking, the 2050 Calculator has now been replicated in more than 10 countries, along with a Global Calculator.

The European Calculator (EUCalc)

Call for evidence

The [European Calculator \(EUCalc\)](#) is a three-year research and innovation action project funded by the European Union's Horizon 2020 research and innovation programme. The European Calculator aims to provide decision-makers with a highly accessible, user-friendly, dynamic modelling solution for quantifying the sectoral energy demand, greenhouse gas (GHG) trajectories and social implications of lifestyle and energy technology choices in Europe. The user can assess the impacts of their choices at the European and individual Member State levels, including Switzerland, providing a unique perspective on the role and potential of the member states and the EU as a whole, in meeting global climate mitigation commitments.

The EUCalc model bridges the gap between analytical models (that are built by integrating climate-energy-economy) and the practical needs of decision-makers. The model provides an integrated perspective on emissions reduction, the exploitation and conservation of natural resources, job creation, energy production, agriculture, lifestyles/behavioural choices, costs, air quality, etc. These are brought together through a highly integrated user interface that enables real-time policy support, underpinned by comprehensive trade-off analysis. The model is built on a novel software platform which has the potential to be used by the new generation of 2050 Calculator models. This Knime software platform assists with the handling of complex sectoral and inter-Member State and EU-28 transboundary and sectoral relationships, while allowing a high level of transparency. As during the development of previous Calculators, the EUCalc model is being developed under the principle of co-design driven by close sectorial expert consultation cycles.

With the model now being close to completion, we are entering a final phase of collecting feedback by way of a public **call for evidence**. We would like to engage with interested members of the public to test the [Transition Pathways Explorer](#) user interface of the EUCalc model to ensure the robustness of the analysis, assumptions and data used, before it is released for wider application. A session has been set aside at the upcoming 2050 Calculator conference in Windsor, UK, to showcase the EUCalc online Pathways Explorer tool to elicit informed feedback from delegates. *We encourage you to participate in the call for evidence by visiting the [Transition Pathways Explorer](#) where you will find information on how to provide feedback through an online form. You can also access the [form direct](#).*

To follow the latest EUCalc developments, follow us on [Twitter](#) or sign up to our newsletter via the [website](#)!

Calculators around the world – updates

India – State Energy Calculator 2050

The State Energy Calculator is an energy scenario building tool, which aims to explore a range of potential future energy scenarios for India for diverse energy demand and supply sectors, leading up to 2050. These scenarios are generated considering the economic growth, structural changes and adoption of technology interventions. The Calculator comprehensively covers all sectors that impact energy – either as demand sector or as supply sectors. Demand sectors are the sectors where energy is consumed such as transport, cooking, buildings, agriculture, and industry. Supply sectors are the sectors from where energy is supplied such as oil & gas, thermal, biomass and renewable power.

Assam has used the Calculator analysis as a base for long-term energy action planning with linkages drawn from the Calculator work for other FCO projects in India. Further, India's premier educational institute, IIT Guwahati, is considering launching a new course or topics within the existing course related to energy modelling. Researchers of IIT Guwahati are undertaking a Masters thesis project which is based on the use of the energy calculator. Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu are using the Calculator for their electric mobility projects.

Six Indian states have started the journey to adopt Energy Calculators in the state energy planning process.



Gujarat



Andhra Pradesh



Maharashtra



Tamil Nadu



Assam



Karnataka

The State Energy Calculator 2050 was developed by ICF Consulting India Private Limited on the lines of the India Energy Security Scenario 2047 Calculator created by NITI Aayog and supported by the British High Commission.

Malaysia

We welcome Malaysia to the Calculator community! The Malaysian Calculator is a new Calculator. We are currently finalising the project inception documentation, with the aim of kicking off the project at the end of October. The first technical training sessions are scheduled for late November, following the international conference in Windsor, UK.

Nigeria

At the end of October, the UK programme team (Laura, Sam and Onesmus) visited Abuja to scope out the Energy Commission of Nigeria (ECN)'s new Nigeria Calculator. The visit was extremely positive and involved discussions with



different government ministries, NGOs and academics. We're excited about how this new project is shaping up and we'll be working closely with the ECN in 2020 to deliver its Calculator. Watch this space!

UK – MacKay Carbon Calculator

The UK is in the final stages of a project to update the UK 2050 Calculator, to be named the **MacKay Carbon Calculator**. The new Calculator will have two new web-interfaces (a simplified version for use by the general public and schools, plus an energy stakeholder version), both backed by the same model. As well as updating user levers, such as introducing hydrogen, the stakeholder version will allow users to vary the lever deployment start and end dates to see the effect on emissions. The UK team hope to launch the MacKay Carbon Calculator in early 2020.

Vietnam

We are pleased to announce that Vietnam will be updating its Calculator model, supported by the International Climate Finance programme. We are working with the same team from the Ministry of Industry and Trade (MOIT) who developed the original Calculator, ensuring that the knowledge and skills gained on the previous iteration will be effectively carried over to inform the updated version. The first technical training sessions are

scheduled for late November, following the international conference in Windsor, UK.

Conferences and events

AAPG 2019 Energy Transition Forum – A New Era for Geoscience

We presented the [Global Calculator](#) to the American Association of Petroleum Geoscientists (AAPG) at the [AAPG 2019 Energy Transition Forum](#) in Edinburgh, UK, on 15 October.

Dr Jeremy Woods, Imperial College London, introduced the Global Calculator, an open-source model of the world's energy, land and food systems that allows you to design your own version of the future up to 2050 and see the implications for the climate. Following the presentation, the participants divided into groups and used the calculator themselves to develop their own pathways. It was a dynamic and engaging session and demonstrated how relevant and useful the 2050 Calculators are in the contemporary climate change discourse.

2050 Calculator International conference – 13-15 November, Windsor, UK

The annual 2050 Calculator international conference is fast approaching and will take place from 13-15 November in Windsor, UK. We are expecting over 100 members of the international Calculator community to attend the 3-day conference, which will be a chance to showcase Calculator team work, learn from best practice and network with other 2050 Calculator teams. Visit the [Calculator community website](#) and see the [agenda](#) for an exciting list of speakers and topics. For further information on the conference, please email: 2050CalculatorConference@mottmac.com. We look forward to welcoming many of you in Windsor!

About us

2050 Calculator delivery partner

To deliver the 2050 Calculator programme, BEIS appointed a Mott MacDonald-led consortium as its delivery partner. **Mott MacDonald** is a global engineering and management consultancy that works on a wide-range of infrastructure and development projects around the world. Our consortium includes **Climact**, a Belgium-based consultancy providing technical support on Calculator development; **Imperial College London**, a leading UK university with extensive experience of Calculator development, land-use issues and energy system change; and **Ricardo**, a UK consultancy bringing expertise in model reviews and quality assurance.

The role of our consortium is two-fold. Firstly, we bring technical and capacity building support to work with governments and other stakeholders as they develop and use their Calculators. Secondly, we are responsible for disbursing UK Government funding to in-country downstream partners where required to ensure sufficient resources are available. Over the next two and half years, we will also be working to build and connect the international Calculator community through conferences, newsletters (like this one) and the [Calculator website](#). We look forward to working with all of you!

Delivery team highlights



Laura Aylett

2050 Calculator BEIS programme lead

Laura manages the international 2050 Calculator programme for BEIS, working to support developing countries to create their own Calculator models. Over the last few years, she has also managed other international climate finance programmes that focus on capacity building, and was part of the UK's UNFCCC negotiations team at COP22 in Marrakech. Prior to joining the civil service in 2013, Laura worked in communications and policy at the Royal College of Nursing, UK, where she led on research for a campaign against cuts to the National Health Service, and worked on the College's response to health care reforms.



Sam Friggens

Project Manager, 2050 Calculator Delivery Partner

Sam is a senior consultant in energy strategy and innovation at Mott MacDonald. His work focusses on energy system transformation, climate change and technology innovation, working with governments and investors in the UK and globally. In 2018, he worked with the UK Committee on Climate Change to explore the role of biomass in a low carbon economy. Currently, he is the project manager for the UK Government's 2050 International Carbon Calculator programme. Sam is also leading the formation of a new infrastructure industry coalition to support the implementation of the UK's net-zero GHG emissions target.

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