



Department
of Energy &
Climate Change

International 2050 Pathways Partnership

Second Annual Review

March 2015

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Any enquiries regarding this publication should be sent to us at Hannah.rollason@decc.gsi.gov.uk.

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Executive summary

We are happy with the progress that has been made on the 2050 Pathways project, and believe that the projects have the potential to influence policy and public understanding of sustainable development in a very positive way, both in the countries we have supported and beyond.

Summary

Title: International 2050 Pathways Partnership		
Programme Value: Budget of £1,557,000, but spent £1,132,579 over 2012-2015		Review Date: 03/15
Programme Code:	Start Date: 08/12	End Date: 12/14 originally, extended to 03/14 and will extend again

Summary of Programme Performance

Year	2014	2015						
Programme Score	B	A						
Risk Rating	Medium	Medium						

Summary of progress and lessons learnt since last review

We are happy with the progress that has been made on the 2050 Pathways project, and believe that the projects have the potential to influence policy and public understanding of sustainable development in a very positive way, both in the countries we have supported and beyond.

Since the last review, all 11 countries that were trained using ICF funds have working 2050 calculator models, and seven have published their first version (South Africa, India, Thailand, Indonesia, Vietnam, Bangladesh and Colombia). All of these countries continue to work on the models, with plans to improve the tools, improve links with government and/or organise outreach activities. However, so far only a limited number of countries have published any additional documentation (for example, explanations of assumptions made in modelling). This is concerning for the DECC project team, as we are committed to openness and transparency.

At this time three of the models have still not been published (Brazil, Mexico and Nigeria), but they are in the process of finalising them and are due to publish by autumn 2015. In Nigeria's case this delay is mainly due to it taking longer to assemble and train the in-country teams than originally anticipated. In the case of both Mexico and Brazil, the delays are due primarily to staff in the ministries being pulled onto other projects. Unfortunately we are not aware of any plans to publish the Algeria calculator at the moment.

It is too early to be able to judge the impact of the calculators on policy, but the Colombian and Indian tools are being used to develop the countries' Intended Nationally Determined Contributions (INDCs) for the UNFCCC negotiations, and the Indian project is well-placed to have influence on the new National Energy Policy that is about to be developed. Ricardo-AEA's research has shown that many countries particularly value the tool for outreach and communication, rather than for policy making, which is reflected in their plans. This also fits into our theory of change, as it builds a "strengthened mandate" for more sustainable development across civil society.

The projects are due to come in approximately 20% under budget once the existing work on the last few countries is complete. This is because an initial budget was estimated per country before the teams were formed, but project plans were demand led, and spend was approved on a case by case basis in conjunction with FCO climate attachés. For the majority of countries, the standard estimated budget was higher than necessary. India, in particular, cost less than expected as the government there was happy to donate staff time. DECC only played for training trips, workshops and launch activities.

In addition, the project has been able to have an impact beyond these 11 countries. DECC staff have trained people from nine additional countries. In-country teams trained by DECC are themselves now training and supporting new countries (e.g. the Colombians have trained the Ecuadorians, and the Indians are supporting the Mauritians). Representatives of 30 countries attended the 2050 Calculator conference in Taipei in February 2015. New countries and regions continue to approach DECC about starting new projects.

So much progress was made this year firstly because of the unique way in which in-country teams were supported by the DECC 2050 team. Independent research by the Ricardo-AEA found that calculator teams were extremely positive about the support they received. Their report stated: "The DECC team's willingness to try to address any problem that the countries encountered, and to be available at short notice to do so, was cited by almost everyone as absolutely crucial in the process of delivering the 2050 Calculators." While there have been delays, 10 teams are on track to meet their original objectives and publish the tool. The flexible approach taken was also very important, as it means that the models address each country's individual needs and interests.

We think that this progress has been good and has met DECC's expectations for the project because although there have been delays in some calculators, we have delivered training that builds capacity in 11 countries and are set to meet our goal of at least 10 finished models. Ricardo-AEA's research has found that the country teams themselves felt their expectations of the project have been met or even surpassed. We believe that allowing teams to build their models in their own way has been valuable because it builds ownership of the finished product in the country, and makes it more likely it will be used in the future. It also proves that we are building capacity in the countries, part of the theory of change, as they aren't just copying the UK's model but developing a new one. The process of building the calculator involves a lot of stakeholders and different government departments, and feedback in Ricardo's report shows that this was considered a valuable process as it brought together people that would not usually work together.

There isn't that much evidence of the finished calculators having an impact on policy yet, but all the launches have been high profile and work is continuing on them all. Many of the tools have only been launched in the last few months, so it would be surprising if they had made a big impact at this stage. Evidence suggests that they are well positioned to have an impact on the future, as per our theory of change, either by being used by the government themselves in planning or by being used in outreach with stakeholders and the general public.

One of the key pillars of transformational change is that our projects are replicable. The 2050 Calculator has proven itself highly replicable and flexible, as some ICF-supported countries are considering developing extra calculator tools (e.g. at a sub-national level) and DECC has been able to help projects start in many extra countries over the last two years, both developed and developing. The development of a nascent "calculator community", spurred on by the Taipei conference, is starting to have tangible benefits by bringing new countries to the fold and by spreading good practice.

Over 2015-16 financial year, DECC proposes to continue the ICF project by offering advice and some technical assistance to our ICF-funded countries. We have had a budget of £200,000 approved to cover work that has been delayed and some work on the Global Calculator. This will cover some financial assistance to Nigeria, Brazil and Mexico, so that they can finish their initial project by launching their tools, and to India and Indonesia, who are re-launching improved versions of their models. We will do this because without this relatively small amount of support to complete the initial stage of the projects (which was already agreed but delayed from last year), it would not be possible to expect any of the positive impacts of our theory of change and our initial investment will have been wasted.

As previously mentioned, the in-country teams (apart from Algeria) plan to continue to work on all the models this year. Funding for this will come from a variety of sources. Some models are being directly supported by the country governments themselves, and some work has received prosperity funding from the FCO. The DECC 2050 team propose getting some extra funding from the ICF to support work in four countries (India, Bangladesh, South Africa and Indonesia), which the countries would not otherwise be able to do. The aim will be to improve the quality of the models and to use the models with stakeholders

and the public. We also propose holding another conference in early 2016 to further build the community. This will require a project extension business case. Throughout this work, we will continue to stress the importance of openness and transparency to encourage teams to publish more documentation online.

We see a lot of potential to continue, and even grow, the project beyond 2015-16. There is scope to further improve and develop the calculators in the existing ICF-supported countries, as well as to do some innovative outreach work using them. We have also received interest from new developing countries about starting new calculator projects. However, at this stage we are not clear what impact the spending review will have on DECC's ability to deliver this work, and we have not been possible to properly scope the demand or potential impact it could have. We will therefore include a proposal in the business case to further extend the project, subject to a detailed plan of action being approved in early 2016.

A. Introduction and Context

Link to Business Case:	https://www.gov.uk/government/publications/international-climate-fund-business-case-and-intervention-summary-international-2050-pathways-partnerships-and-global-calculator
Link to Log frame:	

Outline of the programme

Following a project model developed with the Chinese government, a dedicated team in DECC is providing direct technical and financial support to 11 developing and emerging countries (working mostly with local ministries of environment or energy) to develop their own in-house version of the UK's [2050 Calculator](#) - an interactive, open-source tool for developing energy and emissions scenarios. These will be used to explore the low-carbon development pathways open to the countries, and to open up the debate to stakeholders.

The countries involved are:

- Bangladesh
- India
- Vietnam
- Thailand
- Indonesia
- South Africa
- Nigeria
- Colombia
- Mexico
- Brazil
- Algeria (this project was not included in our initial business case, but was added following a visit of Sonelgaz staff to DECC as part of a delegation of the Algerian government)

DECC's support involved helping set up teams, giving an initial week-long training session in the country, facilitating a follow-up training session in the UK, as well as on-going technical assistance and advice (though in Algeria the technical support was more limited). DECC staff worked very closely with FCO staff in the countries throughout the projects.

B: Performance and Conclusions

Annual outcome assessment

Considerable progress has been made during the course of this year. We have exceeded our expectation in improving the modelling capability of Calculator countries. All 11 countries have been successfully trained and have developed working calculator models, and DECC has trained a number of extra countries. There are signs of a growing 2050 Calculator community, with knowledge transmitting between in-country teams without technical support from DECC (for example, the Colombian team providing training for the new Ecuadorian team).

We have also had considerable success around stakeholder conversations, with all of the in-country teams seeking and utilising stakeholder feedback from various sources. Only Brazil and Algeria sought limited feedback. This is an important aspect of achieving our overall aims as it improves the accuracy of the modelling and trust in the projects.

We are on course to our goal of publishing 10 country calculators, although there have been delays in launching them due to longer than anticipated start up times. For the projects that have been released so far, the initial launch events and reception of the work have been positive, with press coverage and high-profile figures attending. It is too early to judge how influential these calculators will be on policy and whether they will encourage a wider societal debate around 2050 pathways. In many countries governments have, so far, focused on using their tools for communication and engagement with stakeholders, the general public, and intra-governmentally. Press coverage has been favourable and there are encouraging signs that many tools are well-placed to be influential, with a few already being used to determine their countries' INDCs for the UN negotiations. It is also a good sign that all teams excluding Algeria plan to continue working on the project after the end of the initial ICF support phase, and that some have received or secured funding from other sources to support this.

Where data is available on published calculators, there are signs that there is significant public interest in the tools (for example, the Indian tool received 15,624 hits up to mid-January 2015). We have limited data on access to published calculators, and need to consider if this is a suitable indicator to be measuring against.

Overall output score and description

A – outputs met expectations.

Overall, given the delays the project experienced in set-up times, we think that project progress meets expectations. Some milestones were met or surpassed, particularly those around the DECC team giving training and improving modelling capability, DECC provided training to a number of extra countries during the course of the project and in-country teams now being proficient enough to support each other without DECC intervention. Stakeholder engagement was also a success, with almost all projects involving a wide range of actors from across academia, civil society and government. The launches were high profile, with senior figures in a number of countries making supportive statements about the projects

Due to the longer than anticipated set-up times, the project is behind schedule in meeting the milestone of publishing 10 calculator spreadsheets, websites, documentation and holding high-profile launches. This was originally meant to happen by the end of 2014, but only four countries had published their tools by then. However, a further three had published by the end of March 2015 and three more are on track to be published over the next few months. The launch events that did take place were all popular and the models were well received. With the continued support of DECC we have no reason to believe that the remaining launches would proceed differently. We are not aware of any plans to publish the Algerian calculator at the moment, with the company that worked on the model, Sonelgaz, preferring to use it internally.

For the indicators regarding the impact of the calculators on policy and low-carbon development, it is too early to tell as most of the tools had only just been launched by March 2015. There are encouraging signs that some of the projects are well placed to be influential in the future. For example, we have heard that two tools will be used in formulating the countries' INDCs. Also, all project teams (apart from Algeria) are continuing to work on the model or on outreach work, for example adding more sectors to the model or making My2050 versions aimed at the public.

Key actions

- Support Mexico, Brazil and Nigeria in finishing their projects by the end of September 2015 (Laura Aylett). Objectives: Ensure that the work is published openly so that governments and stakeholders can use the calculators.
- Make a detailed ICF project extension request for additional funding in 2015-16 to support the next stage of the projects in key countries, particularly India, by end of July 2015 (Laura Aylett). Objectives: To further develop the models to improve their analytical robustness and the number of sectors they cover. Also, to carry out more outreach so that a wider variety of stakeholders and the public are aware of the tools and able to use them.
- Monitor the progress of this work and organise technical assistance where required by end of March 2016 (Laura Aylett). Objectives: To ensure openness and transparency are maintained and to make sure that work is analytically robust and accurate.
- Organise a conference in early 2016, preferably in India with the support of the calculator team there (Kerenza McFaul). Objectives: To share best practice, share ideas and to build relationships between the teams so that they can support each other as much as possible. For countries new to the calculator methodology, to encourage them to start their own projects and develop their modelling skills.

Has the logframe been updated since the last review?

Project progress has been added to the log frame but no alterations have been made to the content of the milestones. However, we have updated the log frame to include output weightings, which were not included in previous iterations. Most of the milestones in the log frame were expected to complete by March 2015 at the latest.

The log frame will need to be updated in the future to reflect the delays that that been experienced and to reflect the most appropriate outcomes, outputs and milestone for the project extension. New indicators will need to be added to take into account what we now know about the motivations behind teams developing the calculators, for example to capture their use as an educational and debating tool with the general public. We will need to consider if indicator 4.2 is an appropriate measurement given the difficulties we have had in obtaining this data. We will also need to consider whether existing indicators and milestones are clear and measurable, and that they are stretching enough, so that they really reflect the idea of transformational change.

C: Detailed Output Scoring

Output Title	Modelling capability: Improved long-term modelling capability out to 2050		
Output number per LF	1	Output Score	A++
Risk:	<i>Low</i>	Impact weighting (%):	25%
Risk revised since last AR?	-	Impact weighting % revised since last AR?	-

Indicator(s)	Milestones	Progress
1.1 National government and stakeholders attended one week workshops	10 countries having held workshops by end of 2014	Surpassed –11 ICF-supported countries had workshops, plus at least 9 others had technical support during the two-year period.
1.2 Ten national teams develop between 30 and 50 one pagers (summaries of the scenarios for each climate change solution featured in the model),	10 countries having developed one pagers by end 2014	Surpassed –11 countries have developed these, though the majority hadn't published them by the end of 2014.
1.3 Ten national teams developed excel model suiting the requirements of the 2050 Calculator approach	10 countries having developed excel models by end 2014	Surpassed –11 countries have developed working models.

Key Points

Based on the indicators in the log-frame, the project has surpassed its goals in improving modelling capability. All key ICF supported countries had developed working models, and an additional 9 received technical support from the DECC team. The high quality of modelling capability is supported by the recent Ricardo-AEA report into the International 2050 Pathways Partnership project, which agrees that this improvement is largely due to the support provided by the DECC team. The report states:

“Feedback from stakeholders was overwhelmingly positive about the 2050 international outreach programme. In particular, the support from DECC was very positively received; this support was financial, technical and political, and was both responsive and practical. The flexibility of the support also meant that it was possible to adapt the 2050 Calculator to match each country’s specific interests and priorities. This flexibility has translated into a strong sense of ownership by teams that have developed the Calculator.”

There is also promising evidence that this improved modelling capability is now being shared beyond DECC supported countries, with some countries becoming proficient enough in calculator design to support other in-country teams without DECC facilitation. For example, the Colombian team is providing

support for the new Ecuadorian team. The willingness of Calculator countries to share knowledge and build a “Calculator Community” was demonstrated at the conference in Taiwan in February 2015 where representatives of around 30 countries shared their experience. Building this community is vital for ensuring that the country calculator work can continue without direct support from DECC.

The Ricardo-AEA report raises the issue that in a number of countries there were sophisticated energy modelling capabilities before the projects started, using tools like MARKAL and LEAP, and that most teams themselves did not feel that modelling skills had been substantially improved. However, it was felt that DECC’s modelling approach was more accessible to non-technical people and had opened the calculator up to a wider range of stakeholders. A stakeholder from Nigeria said that it had changed the country’s approach to modelling, particularly in enabling the exploration of the linkages between energy demand and economic development. This is key success of the project, which sought to open up the conversation on energy, economic development and low carbon pathways to a wider audience. Positive feedback on the accessibility of the modelling is encouraging as it demonstrates that the project has potential for replicability beyond the support provided by DECC which is vital if countries are to continue to build calculators once the DECC project has been completed.

Summary of responses to issues raised in previous annual reviews (where relevant)

There was a risk in the last annual review that the three countries that had not yet started building their models would never get going. This did not happen, partly due to the continued support from the DECC project team, and 11 countries built working calculator models.

Recommendations

DECC should continue to support the development of the calculator community, in which calculator countries have the capability and the willingness to share their knowledge and abilities in building 2050 calculator models. This is vital in ensuring that we can build on the considerable potential for replication that the project holds without requiring significant extra funding from DECC.

We will do this by developing the 2050 calculator community website and online “book” on how to build a calculator. We will also hold another conference in early 2016, possibly hosted by the Indian team. These conferences are vital for forming links between teams, and building a sense of community between Calculator countries.

Output Title	<i>Accessibility: Energy and emission options publicly available in an easy to use format. Data in public domain</i>		
Output number per LF	2	Output Score	B
Risk:	Moderate	Impact weighting (%):	25%
Risk revised since last AR?	-	Impact weighting % revised since last AR?	-

Indicator(s)	Milestones	Progress
2.1 Ten national teams publish on a website an Excel version of the 2050 Calculator for their country	10 countries having published an Excel model by end of 2014	In progress – As of March 2015, 6 of the 7 countries that have published calculators have the excel model available online (India, South Africa, Thailand, Bangladesh, Indonesia and Colombia). Vietnam's was initially published but was withdrawn and is now available on request.
2.2 Ten national teams publish a web interface for their 2050 Calculator that enables users who are not comfortable with Excel to run the model.	10 countries having published a web interface by end of 2014	In progress – As of March 2015, 7 countries have published a web interface. But 10 have working web tools, with the last 3 web interfaces due out by September 2015.
2.3 Ten national teams accompany indicators 2.1 and 2.2 - with additional documentation to explain assumptions (these could be included within the Excel and web page versions)	10 countries having produced additional documentation by end of 2014	Not met - By end of March, only two countries had produced additional documentation (India and Vietnam).

Key Points

For the 11 ICF countries, a lot of progress was made during the 2014-15 financial year after a slow start the year before while people were hired, teams were formed, and modelling skills developed. By March 2015, 7 calculators had launched (with 3 more in progress), with 6 of these countries making the Excel model publically available. This is encouraging, and we believe that the remaining three countries will publish their Excel spreadsheets once their calculators have launched. Vietnam's calculator was originally published, but was removed while they update the model to include the country's new policies.

Algeria is the one country where we are not aware of plans to publish the model. This project is led by Sonelgaz, a state-owned gas company with existing energy modelling capabilities, who were given more limited support than other countries. Algeria was not included in the original project plan, and funding was provided following a visit from an Algerian government delegation to DECC. Sonelgaz were part of this delegation. DECC funded an initial training workshop and some follow-up training with an external consultant, but did not fund workshops or staff costs. The team built a very analytically robust and complex Excel model, which we believe to be at least 80% complete. To the best of our knowledge the calculator is being used internally by Sonelgaz. However, we are not aware of any stakeholder consultation, use of the tool within government, or any plans to publish this work. Although the final decision to publish is always out of our hands, this is a disappointment.

Overall there has been a disappointing lack of additional documentation published, with only two of the published countries providing this by the end of March 2015. We have reason to believe, however, that this is not because in-country teams were reluctant to publish their data necessarily, but because of the

intense schedule towards the end of the project, which left little time to do work that is considered “extra” to creating and publishing the model itself. The Ricardo report confirms this view, and states: “An ambitious time schedule was brought up as a challenge for several countries. In most countries, the launch of the Calculator was behind schedule and a variety of factors delaying the process were identified. They felt that the project time schedule should rather be one or one and a half years.”

Openness and transparency around energy and emissions data is one of the key drivers of this project for DECC, so encouraging the publication of more material should be part of the extension, and more time should be worked into schedules in the future to allow for this.

Summary of responses to issues raised in previous annual reviews (where relevant)

A risk was raised in last year’s annual review that the countries would be too nervous to publish their tools. This has not come to pass, as the three that are awaiting publication are not delayed for those reasons particularly (though they are spending some time getting sign off or extra feedback to increase their confidence in the model).

It was also mentioned in the last annual review that most countries were only considering energy emissions, which means that industrial process emissions and land use emissions are not included – possibly representing a large proportion of a country’s emissions. One of the USPs of the 2050 Calculator is that it includes all energy and all emissions, which means that it can tell a more complete story of how to tackle climate change, it can be more relevant to the UN negotiations process, and it can be of interest to more government departments and stakeholders. Unfortunately, most models do focus on energy emissions, but Indonesia and Colombia have included land use, and a lot of projects are continuing and will expand into these non-energy sectors.

Recommendations

DECC should continue to support the final three country calculators that need to be published by October 2015. This is because they are nearly complete, so the resources involved in finishing them are very small. Without their publication, the substantial resources that have already been spent will be wasted, as the higher-level impacts in the theory of change are predicated on a finished model being in place. Once these are published, the focus of future support should be on existing calculators to make sure they have impact, and on promoting the principles of accessibility and transparency (which Ricardo’s research found to be very valuable).

Given our emphasis on the importance of publishing energy and emissions data, the DECC team should continue to encourage those countries who have not published additional documentation to do so by discussing the benefits with them again, reviewing documentation, and funding the hosting of websites where needed.

Output Title	<i>Peer Review: Stakeholders involved in reviewing data to improve assumptions</i>		
Output number per LF	3	Output Score	A
Risk:	<i>Low</i>	Impact weighting (%):	15%
Risk revised since last AR?	-	Impact weighting % revised since last AR?	-

Indicator(s)	Milestones	Progress
3.1 Broad range of relevant stakeholders from government, business and NGOs involved (indication of seniority)	10 countries have achieved by end 2014	Not met - 9 countries have achieved this, as Brazil's invitation list was quite limited and Algeria did not do much consultation.
3.2 Input provided by stakeholders (examples)	10 countries have achieved by end 2014	Achieved – 10 of the 11 countries had received feedback from stakeholders.
3.3 Input utilised by national team (examples)	10 countries have achieved by end 2014	Achieved – In 10 countries, national teams had utilised input from stakeholders. For example, Colombia has used a lot of information from other studies and revised down a lot of their assumptions for Level 4 on the basis of their workshops.

Key Points

The project has been successful in the area of stakeholder engagement in the data and assumptions. Since these underpin the models themselves, stakeholder input into these has been vital for ensuring buy-in and building confidence in the projects.

All projects (except Algeria) used stakeholders to develop their models. The Algerian calculator was designed by the company Sonelgaz who we believe intend only to use the model internally at this point. Of the ten countries that did engage stakeholders, nine involved a wide variety of stakeholders from areas such as academia, NGOs and business. This shows that they have taken on board the calculator commitment to openness and transparency, which improves the accuracy of the model, and builds trust and a feeling of ownership among potential users.

We found that Brazil did not consult as widely as other countries, as they did not involve NGOs, which in our experience usually push for more ambitious scenarios to be included. Brazil's engagement focused on academia. However, we do not consider this to be a failure of the project, because within the political culture of Brazil, this was considered to be a very wide consultation.

The Ricardo report noted:

“For many interviewees, one of the key achievements in the process of developing the Calculator was that of stakeholder engagement and communication... for many countries the process of bringing together different stakeholders had been entirely new (India, South Africa), and one which had enabled links to be built across government, and with wider stakeholder groups (South Africa). For some, this had proved to be a challenging process, but ultimately a beneficial one. For example, one interviewee explained that even getting government stakeholders to participate in the process had been an achievement (Indonesia).”

This has been a success of the 2050 Calculator project, which we hope will have affects beyond the project itself by bringing together national governments and stakeholder groups with an interest in climate change policy. As the Ricardo report alludes to, for some countries this level of stakeholder

engagement was an entirely new concept and has encouraged countries to be more ambitious in their models, and provided more robust data. It also makes it more likely that these stakeholders will use the model once it is released because they feel ownership and trust the model.

Summary of responses to issues raised in previous annual reviews (where relevant)

There was a risk identified that key stakeholders may not be involved, but this did not materialise, we believe that this is due to the work of DECC and the FCO with countries to stress the benefits of involving a wide range of stakeholders in the project.

Recommendations

DECC should continue to promote stakeholder engagement in 2050 calculator projects as it has been identified as particularly valuable in and of itself for raising awareness and building buy-in.

Output Title	<i>Society Engagement: Key actors and wider society debate pathway options using calculator</i>		
Output number per LF	4	Output Score	B
Risk:	Moderate	Impact weighting (%):	25%
Risk revised since last AR?	-	Impact weighting % revised since last AR?	-

Indicator(s)	Milestones	Progress
4.1 Launch events; breadth of invitations and attendance	10 countries have achieved by end of 2014	In progress – not achieved due to delays in launching calculators. Only 4 launched by end 2014. By end of March 2015, 7 calculators have launched holding successful events with a wide invitation list.
4.2 Access to webtool (numbers of hits; feedback by users)	10 countries have achieved by end of 2014	Not met- Only 4 webtools published by end of 2014, extended to 7 by March 2015. Only data available to date is that the Indian website had received 15,624 hits up to mid-January 2015.
4.3 Press mentions (number of articles)	10 countries have achieved by end of 2014	In progress - By end of 2014, 7 countries in total had press mentions. By March 2015, this had risen to 8. Some countries received significant press coverage when they launched.
4.4 Used by third parties (who and how?)	10 countries have achieved by end of 2014	In progress - Not all calculators launched yet and still early for those that have but in India, NGOs, think tanks and consultancies have started quoting the Indian tool and sourcing data/projections/ references from the work. The Thai calculator will be used by a university for analysis. The Bangladeshi calculator is being used by academics.

Key Points

None of the milestones in this output were met because of the delay of getting some country projects off the ground. This is just due to slippages in the schedules of the projects, however, not project failures. We are on track to deliver 10 calculators, and there are plans to hold high-profile launch events and to use them with stakeholders and the public in all cases.

Even though the quantity of stakeholder engagement so far has fallen behind our initial timescale, the quality has met our expectations for this stage in the projects. Launch events have been high profile and successful, attracting a wide range of societal actors from different parts of government, NGOs, business and the media.

For those tools which were published, governments and the FCO secured positive press coverage. In Colombia, for example the launch was covered in two national newspapers and one Bogota newspaper,

on 15 news websites and on national radio. The Vietnamese and Thai calculators were featured on TV news.

Unfortunately we do not have access to much data about the number of users on the website, so we are unable to accurately report on this indicator. For India, the only country we were able to obtain data from, the website appears popular, receiving 15,624 hits up to mid-January 2015 following its launch in February 2014. We are not, however, able to ascertain if these are repeat or discrete users. Given our difficulties in obtaining this data, we need to consider if we should continue to report on this indicator or consider a more appropriate measure. We will continue to raise with countries our need for access to data as part of our continuing support for models.

For those countries yet to publish, we have no reason to believe that their launches will be less well received than the seven who already have. For example, both Brazil and Mexico want to use the tool for public engagement so will develop communication plans, and Nigeria will hold a launch event.

Country calculator use by third-parties is important for ensuring that the calculators have as wide an impact as possible both in and outside of country governments. Most countries that have released their tools have done so very recently, so it is too early to judge how involved key actors in society will be. Many countries intend to do more outreach work in the next phase, including with government and academia (Bangladesh), schools (South Africa) and the general public (Colombia). There are encouraging signs that the calculators will be used in the way that we envisaged. The Indian calculator is being used by NGOs, think-tanks and consultancies to inform their positions on energy policy. Both the Thai and Bangladeshi calculators are being utilised by academics during training courses to explain the future of their energy systems.

Summary of responses to issues raised in previous annual reviews (where relevant)

A risk was identified that countries would not utilise their calculators once they were launched. This has occurred in Algeria, where we believe Sonelgaz had no plans to publish their tool. We will no longer be offering financial support to the Algerian team. We have no current plans to support additional countries. However, if we do so in the future we will try to only select organisations to work with that adhere to DECC's commitment to openness, transparency, and sharing.

It remains a risk that the remaining ten countries will either discontinue their engagement programmes (particularly after the initial enthusiasm and activity surrounding the launches has worn off) or do as Algeria has done and refuse to take part in wider engagement altogether. We consider this risk to be low, however, as all 10 countries have plans to continue the engagement work. All countries have staff dedicated to calculator engagement and further funding approved from the FCO in some cases.

To mitigate this risk, ongoing support and encouragement from DECC and the FCO will continue with the aim of keeping teams developing and using their calculators. We plan to make a bid for further funding for a number of countries so that we can fund extra work on the models and additional outreach, which will ensure the models are being used and increase the likelihood that they will continue to be used in the future by making the models themselves more accurate and beneficial.

It is always possible that political support for the work could be withdrawn and calculator projects discontinued. This is particularly a risk in countries when changes of government occur, and is outside of DECC control. This risk derives from having calculators embedded in countries' own government structures. The many positives that the Calculator project gains from this approach (for example, government buy-in, opportunity to influence government energy policy) outweigh the risk that the political tide may turn.

Recommendations

Supporting countries to do more outreach work as part of the next stage of their projects by providing advice for all, and in some countries providing funding support. For example, the team in India would like to hold a series of workshops around the country to show stakeholders the tool and train them to use it.

Encouraging countries to share accurate information on the number of website hits by emphasising the importance of gathering data to gain an understanding of the reach of the calculators. If we are unable to convince countries to share this information we will need to consider developing a different, more appropriate measure of social engagement with the tools.

It is not our intention to support any new calculators as part of the next state of the project, as we have here, though we will help link up interested governments with other calculator teams nearby. Should we choose to do so, in the future our experience with the Algerian team has shown us that we need to carefully consider whether groups that we may work with share our objectives and are able to influence government policy or raise awareness in the wider public.

Output Title	<i>LCD co-benefits - Low-carbon development shown to deliver more than emissions cuts e.g. air quality, fossil fuel imports etc</i>		
Output number per LF	5	Output Score	A
Risk:	Moderate	Impact weighting (%):	10%
Risk revised since last AR?	-	Impact weighting % revised since last AR?	-

Indicator(s)	Milestones	Progress
5.1 Analysis and webtool include consideration of relevant developmental co-benefits	5 countries have achieved by end of 2014	Achieved – 4 of the countries publishing in 2014: India (land use and imports), Thailand (land use), Indonesia (imports) and South Africa (imports). By April 2014, this had risen to 6: Vietnam and Colombia both include land use, and a second version of Indonesia was launched which includes land use.

Key Points

Although there were delays in timing, six of the seven finished calculators now include some additional sectors which can show co-benefits of low-carbon development, namely land-use implications and energy security. Colombia and Indonesia have included land-use emissions, which is very important as they are forest nations.

None of the ICF-funded projects have included air quality yet, or costs. However, some are planning to include land use, costs and air quality in future versions of the tool, and there is interest in water implications as well. We understand that China's Inner Mongolia province-level calculator includes water resource availability and pollution, and teams are interested in learning how this has been modelled.

Summary of responses to issues raised in previous annual reviews (where relevant)

As noted in the previous review's risk assessment, some countries are at risk of not covering these non-energy co-benefits. The recommendation was to keep working with them to get the first version out and then encourage them to add more in the second stage. This still remains our strategy, and has already yielded some results. For example, Indonesia has published a second version including land emissions, and India is working on a version including costs.

Recommendations

As noted in the previous review's risk review, we will work with countries to produce their first version of the calculator, even if it doesn't include every sector, and then continue to explore further updates of the tool to add these sectors in the future. Any future conference on the calculators will be an opportunity for teams to share how they are modelling these new areas in innovative ways. For example, China's work on water must be featured heavily so others can learn from them.

D: Value for Money and Financial Performance

Key cost drivers and performance

The key cost drivers for the projects in each country originally were the staff costs for the teams and the costs of doing outreach activities like holding workshops in each country, and the demand for both of these. This varied a lot from country to country because we were demand led and each project had a unique set-up. For example, in some countries the government was willing to dedicate staff time to the project, so ICF funds did not need to cover this. However, in other countries they outsourced some of the work to local external consultants or trusted partner organisations, which ICF funds paid for.

For 2015-16, we proposed continuing to support existing projects only rather than working with new countries. Going forward the main cost drivers will be the same, and demand is likely to vary even more from country to country, as each project is at a different stage and is developing in its own way. Also, some teams will need extra ICF funding to carry on the project and some do not. For example, the Thai, Vietnamese and Indonesian projects have received FCO prosperity funding instead, and the Colombian government has dedicated a member of staff to work on the model which we do not need to pay for.

VfM performance compared to the original VfM proposition in the business case

Five qualitative VfM indicators were identified in the original business case, as it is very difficult to judge results through measures like greenhouse gas emissions abated or jobs created:

1. Builds developing country government capacity
2. Facilitates low-carbon dialogue
3. Uses existing resources
4. Doesn't use consultants
5. Enhances UK co-operation as a leader on low-carbon development

Ricardo-AEA's report did not attempt to do a full VfM assessment because of the difficulties involved and because the project is at an early stage, but used the indicators listed above. Their assessment was:

- Criterion 1 has broadly been achieved in those countries that had launched 2050 Calculators, when taking a broad definition of improved modelling capability as an ability to develop low carbon development scenarios. However, specific modelling capability, for example in the form of skills and expertise, was not really affected.
- As most of the ICF funded Calculators have only been launched over the past few months, or are yet to be launched, it is too early to evaluate Criterion 2.
- Criterion 3 has been fulfilled. From the UK side, the Calculator draws largely on existing resources, drawing on members of the 2050 Calculator team, as well as DECC's modelling integrity team, for technical input, and the FCO for wider networking and relationship building. In terms of the countries, the work was done using existing institutions and staff and required few new posts or resources.
- Criterion 4 was only partly fulfilled. The VfM goal was to minimise the use of consultants and have most of the work done through government employees. However, the interviews and country information available to us show that consultants (including research institutes) were sometimes used in the development of the Calculators. One interviewee suggested that this may

have been partly because government employees already receive fixed salaries and have fixed, project-independent duties whereas consultants can be paid directly through the available programme funds.

- The interviews showed some evidence for the achievement of Criterion 5. An interviewee from a UK Embassy/High Commission felt that the increased leverage to work with the country government on energy and climate change issues had been one of the project's greatest benefits from their perspective. Similarly, an interviewee from Brazil argued that the UK energy sector has long been the model the country looked to follow and that, since the 2050 Calculator had originated in the UK, it had carried more weight in Brazil.

Assessment of whether the programme continues to represent value for money

At this stage, the potential benefits of the calculators in terms of influencing low-carbon development (and therefore value for money based on the theory of change) are not yet realised as they have only just been published.

However, the early stage of the theory of change is now complete, as the initial models have been built. And it can be said that the programme has the potential to represent good value for money due to its small budget put potentially large impact on energy and climate change policy and public understanding in some strategically important countries (for example India, Indonesia, Brazil and South Africa). The small budget is due to the unique way the project has been managed, using DECC staff and FCO climate change attachés to work directly with country governments, rather than hiring expensive UK or EU-based consultants to build the models on behalf of countries, or to train the countries to build their own. The budget for each calculator was approximately £130,000, and overall the 10 projects came in (or are due to come in) under budget. It is worth noting that we have received a quote from a commercial provider to take on DECC's role supporting a new batch of countries, and our costs were significantly lower.

Helping the countries build the models themselves has resulted in models of more variable quality and style (though they plan to continue to improve this), but that are tailored to the country's interests and have significant buy-in in most cases. This means they are more likely to be used. While local consultants and research institutes were involved in some of the country projects, usually this was at the request of the government in question, and they worked closely with staff in government. The only exceptions to this are Bangladesh, where in the end the government withdrew support for the tool (however, NGOs and academia continue to be very supportive), and Algeria (where it was developed by a public fossil fuel company). Working with consultants has slightly lessened the value for money of the calculators in terms of capacity building within government, but capacity has been built instead in organisations that governments partner with on a regular basis.

To help ensure that the project realises its potential and offers good value for money, we will need to do the following activities with the following resources:

- Continue to support existing teams to further develop their models to improve their accuracy and usefulness, and to do further outreach work with government, stakeholders and the general public to make sure they are used. To do this, we will need:
 - The time of analysts to help train teams on how to build new parts of their model, and for quality assuring models. This is more of a challenge now that the 2050 team has lost its dedicated analysts. One ex-team member has volunteered to do a training trip to Vietnam already, and we are looking to get a more formal agreement with the Engineering and possibly other teams so that we are guaranteed some time for desk-based QA and training trips. Failing this, there are consultants who have already worked on calculators that we could hire, though this would be a last resort because of the cost implication, which would reduce value for money.
 - Further ICF funding for some countries which are not able to secure the necessary resources internally or from the FCO's prosperity fund. These requests will be considered on a case-by-case basis to evaluate whether they are likely to have an impact on our theory of change, and represent value for money. A project extension request will be required to secure this funding.

- To further develop the calculator “community” by developing the website and holding another conference in early 2016. We have been able to link teams in different countries to offer each other support, which not only offers value for money, but also facilitates South-South learning and spreads the “calculator message” to other countries with very little financial outlay from the ICF. For example, the Colombian team has supported the Ecuadorian government to start projects, and the India team are supporting the Mauritians. Through holding another conference next year and linking up more teams, countries will learn from each other and further develop their models and outreach skills. Resources required:
 - Approximately £70,000 for the conference, which will be part of the project continuation request. We are in talks with the team in India about hosting it.
 - A small pot of money to pay for travel of calculator teams to do training trips (e.g. Colombian team visiting Peru, and possibly Thai/Vietnamese/Indonesian visiting Malaysia) to get projects going in new developing countries. No additional funding is required for this as it will be covered by the budget for 2015-16 that has already been agreed.
 - Time of the DECC 2050 team developing the 2050 Calculator community website and online resources. A “book” is already available online, but it is a work in progress, and requires input from teams around the world which needs to be co-ordinated.

Quality of financial management

Normal DECC budget and reporting procedures were followed throughout the project, and auditors looked at the accounts.

The project was originally supposed to finish in December 2014, and this was extended to March 2015. At the end of the 2014-15 financial year, the project was approximately £424,000 underspent (around 27%).

This underspend occurred for two reasons:

1. The projects were demand led. A standard estimated budget was determined for a country project during the business case phase, but actual budgets were set later once teams had been set up. Spend was approved on a case by case basis in conjunction with FCO climate attachés. For most countries, the standard estimated budget was much higher than necessary. Eight of the 11 countries underspent.
2. Three of the country projects were delayed (Nigeria, Brazil and Mexico), as was the second phase launches of the Indonesian and the India projects, so spend on this (approximately £65,000) has moved to the 2015-16 financial year. Also the final payment to Ricardo-AEA for their evaluation report has yet to be made because of delays.

A budget of £200,000 has already been agreed for this project and the Global Calculator in 2015-16 based on the current business case, so this will cover work that has already been agreed but was delayed (e.g. the launch activities of the final calculator and the final payment to Ricardo-AEA) totalling approximately £95,000, plus some extra technical visits (some done by country teams themselves to new countries). We plan to do a project continuation request soon with a business case for more funding to work on the next stage of some of the calculator projects, with a particular focus on India.

Date of last narrative financial report	-
Date of last audited annual statement	-

E: Risk

Overall risk rating:

Medium

Overview of programme risk

A number of the risks identified before have been downgraded from 2 to 1 because projects are now established and the majority of countries have published their calculators. However, there are remaining risks around how the calculators are used and whether or not they are influential. There is also an increased risk that DECC is less able to answer technical questions about calculators as we no longer have analysts dedicated to the project.

Description of risk	Initial risk	Current risk	Comment at 2 year review stage
1. Countries are unable to complete their 2050 Calculator because of a lack of data, meaning it cannot influence their low carbon development plan.	2	0	The 11 countries that we supported have now developed their Excel models so any data issues have been resolved.
2. Countries initially embrace the open-sourced nature of the 2050 Calculator but then refuse to publish their data, meaning that whilst it may influence government policy, its use as a stakeholder engagement tool is lost.	2	2	This still remains a risk for the remaining countries that haven't published their calculators, and for countries that could increase access to their model by publishing additional documentation and information. With both groups we will continue to stress the importance of openness and transparency for DECC.
3. Countries deliver technically sophisticated 2050 Calculators but these are poorly communicated and are not used to influence policy.	2	2	This remains a risk for all calculators, and particularly for the three countries that are yet to publish. Even in those countries that have published it is possible that political support could be withdrawn. It is in the nature of the project that we allow countries to decide whether or not to make the calculators publically available, and it is clearly up to country governments themselves whether they use the calculators to inform policy making. Given that most calculators were only recently published it is difficult to assess the extent to which the calculators will be used in the way that we hope. There are, however, promising signs from published countries that the calculators will be widely shared or used. Those countries which are yet to publish all have plans to share the calculator widely and engage with stakeholders and wider society. The more widely calculators are shared the more likely we believe it is that they will influence government policy through increased social pressure and buy-in. We will continue to work with all countries to

			encourage them to disseminate the calculators widely.
4. 2050 team loses the capability to answer queries about, or understand data within, the 2050 Calculator meaning that it is unable to support requests from other countries developing their own calculators	1	3	<p>2050 team has been reduced in size and those with technical knowledge are now primarily focussing on other projects. The head of the 2050 Calculator team recently announced he is leaving DECC. He has offered to continue to answer queries and support teams, particularly on the web tool, but there is a very high risk that we will not be able to answer technical questions. We are already finding it difficult to find people to help with quality assurance and requests for training from existing calculator teams.</p> <p>It is important that we secure some official support from DECC experts for this work, and we will be approaching the Engineering team to discuss options.</p> <p>Even if DECC completely loses capability in this area, we have access to a number of people around the world who now are calculator "experts". Some of these will charge for their services, though.</p>
5. One or more of the targeted 2050 countries fails to deliver country calculator to specification jeopardising target of engaging 10 developing countries with ICF funding	2	0	All have working models now, even those who haven't published, so this is not a risk. Though there is a risk they may not publish them for other reasons.
6. Political interference causes biased use of data within a country's Calculator to advance a particular agenda	2	2	"Level 4s" in many tools are not as ambitious as they could be, but most teams are continuing to work on their models and the importance of ambition is something we can continue to stress to them. Thus far, the project has been largely free from specific agendas, although developing countries have put greater emphasis on the importance of industrial growth in their economies. This emphasis makes decarbonisation challenging and ultimately leads to less ambitious targets. We hope that by encouraging action around Risk 2 (i.e. encouraging countries to publish their data) this is less likely to be an effective long term strategy.
7. New risk: 2050 Calculator does not include all GHGs or sectors. Brazil is looking to only initially cover some sectors (leaving out LULUCF), but could increase the scope further down the road.	0	2	The first versions of the calculators that have been published do not include land use and forestry, but many countries are improving their models to include it. For example, Indonesia added forestry. This is something we will encourage in the next stage of the projects.
8. New risk: FCO/DfID in country staff working on the project leave.	0	1	We have experienced some turnover of HMG staff in various countries particularly in UK based departments.

		<p>This has proven not to be seriously detrimental to the project as calculators have continued to be developed and published despite this. Now that projects are established, this is less of a risk. Our treatment is to make sure that a wide group of staff in an embassy or DfID mission are involved, and ensure strong knowledge and information management processes are in place. One aspect of this is to build strong relationships with locally engaged staff who are often in post for longer periods of time.</p>
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Outstanding actions from risk assessment

To avoid fraud, payments to countries are made:

1. In instalments, after evidence of pre-agreed outputs and activities have been supplied. (We have already delayed payment of instalments to some countries until outputs have been delivered.)
2. Using the procurement practices of the FCO or DfID in the country concerned
3. Normally, with the direct oversight of local FCO or DfID staff.
4. Always with the oversight and agreement of the DECC team member responsible for that project.

The amount allocated to each country was limited (to at most c. £140,000), so in the event of a misuse of funds its impact on the overall project will be contained.

F: Commercial Considerations

Delivery against planned timeframe

There were delays in country teams publishing their calculators, as original timescales were overly ambitious. The project end date was originally extended from December 2014 to March 2015, at which time 7 of the expected 10 calculators had completed. However, 3 more (Nigeria, Mexico and Brazil) are on track to publish over the summer and autumn.

These delays have had minimal impact on the budget and have not increased costs. It has meant that spending on launch events in these three projects have been pushed back, and will now be spent in the 2015-16 financial year.

Ricardo-AEA's evaluation report was also delayed into the 2015-16 financial year as they were able to attend the conference in Taiwan, which meant they had a lot more material to analyse. This meant that the final payment to them will need to be made in 2015-16 instead.

Performance of partnership (s)

In most cases, DECC has signed MoUs with country governments/organisations, and has outsourced most of the formal contract arrangements to the FCO in each embassy/high commission to manage. DECC has then reimbursed the FCO when money is spent. This arrangement has worked well, as the

embassies already understand financial arrangements in each country. However, the FCO's paper-based method of paying invoice combined with DECC's own (often slow) system has meant a lot of delays in paying invoices.

The 2050 Calculator team believe that there are lessons which could be utilised by the DECC branch of the International Climate Fund team from our experience working with the FCO climate attaché network.

Given the spread out nature of the project, good communication was important for this project, but DECC IT systems made using Skype and other software very difficult. The 2050 Calculator project needed to purchase separate computers to operate them. The possibility of purchasing a DECC ICF based laptop with more advanced communicating programmes should be considered as an option. The benefits of being able to communicate with our partners in this way were numerous.

Asset monitoring and control

N/A

G: Monitoring and Evaluation

Evidence and evaluation

Ricardo-AEA has been contracted to produce a full analysis of the project so far. This has been delayed but we have received a final draft of the report so it is nearly complete. They interviewed a number of stakeholders around the world to produce this. However, in the draft report they state that it is still too early to judge the impact of the project as so many calculators have only just published. They have recommend to us that a second evaluation take place no earlier than summer 2016. We will consider this but it may be disproportionate to the size of the budget in the next financial year.

The theory of change and log frame are still mostly relevant, though in developing the KPI15 (transformational change) methodology, a few indicators that were not included in the log frame needed to be added. These are indicators mostly relate to the likelihood of the calculator projects continuing after DECC support ends (e.g. posts embedded in governments to continue working on the calculator). The theory of change and log frame will need to be adjusted further when the plan for the next year is finalised. They should reflect what we have learnt about what countries value themselves about the project (e.g. the use of the calculators in communication within government and to the general public, which is another valuable outcome of the project), they should contain only measurable indicators (currently some are difficult to measure), and that should be sufficiently stretching so they truly reflect the idea of "transformational change".

Monitoring progress throughout the review period

We regularly keep in touch with the country teams and use the FCO attachés to monitor progress in person. The process of building the calculators included a number of visits to the countries involved, and visits of the country teams to the UK, which allowed DECC to troubleshoot.

We get feedback throughout the year and try to record it. For example, the calculator community conference in Taiwan in February 2015 included a lot of very positive feedback about the project, the 2050 Calculator modelling approach, and DECC's support. It was a very positive event, with teams from

all over the world sharing their experiences. You can see a video outlining the feelings of participants here: <https://www.youtube.com/watch?v=GlvdX-gr0a4>

H: Transformational Change

Rating

3 - tentative evidence of change – change judged likely

Evidence and evaluation

Despite delays to some projects, the ICF funding has successfully helped 11 country teams build working models, and DECC staff have trained people from at least 9 further countries, exceeding expectations. Representatives of 30 countries attended the 2050 Calculator conference in Taipei in February 2015. The methodology has certainly proven to be replicable in a wide variety of countries. There are also very encouraging signs that the ICF-funded teams are looking to further develop and refine their models, and use them to engage the general public. This suggests that the teams themselves see value in them, and that the project and its impacts will be sustainable without ICF help in most of the countries involved.

However, so far there is little evidence that the ICF-funded Calculators have been influential on policy (though Colombia has confirmed they will use it to formulate their INDC), reflecting that it is still early days for most of the projects. Four have not yet launched finished models (Nigeria, Brazil, Mexico and Algeria). However, there are signs in many of the countries that the Calculators have the support of influential government departments so will be well placed to have influence in the future.

So far, there is more evidence of change in the early part of our method for the transformational change KPI, which would be expected if transformation follows our theorised pathway.

For a fuller explanation, see Spring 2015 results collection.

Monitoring progress throughout the review period

Progress is monitored now for transformational change every year as part of the ICF results collection process.

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Department of Energy & Climate Change

3 Whitehall Place

London SW1A 2AW

www.gov.uk/decc

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