



2050 PATHWAYS: INTERNATIONAL VISIT REPORT

OFFICIAL VISIT TO THE GOVERNMENT OF WALES FUNDED BY 'THE CLIMATE GROUP –
Under2 Coalition– FUTURE FUND' - APRIL 2019

(as per the UNDER2 COALITION FUTURE FUND SECONDMENT AGREEMENT BETWEEN THE CLIMATE CHANGE ORGANISATION LIMITED KNOWN AND T/A THE CLIMATE GROUP AND THE STATE OF SÃO PAULO, SECRETARIAT OF INFRASTRUCTURE AND ENVIRONMENT, GRANT NUMBER: UC/FF/2019/001, PROJECT: SECONDMENT WITH THE WELSH GOVERNMENT: 2050 PATHWAYS KNOWLEDGE AND EXPERTISE EXCHANGE, FEBRUARY 2019)



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I. OBJECTIVES

This Report aims to provide The Climate Group –the Under2 Coalition Future Fund with an overview of the official visit by Mr. Oswaldo Lucon to the Government of Wales on the 8th and 9th of April 2018. The intent was exchanging information in order to validate the 2050 Pathways Tool developed by the UK Department for Business, Energy & Industrial Strategy¹ and promoted by The Climate Group and Under2 Coalition for the 2050 Pathways Workstream (**Figure 1**)².

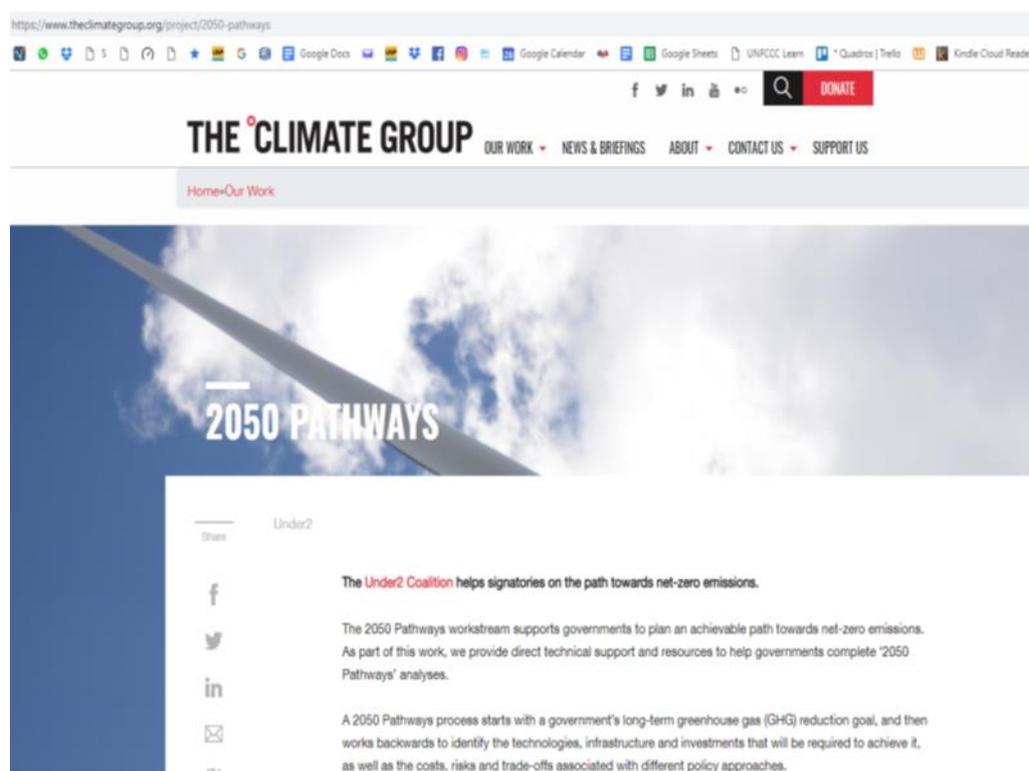


Figure 1. Climate Group's webpage with the 2050 Pathways Workstream

From this visit Sao Paulo aimed to learn from the Welsh experience with regards to their 2050 Pathways Model and Climate Change Strategic Plan, as well as to cross-validate the UK 2050 Calculator (hereafter named "Tool"), already utilized by Wales and being adopted by Sao Paulo.

Further, our purpose was to discuss how to expand this initiative, its pros and cons, and how to align outcomes with the Under2 Coalition overall objectives. We aim also to provide a technical background to The Climate Group initiatives, in order to engage other regional governments in the 2050 Pathways Workstream and in other common strategies.

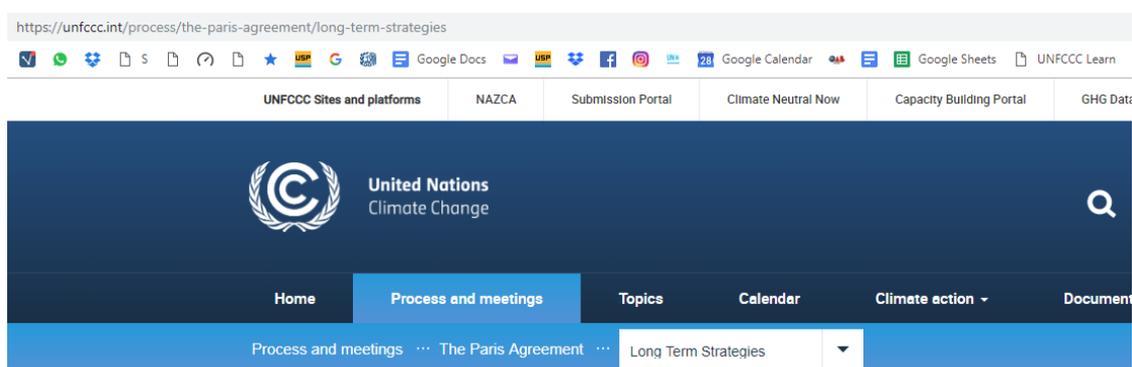
¹ UK Department for Business, Energy & Industrial Strategy, 2013. Guidance, 2050 Pathways, <https://www.gov.uk/guidance/2050-pathways-analysis>

² The Climate Group, 2019. 2050 Pathways, <https://www.theclimategroup.org/project/2050-pathways>

Other purposes were to exchange views on programmes, policies, institutional arrangements, financing and bilateral/international cooperation. Topics such as Adaptation, Sustainable Development Goals, International Cooperation, Nature-Based Solutions and Climate Mitigation Strategies were addressed during the visit.

II. BACKGROUND

In accordance with Article 4, paragraph 19, of the UNFCCC's Paris Agreement, all Parties should strive to formulate and communicate long-term low greenhouse gas (GHG) emission development strategies, mindful of Article 2 taking into account their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances. The COP, by its decision 1/CP 21, paragraph 35, invited Parties to communicate, by 2020, to the Secretariat mid-century, long-term low GHG emission development strategies in accordance with Article 4, paragraph 19, of the Agreement. To date, 11 countries have done so, including the United Kingdom³ (Figure 2).



Communication of long-term strategies

In accordance with Article 4, paragraph 19, of the Paris Agreement, all Parties should strive to formulate and communicate long-term low greenhouse gas emission development strategies, mindful of Article 2 taking into account their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.

The COP, by its decision 1/CP 21, paragraph 35, invited Parties to communicate, by 2020, to the secretariat mid-century, long-term low greenhouse gas emission development strategies in accordance with Article 4, paragraph 19, of the Agreement.

Parties who wish to communicate their long-term strategy to the secretariat are invited to send their submissions to LT-LEDS@unfccc.int.

Figure 2. United Nations Framework Convention on Climate Change, Paris Agreement, commitment to make public national long term strategies such as pathways to year 2050

³ United Nations Framework Convention on Climate Change, 2019. Communication of long-term strategies, <https://unfccc.int/process/the-paris-agreement/long-term-strategies>

Subnational governments are not under this mandate, but voluntary efforts are coordinated by entities such as The Climate Group. The Group's Under2 Coalition Memorandum of Understanding⁴ establishes that governments commit to limiting emissions to 80-95% below 1990 levels, or to below 2 annual metric tons per capita, by 2050 – the level of emission reduction necessary to limit global warming to under 2°C by the end of this century. It is not legally binding but demonstrates a “clear and lasting commitment from signatories to reduce emissions in the decades to come”. Governments who sign or endorse the Under2 MOU become part of the Under2 Coalition (**Figure 3**).

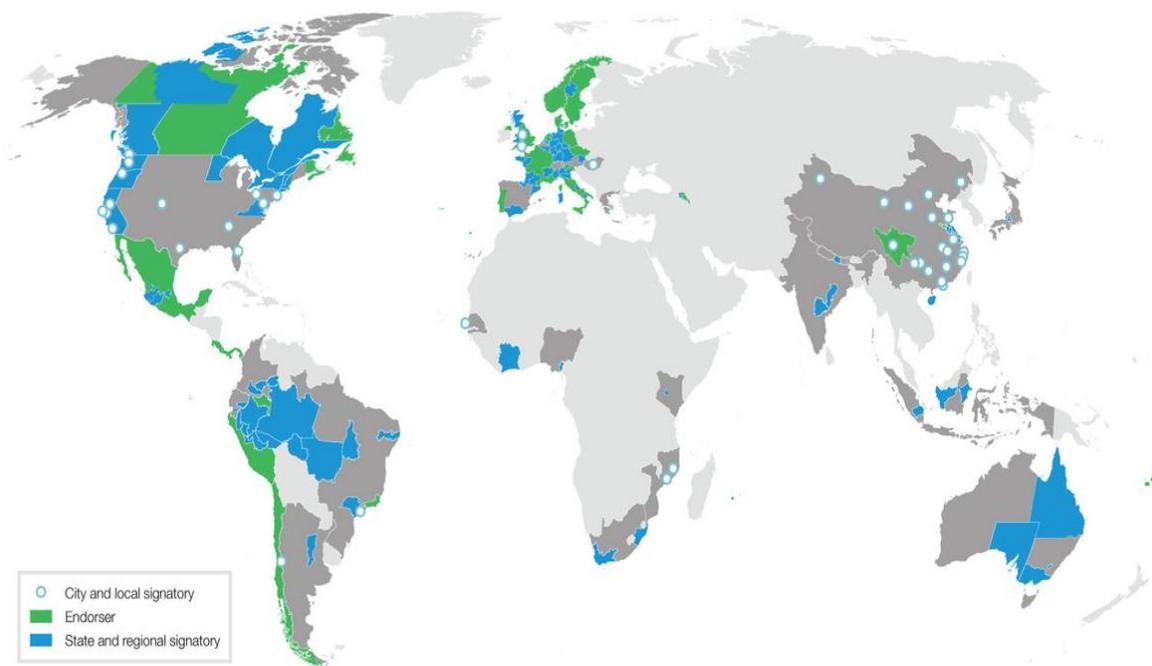


Figure 3. Signatories to the Under 2 MoU

To support partners in achieving such goals the Climate Group has started the 2050 Pathways Workstream⁵, analogue to the long-term view of the Paris Agreement. It aims to support efforts to achieve a path towards net-zero emissions at subnational level, helping with national governments to comply with their own Nationally Determined Contributions to the Paris Agreement. Some signatories to the Under2 MOU have performed their long-term analyses, at different levels and using different tools. These include the States of California, Massachusetts, New York and Washington (United States), the Basque Country (Spain), the Provinces of Baden-Württemberg (Germany), Quebec (Canada), Western Cape (South Africa) and the Region of Wales (United Kingdom) (**Figure 4**). The

⁴ The Climate Group, 2019. The Under 2 MoU, <https://www.under2coalition.org/under2-mou>

⁵ The Climate Group, 2019. 2050 Pathways, <https://www.theclimategroup.org/project/2050-pathways>

Climate Group and the Under2 Coalition have offered technical support and resources to perform these analyses.

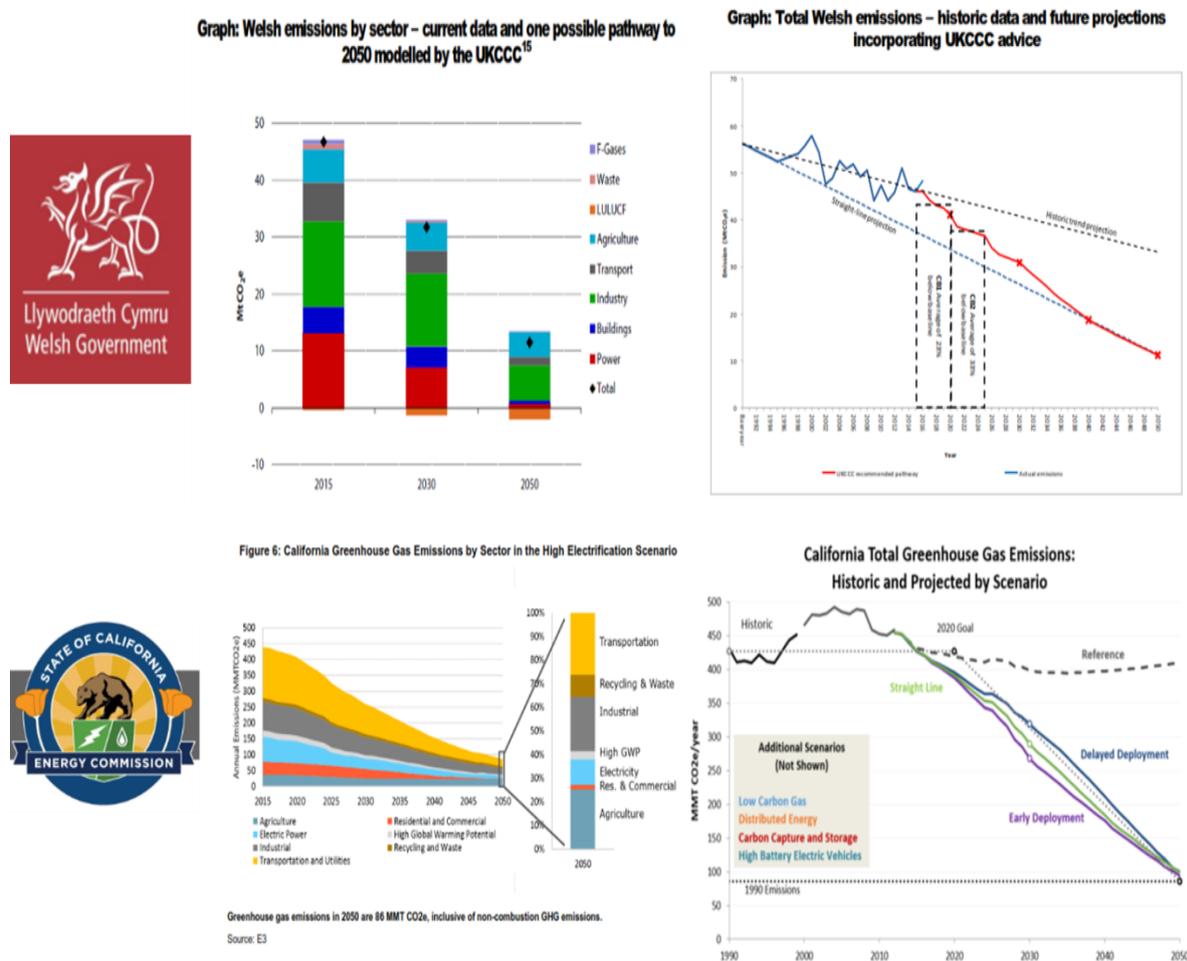


Figure 4. Pathways already published: Wales and California

At the UNFCCC CoP23 in Bonn 2017, in a side event of The Climate Group, former Governor Jerry Brown from California reaffirmed the commitment for addressing climate change and presented their 2050 Pathways Project⁶, conducted by several public bodies and a private contractor Energy+Environment⁷. In that occasion, the State of São Paulo (Brazil) signed the Under2 MOU and manifested interest to join the 2050 Pathways Workstream⁸ (Figure 5).

⁶ <https://www.under2coalition.org/news/governor-brown-reaffirms-us-commitment-paris-agreement-michael-bloomberg-cop23-we-re-here-we-re>

⁷ Energy+ Environmental Economics, 2019. Summary of the California State Agencies' PATHWAYS Project: Long-Term GHG Reduction Scenarios, https://www.ethree.com/public_proceedings/summary-california-state-agencies-pathways-project-long-term-greenhouse-gas-reduction-scenarios/

⁸ <https://www.infrastruturameioambiente.sp.gov.br/en/2017/11/second-day-at-cop23-reinforces-agenda-of-regional-alliances/>



Figure 5. Climate Group / Under2 Coalition side event at the CoP23 in Bonn, bilateral conversations with the Governor of California

The Climate Group opened in April 2018 a call for proposals for the Future Fund. São Paulo responded, seeing an opportunity to connect with the Californian Government at the Global Climate Action Summit⁹ in San Francisco, by mid-September in that same year (Figure 6). The approved proposal envisaged to simulate the Californian model using data available for the

⁹California Government, 2018. Global Climate Action Summit <https://www.globalclimateactions summit.org/>

São Paulo State, with initial focus on the energy demand side (residential, commercial, transport, industry, agriculture, other sectors). Adapted to local conditions, including institutional capacities, it would serve as a non-US subnational laboratory for the Californian initiative.



Figure 6. Climate Group / Under2 Coalition General Assembly at the GCAS, San Francisco, 2018



Figure 7. Future Fund support for visit to California in 2018, first bilateral conversations between Sao Paulo and Wales

The State of São Paulo is considered a trendsetter in Brazil for subnational policies and a game changer in terms of national climate commitments, now with the difficult task to help Brazil delivering its NDCs. São Paulo is also a major energy consumer and needs to better understand how to build future emissions pathways. However although both states are the most developed and populated in their respective countries, California and São Paulo are in very different stages for understanding their long term GHG mitigation pathways. While California had a well-established team and platform, São Paulo still had scattered initiatives, mostly based on topdown simulations in Excel, not sufficient to devise credible pathways. The challenge for Sao Paulo was to start the 2050 Pathways with a reliable tool, from those made available at the Under2 webpage¹⁰ list of resources.

The Under2 Coalition has developed exclusive resources for its signatories, including an 'Introduction to 2050 Pathways' webinar series which shares the experiences of Under2 signatories that have completed a 2050 Pathways analysis, and a 2050 Pathways Registry and Resources webpage.

MODELS, TOOLS AND METHODOLOGIES ↓

REGISTRY ↓

RESOURCES

- [Under2 Webinar - Intro to 2050 Pathways with case studies by California \(U.S.\) and Washington State \(U.S.\)](#)
- [Under2 Webinar - Intro to 2050 Pathways with case studies by Baden-Württemberg \(Germany\) and Western Cape \(South Africa\)](#)
- [Under2 Webinar - Intro to 2050 Pathways with case studies TBD \(Asia\) and TBD \(Australia\)](#)
- [2050 Pathways Platform Handbook](#) written by Jim Williams (SDSN) and Henri Waisman (IDDR)
- [Deep Decarbonization Pathways Project Country Reports](#)
- [Risky Business Project National Report: The Economic Risks of Climate Change in the United States](#)
- [UK 2050 Pathways Calculator](#)
- [LEAP: The Long-range Energy Alternatives Planning System](#)
- [Asia-Pacific Integrated Model \(AIM\)](#)
- [Global Change Assessment Model \(GCAM\)](#)
- [Evolved Energy Research](#)
- [RE-AMP Network](#)
- [Sustainable Development Solutions Network](#)
- [National Renewable Energy Laboratory \(NREL\)](#)
- [NRDC America's Clean Energy Frontier: The Pathway to a Safer Climate Future](#)
- ["A review of energy system models"](#) written by Subhes C. Bhattacharyya and Govinda R. Timilsina

Figure 8. Tools made available by the Under 2 Coalition webpage, including the UK 2050 Pathways Calculator adopted by Wales and Sao Paulo

¹⁰ The Climate Group, 2019. 2050 Pathways, <https://www.under2coalition.org/project/2050-pathways>

At the GCAS a side event¹¹ promoted by The Under2 Coalition in round talks, regions like Catalonia (Spain) and Santa Fe (Argentina) also manifested interest in the 2050 Pathways Workstream (Figure 9).




Under2 Coalition General Assembly 2018 update

September 2018

Summary

Don't miss...

Photos of the Under2 Coalition General Assembly are available [here](#).

As well as an article on our website: ['Biggest ever gathering of global states and regions on climate action'](#)

The Under2 Coalition held its Annual General Assembly on September 12, 2018, in San Francisco, California and brought together Governors, Ministers, Premiers and senior officials from 73 governments around the world to step up on climate action. The meeting was convened by The Climate Group, Secretariat of the Under2 Coalition, and chaired by Helen Clarkson, CEO. This General Assembly was the biggest meeting to date since the founding of the coalition in 2015.

During the meeting, government attendees shared individual success stories from their respective regions and committed to collaborate and share best practice policy solutions with a specific focus on healthy energy systems, land use and conservation, industrial transition, inclusive growth and buildings.

We also welcomed sixteen new joiners to the coalition. The Under2 Coalition now counts 222 jurisdictions as members who represent 1.3 billion people, \$34 trillion in GDP and 43% of the global economy.

The outcomes sought from the General Assembly were as follows:

- Formally introduce the new leadership group (Co-chair and Steering Group members) that will steer the Under2 Coalition over the next two years
- Secure agreement on workstreams priorities for 2019 to reinforce the key role of the Under2 Coalition for international climate action
- Announce new partnerships that will drive the Under2 Coalition forward and agree on next steps to attract more resources

Please find an appendix at the end of this document detailing the Under2 Coalition's goals until 2020.



Figure 9. Under2 Coalition General Assembly update

¹¹ The Climate Group, 2018. Global Climate Action Summit, <https://www.theclimategroup.org/event/global-climate-action-summit>

In San Francisco the Sao Paulo representative Oswaldo Lucon visited the consulting company E3, which developed the California 2050 Pathways model running on a software called *Analytica*¹².



Figure 10. Webpage of E3, private consultant hired by California to perform their 2050 Pathways using Analytica software

Part of the model is publicly available, but insufficient for use. After downloading the files and the software and registering for the free edition, messages appear informing about the limited features of the browsing. Possibly suitable for initial modelling of regions other than California, the Analytica Free 101 has a free download as the entrance version, but limited to 101 variables and other fewer possibilities (Figure 11).

¹² ¹² Energy+ Environmental Economics, 2019. Summary of the California State Agencies' PATHWAYS Project: Long-Term GHG Reduction Scenarios https://www.ethree.com/public_proceedings/summary-california-state-agencies-pathways-project-long-term-greenhouse-gas-reduction-scenarios/

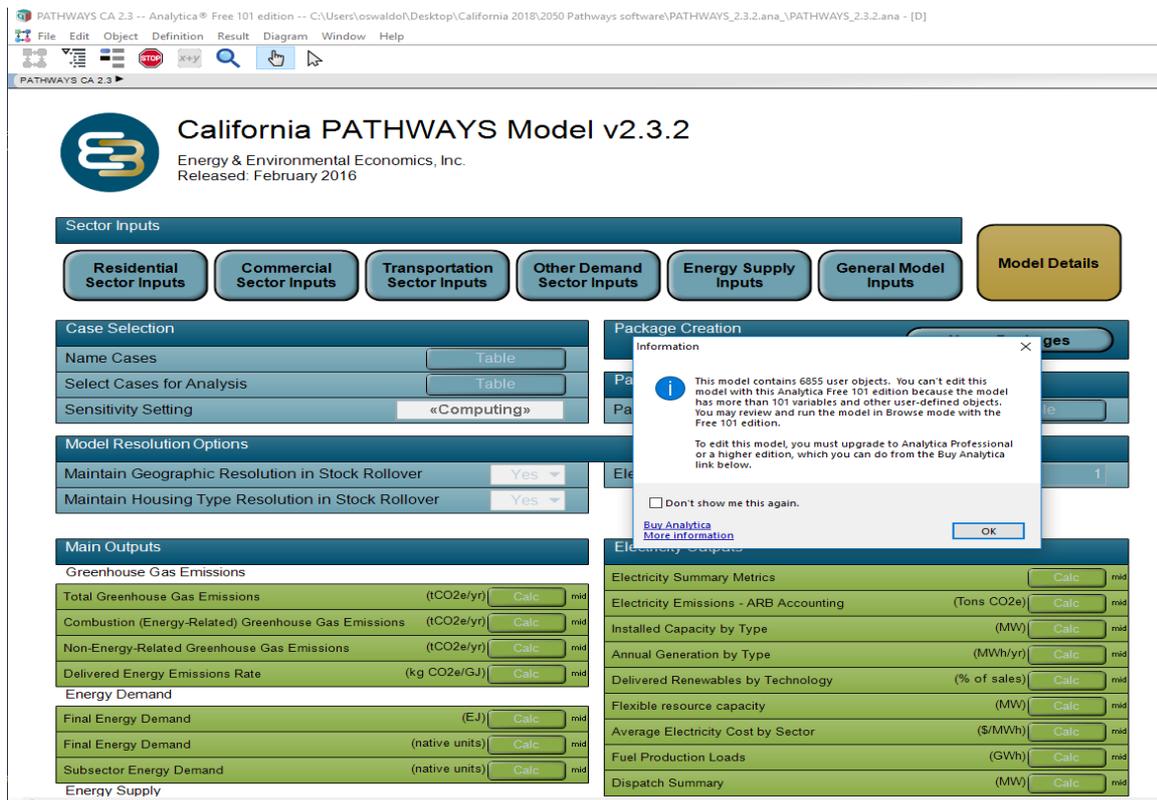


Figure 11. Limitations of the Californian model for beginners

The professional version costs US\$995, the fully functional version US\$2795 (where California 2050 Pathways was built upon) and the optimizer version costs US\$4995 (which eventually could be used in a cloud among regions). The E3 staff recommended not to use Analytica at all, due to its high complexity. Rather, a better tool would be the LEAP (Long-range Energy Alternatives Planning) System¹³, with a free trial version, but also limited in terms of functionalities.

¹³ Stockholm Environmental Institute, 2000-2019. LEAP: Introduction, <https://www.energycommunity.org/default.asp?action=introduction>

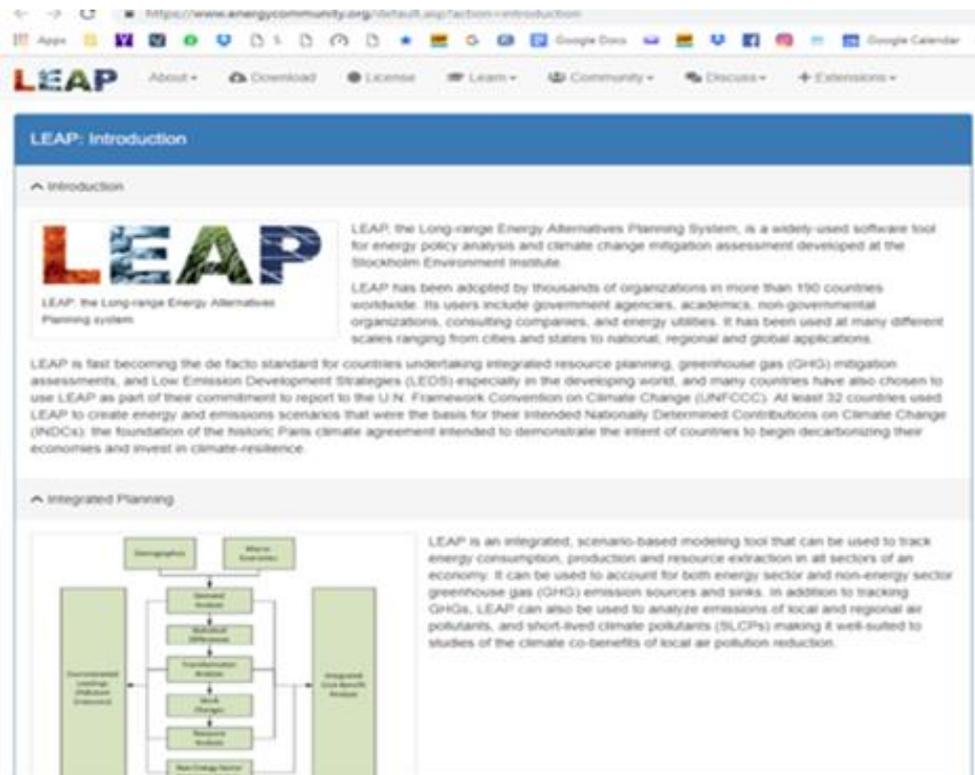


Figure 12. Webpage of LEAP model, initial option considered by Sao Paulo for the 2050 Pathways

At national levels there are other more sophisticated platforms such as VEDA-TIMES-MARKAL and GCAM. These options were initially considered for a joint 2050 Pathways Outreach, but soon dropped taking into consideration limited resources and the necessity to build progressive confidence on the pathways as a decision making support tool. Another options discussed in San Francisco was a collaborative cloud platform, shared among 2050 Pathways signatories and conducted by a central hub. Conversations started with the Californian Government, which suggested for instance involving organizations such as the Rocky Mountain Institute and the Rockefeller Brothers Fund. Large companies such as Google did not manifest any interest in programs such as these, with very limited commercial scale.

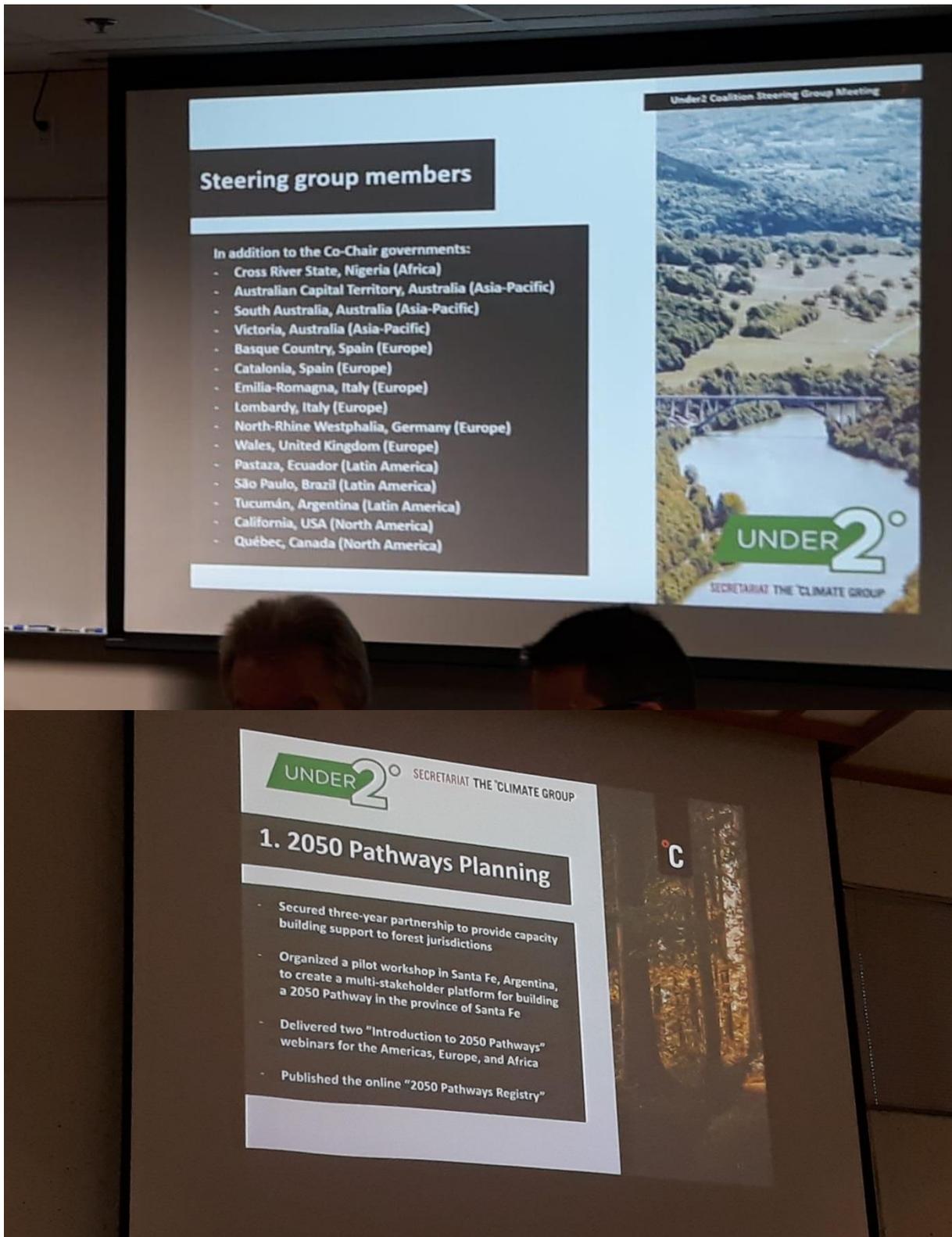


Figure 13. Occasion when São Paulo and Wales initiated conversations about the 2050 Pathways

At the GCAS 2018 occurred the first bilateral talk between São Paulo and Wales on the topic 2050 Pathways. **Oswaldo Lucon** and **the Welsh Government** exchanged views, initially based

on the Californian experience, but later on the Welsh efforts conducted by the Government and Cardiff University (Figure 13). Based on the UK 2050 tool, the Welsh model was ready at that time, available for other regions to learn from.

Later in December, at the COP24 in Katowice, Poland, Sao Paulo and Wales continued bilateral talks, considering deriving the proposed secondment from California to the British Region. Sao Paulo proposed to study the UK tool and only then start up a common workplan.

Visits schedule was defined in February 2019, as a part of the secondment proposed to the Future Fund, by **Oswaldo Lucon** (Government of Sao Paulo), **Mathilde Batelier** (The Climate Group), and **Calum Shaw** (Welsh Government). Initially foreseen for June 2019, it was anticipated to April, due to another meeting that Mr. Lucon would have in Edinburgh Scotland, for the Intergovernmental Panel on Climate Change, IPCC. Travel costs would drop considerably, being only necessary a domestic UK flight to Cardiff and four nights in a hotel.

III. MEETINGS REPORT

Meetings were held at the Welsh Government Offices (Crown Building, Cardiff CF10 3NQ, UK) on April the 8th and 9th, 2019. From **São Paulo**, participated **Oswaldo Lucon**, Adviser on Climate Change. From **Wales**, visits were coordinated by **Lucy Corfield**, Head of Decarbonisation. The Welsh team were **Sam Clemmens**, Senior Evidence Adviser; **Josh Beeson**, Assistant Economist; **Emanuela Piga**, PhD Student from Cardiff University; **Robert Bailey**, Carbon Budget Strategy Manager; **Monjur Mourshed**, Professor of Sustainable Engineering at Cardiff University; **Lori Frater** and **Stuart Lyden**, from the International Cooperation Department, **Rob Knowles**, responsible for Climate Adaptation and Well-Being; and **Calum Shaw**, from the Welsh Carbon Budget Strategy.

The **key points** addressed during the visit were (i) to explain the purpose and requirements of the visit; (ii) to discuss the role and responsibilities we have including the legislative framework under the Env Wales Act; (iii) to discuss with the Decarbonisation team about the 2050 model and how has been used it in the Welsh Pathways workplan; (iv) to understand how the legal requirements of the Well-being for Future Generations Act reflect in Welsh policies; (v) to exchange views on The Climate Group's Nature based MOU; (vi) to prospect synergies with other networks, particularly NRG4SD; (vii) to scrutinize the 2050 models of Sao Paulo and Wales with the Cardiff University specialists; (viii) to discuss international relations and climate strategies at national levels, and how subnational governments can influence them; and (ix) to address topics related to Climate Change Adaptation.

A. DECARBONISATION AND THE WELSH CLIMATE CHANGE STRATEGIC PLAN

Lucy Corfield, Head of Decarbonisation, conducted the visit, introducing the various specialists working with Climate Change.

The firsts were **Sam Clemmens** (Senior Evidence Adviser), **Josh Beeson** (Assistant Economist), **Emanuela Piga** (PHD Student from Cardiff University) and **Robert Bailey** (Carbon Budget Strategy Manager), when were discussed the Welsh Climate Strategy (**Figure 14**).

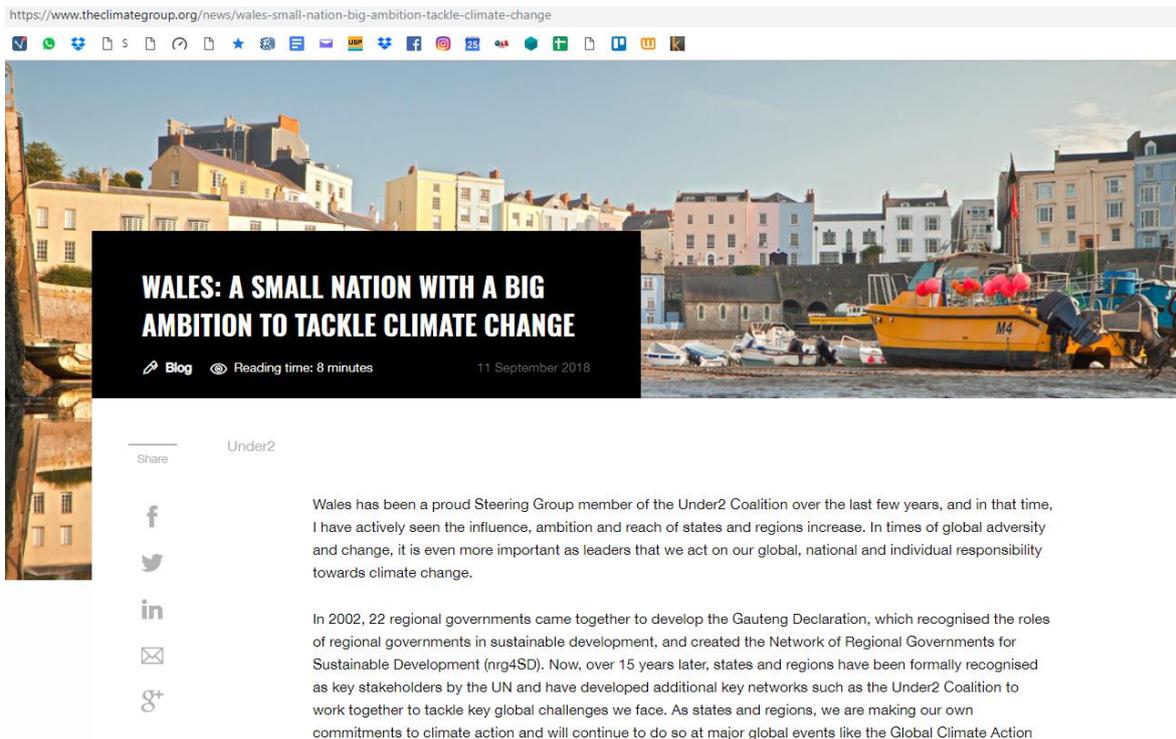


Figure 14. Welsh Climate Strategy, from The Climate Group’s webpage

Mr. Bailey presented the previous non statutory commitment 2010 Welsh Government Climate Change Strategy¹⁴, with a commitment to reduce 40% in GHG in all sectors by 2020 from 1990 levels, and a reduction of 3% per year since 2011 relative to a baseline average emission over the period 2006-2010. In numbers, such commitment is equivalent to 34.58 Mt CO₂e. New targets were set out in 2018, in stages over the next 30 years, requiring a 27% cut in emissions by 2020, 45% by 2030 and 67% by 2040. They set the path towards an overall reduction of 80% from 1990 levels by 2050. The document *Prosperity for All: A Low Carbon Wales*¹⁵ outlines a plan to meet the first carbon budget (2016-2020) with a hundred policies and proposals in all portfolios. It integrates policies from across the Welsh and UK Governments, as well as the EU, despite all the uncertainties posed by the ongoing Brexit process. Good examples are the Economic Action Plan, the Renewable Energy Targets and the new version of the Planning Policy Wales. A consultation process was opened last year and

¹⁴ Wales Climate Change Strategy 2010. Website <https://gweddill.gov.wales/docs/desh/publications/101006ccstratfinalen.pdf> accessed 16 April 2019

¹⁵ Welsh Government 2019, Prosperity for All: A Low Carbon Wales https://gweddill.gov.wales/topics/environmentcountryside/climatechange/emissions/prosperity-for-all-a-low-carbon-wales/?skip=1&lang=en&_ga=2.138439539.1721625609.1556539645-1105404820.1551117865

the Government response is due in 2019. The Welsh Government has a significant scientific support from Cardiff University, located just across the street.

Mitigation has been obtained mostly with decommissioning coal-fired power stations, but also due to energy efficiency in buildings and transport. The advisory group Committee on Climate Change¹⁶ pointed to these challenges and suggested a range of measures, including: more energy efficient buildings (through standards, retrofit energy efficiency and low-carbon heat including funding and soft support, use of industrial waste heat and public engagement towards decarbonization), tree planting (simplifying and streamlining the process), actions in agriculture (farming policies), increasing use of public transport, active travel (cycling, supporting uptake of ultra-low-emission vehicles e.g. electric cars), plus procurement policies (ultra-low emissions vehicles, low carbon products) and planning (land use, cycling and walking, electric vehicle charging points etc.).

In 2014, Wales emitted 46.40 MtCO₂e, of which 12% in Agriculture and Land Use, 64.67% in Business, 0.71% in the Public Sector, 7.83% in Residences, 12.77% in Transport, and 2.13% from Waste¹⁷. The main emitter in Wales is therefore the Business Sector, comprising Industries and Energy Production, mainly due to coal-fired power plants that produce electricity often exported to other UK regions. Hence, there is a particular interest from Wales to obtain a national acknowledgement of the impacts from the consumption sector.

B. AN INTRODUCTION TO SÃO PAULO GHG PROFILES AND PAST ENERGY PLANS

Mr **Lucon** presented a preliminary test with the Sao Paulo 2050 Pathway obtained results. The historical profile of GHG emissions from the State of São Paulo is shown in Figure 1.

¹⁶ CCC, 2017. Building a low-carbon economy in Wales Committee on Climate Change December 2017. Website <https://www.theccc.org.uk/wp-content/uploads/2017/12/CCC-Building-a-low-carbon-economy-in-Wales-Setting-Welsh-climate-targets.pdf>

¹⁷ Welsh Government, 2017. Welsh Emissions. Website <https://gweddill.gov.wales/topics/environmentcountryside/climatechange/welsh-emissions/?lang=en> accessed 16 April 2019. See also Ricardo Energy and Environment, 2014, Local and Regional Carbon Dioxide Emissions Estimates for 2005–2014 for the UK. Technical Report for Department of Energy and Climate Change GA0216. Website https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/533671/Technical_Report_2014.pdf accessed 16 April 2019

It is important to note that GHG emissions from Sao Paulo are still not fully calibrated with the tool; SEEG¹⁸ data for year 2015 was 91 MtCO₂e. Also, historical numbers are non-official, but SEEG was chosen because of its consistent timeline. The official GHG inventory for São Paulo is only available for the round years 1990 and 2000.

São Paulo has a legally binding target of 20% reductions in CO₂, compared to 2005 levels, by year 2020, which much likely will not be attained. There are several reasons for this, but most of all related to national policies on energy and transport. It is to consider as well that the ambition for such a target in a region without coal and with already a high share of renewables in the matrix is quite overrated.

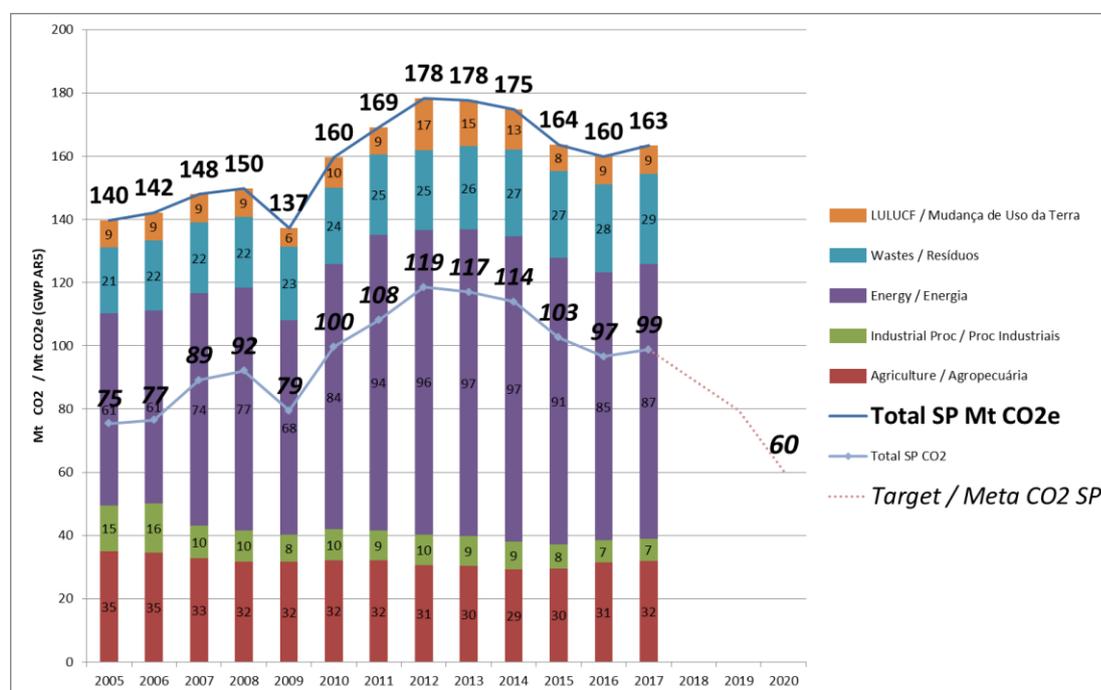


Figure 15. Emissions from the State of São Paulo (estimated from SEEG), and the legal reduction target for year 2020

São Paulo has conducted previous energy plans using models such as LEAP. The Administration was intending to contract with external consultants an Energy plan covering up to year 2035, but after a series of roundtables it became clear that the horizon should be

¹⁸ SEEG, 2018 Sistema de Estimativas de Emissões e Remoções de Gases de Efeito Estufa, <http://seeg.eco.br/en/>

extended to year 2050, aligning with the long term views that will be provided by national governments to the UNFCCC.

Losses of accuracy cannot be attributed solely to model limitations. A proof is a review of past outlooks, published in year 2006 and envisaging year 2016¹⁹. Hence, there are considerable advantages in using a more swift, transparent and easy to manage tool in parallel with the official plan.

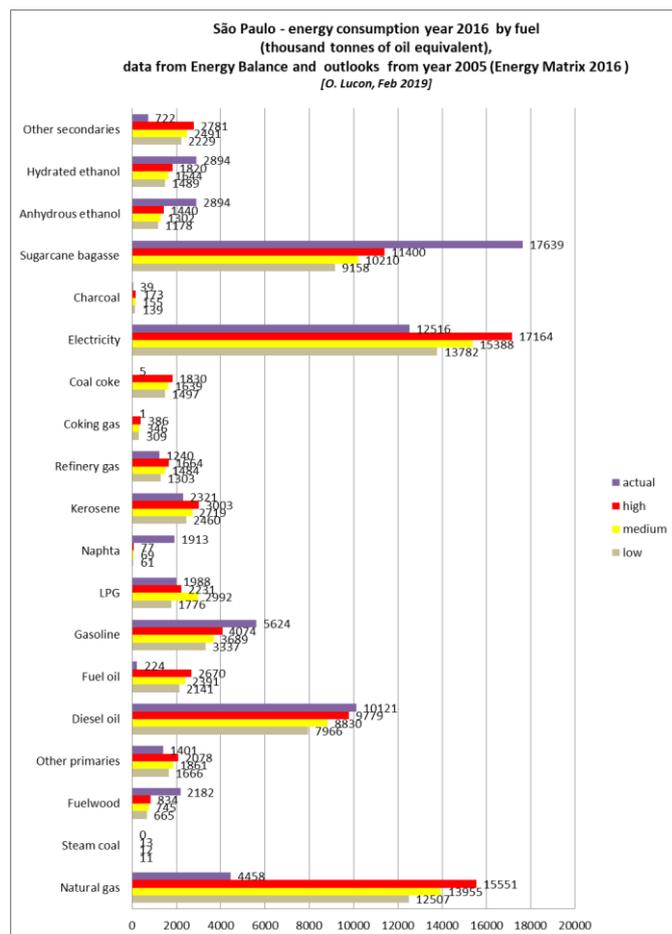


Figure 16. Comparison between actual energy consumption by fuel in year 2016 and three scenario outlooks for the State of São Paulo

¹⁹ Secretaria de Energia e Mineração, 2006. Matriz Energética do Estado de São Paulo 2006-2016

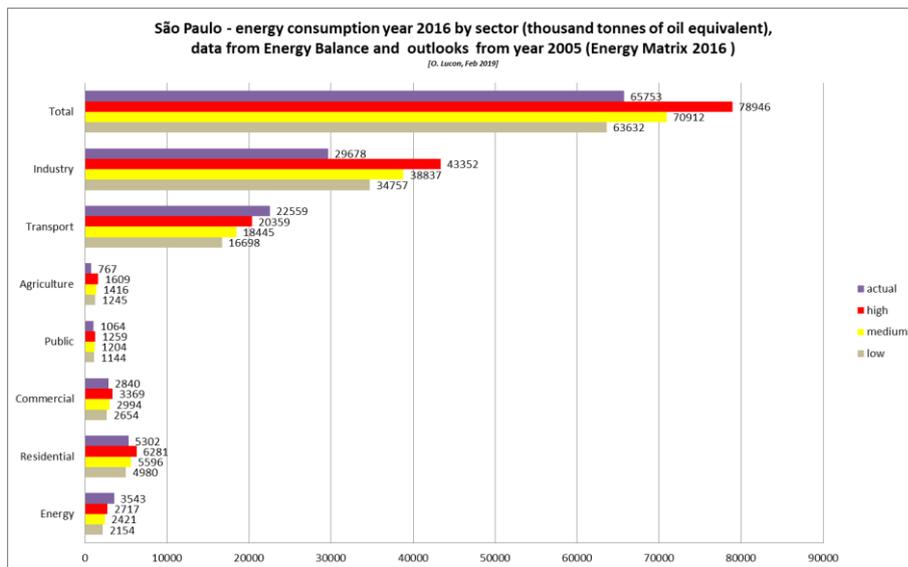


Figure 17. Comparison between actual energy consumption by sector in year 2016 and three scenario outlooks for the State of São Paulo

C. OPERATIONAL RECOMMENDATIONS FROM WALES AND SÃO PAULO FOR THE 2050 PATHWAYS

In a session with Professor Monjur Mourshed (Sustainable Engineering, Cardiff University), we discussed and compared the Energy Sector 2050 Pathways spreadsheets of Wales and Sao Paulo. Mr Clemmens was responsible for refining and utilising the Welsh model, covering basically the Energy Sector. Mr Beeson addressed the econometrics of the model. Miss Piga works on Wales’ international consumption emissions. Showing both models allowed to identify key points to address in terms of a broader outreach of the tool.

Whilst the Welsh model was built upon the original UK Department of Energy and Climate Change 2050 Energy Calculator²⁰, the Sao Paulo model was based on a version adapted for Brazil by the Ministry of Mines and Energy’s Energy Research Company (Empresa de Pesquisa Energética – EPE) and COPPE (part of the Federal University of Rio de Janeiro)²¹, funded by the UK Government. The Brazilian version is in Portuguese, and efforts to re-translate to English affected the calculation formulas. Professor Mourshed suggested that the main page, named “Control”, could be presented in English without affecting the worksheet. The Sao Paulo representative noted that widely available assistant tools such as Google Sheets allow

²⁰ UK Government, 2013a. Guidance 2050 Pathways <https://www.gov.uk/guidance/2050-pathways-analysis>

²¹ EPE, 2016. Calculadora 2050. Empresa de Pesquisa energética. Website <http://calculadora2050.epe.gov.br/calculadora.html>

to translate any worksheet by using simple formulas²². At this technical stage both sides performed and discussed consistency checks, identifying in particular data gaps not available at subnational levels. São Paulo recommended the adoption of different color codes in the spreadsheet cells, e.g. green-yellow-red, according to the level of confidence of the underlying assumption or quality of primary data. Also, in each cell could be added the reference utilized as a side comment.

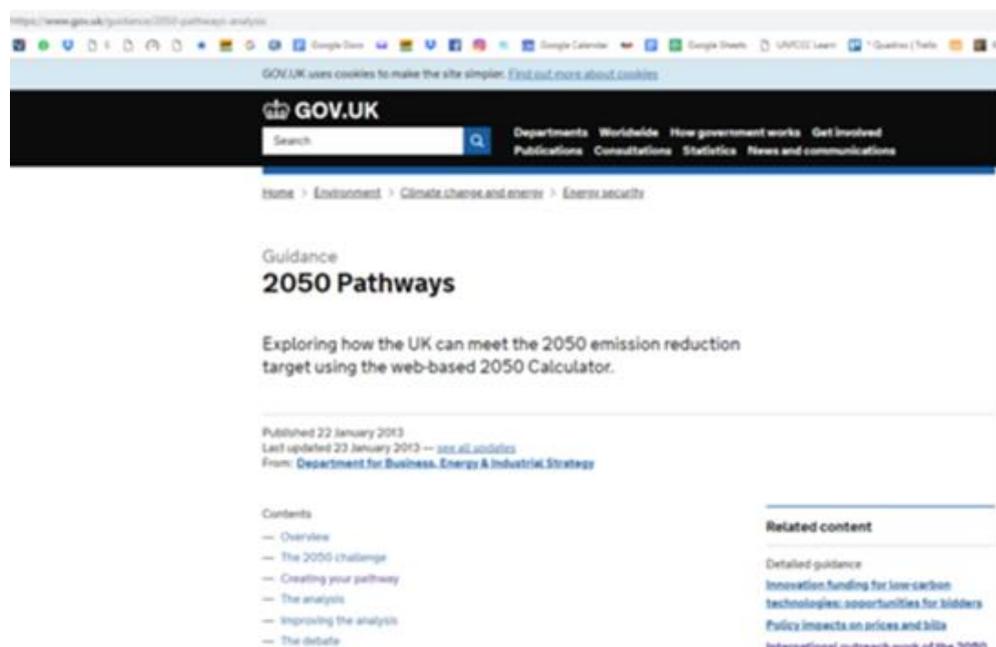


Figure 18. The UK 2050 Pathways Tool

²² Google, 2019. Docs Editors Help. Website <https://support.google.com/docs/answer/3093331?hl=en>



Figure 19. Brazilian Tool, based on the UK 2050 Pathways

Escolha da trajetória		Descrição da trajetória				Exemplos de trajetória	
Objetivo	Descrição	1990	2010	2050	2050	2050	
Geração de energia elétrica	1a. Termelétricas a gás natural	1	1	1	1	1	
	Termelétricas a gás natural - Petróleo torrefado	1	1	1	1	1	
	1b. Termelétricas a gás natural - CCS	1	1	1	1	1	
	1c. Termelétricas a carvão	1	1	1	1	1	
	1d. Termelétricas a carvão - Petróleo torrefado	1	1	1	1	1	
	1e. Termelétricas a carvão - CCS	1	1	1	1	1	
	1f. Termelétricas a derivados de petróleo	1	1	1	1	1	
	1g. Acoplamento de hidrogênio e de biogás	1	1	1	1	1	
	1h. Acoplamento de etanol e de biogás	1	1	1	1	1	
	1i. Prioridade de uso de biogás	1	1	1	1	1	
Injeção de gás natural	2a.1. CCS (Tecnologia de captura e armazenamento de carbono)	1	1	1	1	1	
	2a.2. Energia nuclear	1	1	1	1	1	
	2a.3. Energia eólica	1	1	1	1	1	
	2a.4. Energia eólica offshore	1	1	1	1	1	
	2a.5. Energia eólica offshore	1	1	1	1	1	
	2a.6. Energia dos oceanos	1	1	1	1	1	
	2a.7. Energia hidrelétrica	1	1	1	1	1	
	2a.8. Energia solar fotovoltaica	1	1	1	1	1	
	2a.9. Energia solar fotovoltaica (CSP)	1	1	1	1	1	
	2a.10. Energia solar fotovoltaica (CSP)	1	1	1	1	1	
Injeção de gás natural	2b. Injeção de gás natural em reservatórios de petróleo	1	1	1	1	1	
	2b.1. Injeção de gás natural em reservatórios de petróleo	1	1	1	1	1	
Substituição de gás natural	2c. Substituição de gás natural por hidrogênio	1	1	1	1	1	
	2c.1. Substituição de gás natural por hidrogênio	1	1	1	1	1	

Figure 20. Control worksheet, central core of the UK/BR 2050 Pathways Tools, with scenario assumptions using color codes



Figure 21. Scenario outputs, as displayed in the Control worksheet

A. PRELIMINARY SÃO PAULO'S 2050 PATHWAYS RESULTS

To date the 2050 Pathways simulations - using the UK DECC/ Brazil EPE tool - are considered accessory to the official plan still to be contracted. The option for this Excel tool is a result of all the background information already here described. Next step was to learn how to use it. Initially it was the idea for a secondment of a São Paulo representative to Wales, but a series of consultations allowed for constructing the pathways first, and only then submitting to the Welsh partners for discussion. The SP results of 2050 Pathways can be summarized below:

Parameter	Base year	Reference scenario		Long Term scenario		Difference between scenarios %
	2015	2050	%p.a.	2050	%p.a.	2050
Population, million	43	47	0,3%	47	0,3%	-
Households million	14	19	0,9%	19	0,9%	-
GDP billion of year 2010 Brazilian Reals (2010 R\$ bln)	1	4	3,5%	4	3,5%	-
GHG MtCO2e	84	351	4,2%	285	3,5%	(19%)
Energy demand thousand tonnes of oil equivalent (ktoe)	71044	172767	2,6%	161273	2,4%	(7%)
Primary Energy (ktoe)	80298	231468	3,1%	215238	2,9%	(7%)
Power Generation (ktoe)	14925	55977	3,8%	51935	3,6%	(7%)
Energy per GDP (toe per thousand Reals)	6,3	5,5	(0,4%)	5,1	(0,6%)	(7%)
GHG/Primary Energy, tonne of carbon dioxide equivalent per thousand tonne of oil equivalent (tCO2eq/ktoe)	0,001	0,002	1,1%	0,002	1,1%	-
GHG/Power Generation (tCO2eq/ktoe)	0,000	0,003	8,6%	0,003	8,6%	-
GHG/GDP, kilogram of carbon dioxide equivalent per thousand of year 2010 Brazilian Reals (kg CO2e/ 2010 R\$ thousand)	66	83	0,7%	83	0,7%	-
GHG/Pop, tonnes of carbon dioxide equivalent per capita (tCO2e/person)	1,961	7,438	3,9%	7,438	3,9%	-
Renewables in Primary Energy (ktoe/ktoe)	59%	37%		39%		5%
Renewables in Power Generation (ktoe/ktoe)	94%	29%		31%		9%

Table 1 Key indicators from the São Paulo simulations utilizing the 2050 Pathways Tool

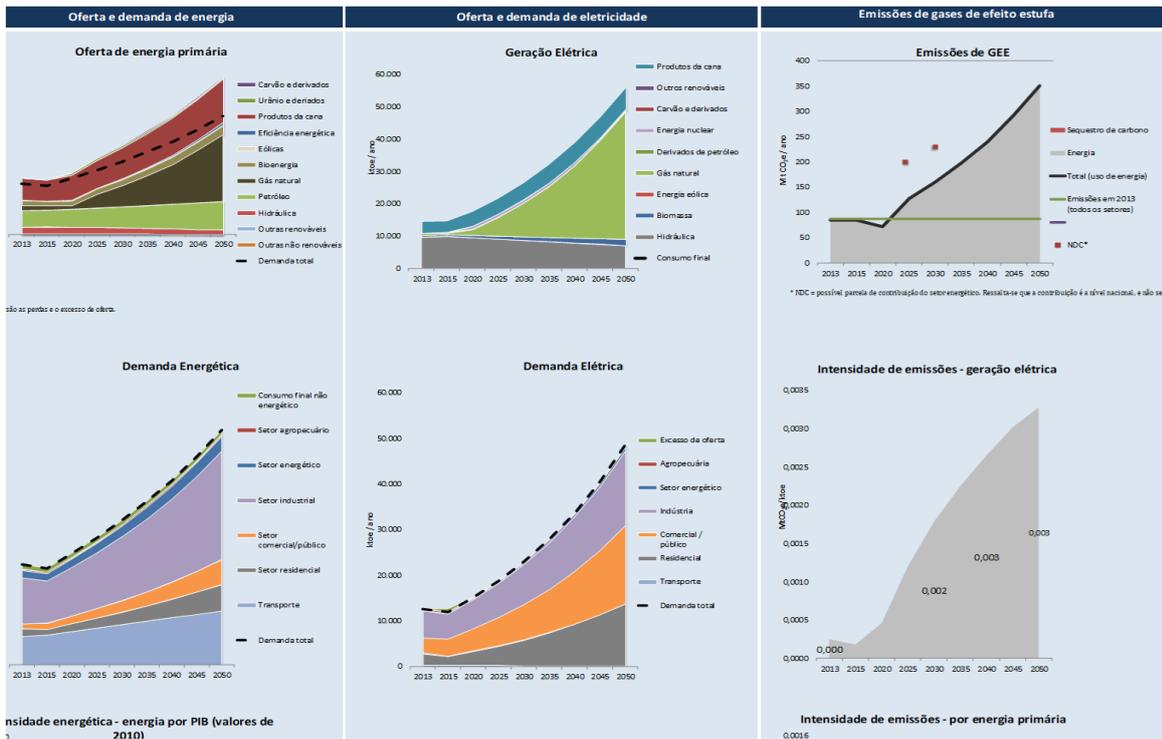


Figure 22. São Paulo (2013-2015) according to the Reference (business-as-usual) scenario

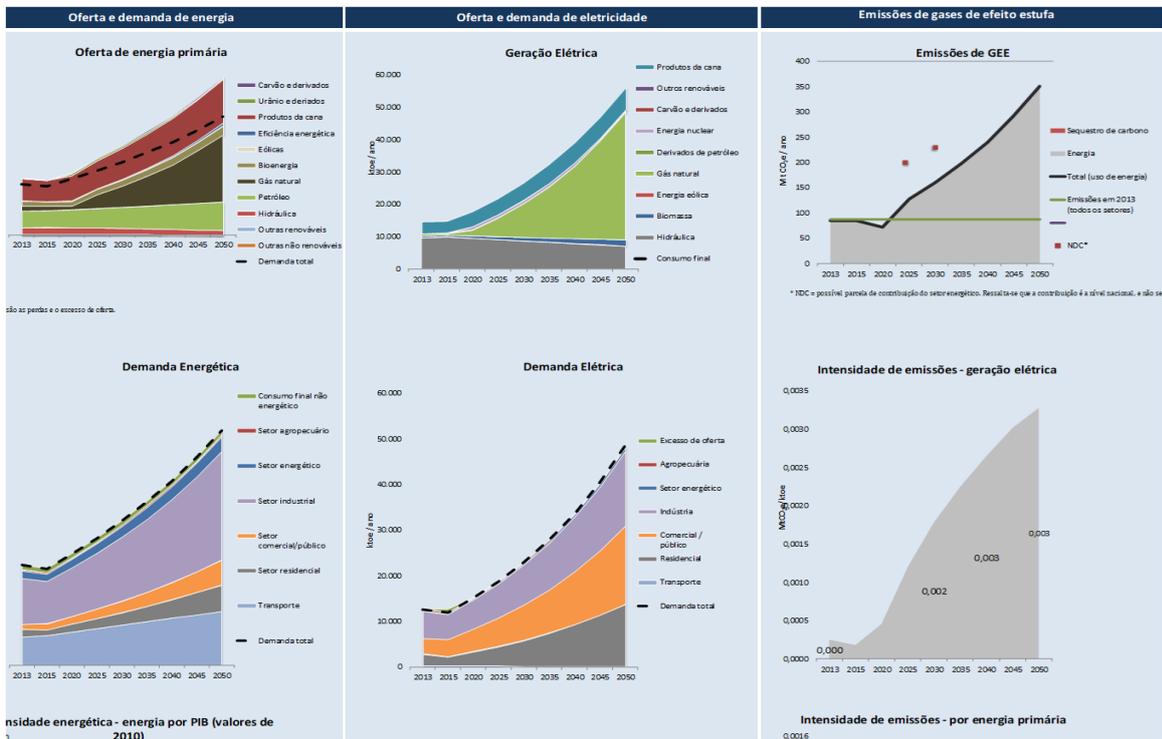


Figure 23. São Paulo (2013-2015) according to the Long Term (alternative, more ambitious) scenario

By comparing both scenarios, two striking points are:

- why all parameters grow so considerably?
- why is the Long Term “not good enough”?

Answers are straightforward. The first goal with the exercise was to validate the 2050 Tool, hence for São Paulo were adopted the same premises as in national Reference and Long-term scenarios. The approach was to be realistic, instead of “playing with numbers” to accommodate a more desirable narrative.

B. 2050 PATHWAYS: A COMPARISON BETWEEN WALES AND SÃO PAULO

There are common problems for Wales and Sao Paulo; one is that the sources of more than half of all emissions are beyond the direct influence of the local governments. In Wales they a coal-fired power station and steelworks. In Sao Paulo a main problem is transport, considering that the State has no jurisdiction on fuel quality, vehicle standards, production and consumption.

Table 2 compares Wales and Sao Paulo in terms of GHG profiles. An exam of these numbers must be done with proper care. First, because there are several estimates involved. Second, because local circumstances and capabilities vary considerably: demography, natural resources, technologies. Nevertheless, the column of per capita emissions – considering solely the Energy Sector – shows a convergence to around 5 tons per capita per year of carbon dioxide equivalent.

This “back of the envelope” number can be compared to that of the Under2 MOU²³, the global pact of subnational governments to reduce carbon emissions and limit global warming to below 2°C , initiative of which The Climate Group acts as a Secretariat, here quoted: **“The agreement commits the signatories to either reducing their greenhouse gas emissions between 80% and 95% below 1990 levels by 2050, or achieving a *per capita* emissions target of less than 2 metric tons by the same date.”**

²³Under 2 Coalition Memorandum of Understanding, <https://www.under2coalition.org/>

Year	Emissions Mt CO2e, Energy Sector only		Population, mln		Emissions per capita, tonnes, Energy Sector only	
	Wales	Sao Paulo	Wales	Sao Paulo	Wales	Sao Paulo
1990	57	38	2,86	31,55	19,9	1,2
2000	59	69	2,91	36,97	20,3	1,9
2010	47	84	3,05	41,26	15,4	2,0
2015	46	84	3,01	43,05	15,3	2,0
2020	41	92	3,01*	44,64	14*	2,1
2030	31	140	3,01*	47,63	10*	2,9
2040	19	202	3,01*	47,6	6*	4,2
2050	11	285	3,01*	47,2	4*	6,0

Table 2. GHG emissions from Wales (Greenhouse Gas Inventory for Wales apud BBC, 2018²⁴) compared to Sao Paulo GHG emissions from the Energy sector, historical and projected by the 2050 pathways tool. São Paulo estimates in years 1990, 2000 and 2010 taken from SEEG. Historical population from UK ONS²⁵, Welsh National Statistics²⁶ and IBGE²⁷. Future population for Sao Paulo estimated by SEADE²⁸ and for Wales roughly estimated by the author freezing year 2015 value as a default

Here are crucial feedbacks to the Under2 Coalition members and Secretariat. The first is that it is not too difficult to extract political commitments to curb GHG in an ambitious way, but one can expect significant difficulties in terms of implementation if this is done without previous studies. The second is a caveat: there is an optimum in terms of planning, at the risk of having the “paralysis by analysis” effect.

²⁴ <https://www.bbc.com/news/uk-wales-46426447>

²⁵ UK ONS. Office for National Statistics, <https://www.ons.gov.uk/>

²⁶ Welsh Government, 2019. Welsh Statistics. Population projections <https://statswales.gov.wales/Catalogue/Population-and-Migration/Population/Estimates/nationallevelpopulationestimates-by-year-age-ukcountry>

²⁷ IBGE Censo Demográfico, <https://sidra.ibge.gov.br/Tabela/1286>

²⁸ SEADE. Projeções populacionais, <http://produtos.seade.gov.br/produtos/projpop/>

IV. CLIMATE ADAPTATION AND WELL-BEING

A conversation with Mr. **Rob Knowles** introduced the Welsh Climate Adaptation and Well-Being strategy. In 2018 was opened for consultation a draft Adaptation Plan²⁹, closed in March this year. It presents the impacts from climate change in the region, supported by data from the UK Met Office. It also defines action hotspots such as flooding infrastructures, water shortages, and threats to ecosystems and agriculture. Research priorities are protection to communities, infrastructure, human health, natural resources and agriculture. Nature-based solutions comprise a broad array of proposals under consideration, in a site-specific approach. Guiding principles for Adaptation include resilience, health, equality, community cohesiveness, prosperity, global responsibility and recognition of traditional values in particular the Welsh language. Progress is assessed through monitoring and periodical reports. Different commitments are shown, presenting for each a summary, a timescale, stakeholders, responsibilities, indicators and baselines. Metrics are, therefore, a very strong quality in the Welsh Adaptation strategy.

The Welsh Well-Being strategy addresses the UN Sustainable Development Goals (SDGs) with an interesting title: Prosperity for All³⁰. It is framed along 12 governmental objectives:

- 01 Support people and businesses to drive prosperity*
- 02 Tackle regional inequality and promote fair work*
- 03 Drive sustainable growth and combat climate change*
- 04 Deliver quality health and care services fit for the future*
- 05 Promote good health and well-being for everyone*
- 06 Build healthier communities and better environments*
- 07 Support young people to make the most of their potential*
- 08 Build ambition and encourage learning for life*

²⁹ Welsh Government, 2018. Draft Climate Change Adaptation Plan
<https://gov.wales/sites/default/files/consultations/2018-12/climate-change-adaptation-delivery-plan-for-wales.pdf>

³⁰ Welsh Government, 2017. Prosperity for All: the national strategy – Well-being statement,
<https://gov.wales/sites/default/files/publications/2017-10/prosperity-for-all-the-national-strategy-well-being-statement-2017.pdf>

09 Equip everyone with the right skills for a changing world

10 Build resilient communities, culture, and language

11 Deliver modern and connected infrastructure

12 Promote and protect Wales' place in the world

These objectives are displayed in a matrix defining primary contributions to the items prosperity, resilience, health, equality, community cohesiveness, promotion of Welsh language and global responsibility. The annual budget is aligned to the maximum extent with the lines of Prosperity for All.

All these inputs were considered extremely useful for Sao Paulo, where Climate Adaptation and SDG actions are not set under a single umbrella, requiring ad-hoc coordination among different actors.

A key barrier identified in both regions is lack of financing for climate adaptation actions.

V. INTERNATIONAL COOPERATION

Conversations with the Welsh Government representatives **Mrs Lori Frater** and Mr **Stuart Lyden** discussed the role of São Paulo and Wales in international networks such as Under 2 Coalition, and the Network of Regional Governments for Sustainable development (NRG4SD). Under the latter, the RegionsAdapt offer a climate adaptation framework, and the Network Secretariat supports the voice of subnational governments at UN negotiations (particularly UNFCCC's Conference of the Parties), European Union initiatives and global discussions on environmental and sustainable development affairs.

The Climate Group is considered by the two regions as a pivotal player for accelerating climate ambition, not only within partner regions' own jurisdictions but also in terms of influencing national governments. It has considerably broadened the Policy Action scope with the Future Fund, plus workstreams for Transparency, Emission Disclosure, Zero Emission Vehicles and Buildings. Both Wales and Sao Paulo believe that there is a huge potential to further explore the 2050 Pathways with workshops, webinars, side events and technical workshops.

VI. GENERAL RECOMMENDATIONS

There are important points arising from this brief secondment that may be useful for other regions within the Under 2 Coalition willing to join the 2050 Pathways Workstream utilizing the set of worksheets tested by Wales and Sao Paulo³¹.

First, this UK DECC Tool is a remarkable entry point. The fast feedback provided by the simple 2050 Tool has a potential to raise awareness at a much higher level than “black box” models conducted by few specialists.

Second, it is recommended for new participants to take into consideration that the scoping stage of the model is the most difficult part. Long term strategies require good quality data and a minimal of consensus among stakeholders. It will require obtaining historical data from energy balances, understanding the national and subnational drivers (jurisdiction, policies and measures) and estimating region-specific parameters such as growths in population, GDP, and energy use across sectors. Regions within the Under 2 Coalition which have already started the 2050 Pathways process can be therefore very instrumental in terms of capacity building.

Third, it is important for subnational governments to bear in mind that in most cases the majority of climate-relevant policies – such as those for energy, production and efficiency - are determined at national level, what in many cases can be out of local reach but with huge local impacts.

Lastly, The Climate Group could consider expanding its website with technical information from regions, bundled in a single place. For instance, it could have a docking station for case studies, 2050 Pathways model outputs, and climate impact maps of all partner regions according to representative concentration pathways (RCP’s).

For the medium-term future regions, could consider having within the Under2 Coalition a centralized hub for 2050 pathways, impact maps and other sophisticated technical information, optimizing resources and harmonizing results.

These are the main conclusions that this secondment has successfully achieved.

³¹ UK Government, 2013b, Guidance International outreach work of the 2050 Calculator, <https://www.gov.uk/guidance/international-outreach-work-of-the-2050-calculator>

VII. ACKNOWLEDGEMENTS

Sao Paulo would like to thank the Welsh Government, The Climate Group and the Under2 Coalition Future Fund for providing all resources without which this initiative would not be possible. In particular, we would like to express our gratitude to Mathilde Batelier (The Climate Group) and Calum Shaw (Welsh Government) for devising the first steps of this workplan, as well as Lucy Corfield, who conducted all the stages of this visit.



VIII. ANNEXES

ANNEX 1. Call for proposals for the Future Fund 2018

----- Mensagem original -----

De: Sally JENSEN <sjensen@theclimategroup.org>

Para:

Cc: Subaskar SITSABESHAN <ssitsabeshan@theclimategroup.org>, Shilpi SAMANTRAY <Ssamantray@theclimategroup.org>, Nehmat KAUR <NKaur@theclimategroup.org>

Assunto: Under2 Coalition Future Fund Call for Project Proposals

Data: seg, 23 de abr de 2018 13:35

Dear Under2 Coalition colleagues,

I am delighted to announce that the **call for proposals for the Under2 Coalition Future Fund 2018 is now open**. Your government has been identified as an eligible beneficiary for the initiative, which aims to strengthen the climate actions of the sub-national governments in developing and emerging economy regions. Last year's report can be seen and downloaded here: <https://www.theclimategroup.org/news/future-fund-progress-report> Please find attached:

- A general document outlining the **priorities, purpose and envisaged outcomes** of the Future Fund
- A **Project Proposal template form**

If you would like to submit a project proposal to benefit from this year's Future Fund, please fill in the attached form and return it to futurefundproposals@theclimategroup.org by **5pm BST on 11 May 2018**. Please note the additional information at the end of the document. Late submissions will not be granted consideration. If you have any questions about the Future Fund's work, or require further clarification on the attached documents, please do not hesitate to contact me and I will be happy to help.

Best wishes

Sally Jensen
Under2 Coalition Project Coordinator

t: +44 (0)207 960 2987 | m: +44 (0)7484 669 542
sjensen@theclimategroup.org

The Climate Group

Second Floor, Riverside Building, County Hall, Belvedere Road, London, SE1 7PB, United Kingdom
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TheClimateGroup.org

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ANNEX 2. Sao Paulo Proposal for the Future Fund 2018: 2050 Pathways




Futur e
Fund Proposal Template
April 2018

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Applicant Background Information	
Government name	SÃO PAULO STATE, BRAZIL
Principal contact name & job title	OSWALDO LUCON Senior Adviser – Climate Change
Contact details (telephone & email)	Phone +5511 31333191, Cell/WhatsApp +5511 991164656 Skype oswaldolucon, Email olucon@sp.gov.br, oswaldolucon@gmail.com
Proposal	
Type (please tick) <i>Each government may apply for up to all three types of funding, e.g. 1x project, 1x secondment, 1x travel support.</i>	<input type="checkbox"/> Project (please fill in section A) <input checked="" type="checkbox"/> X Peer-learning secondment (please fill in section B) <input checked="" type="checkbox"/> X Travel support to Under2 Coalition General Assembly 2018 (please fill in section C)
A: Project (Activities Details)	
1. Project title	São Paulo State 2050:energy pathways
2. Which work stream does the project fall under? (please select one) <i>For more information on the work streams, please visit http://under2moa.org/work/</i>	<input type="checkbox"/> X 2050 Pathways <input type="checkbox"/> (X partially) Policy <input type="checkbox"/> Disclosure and Transparency
3. Grant Amount Requested (in US\$) <i>Maximum possible financial assistance will be \$25k. Please fill in the attached budget template with as much detail as possible</i>	US\$ 21,254
4. Brief description of the activities you propose to complete with the grant, if awarded <i>Please see the selection criteria at the bottom of this form</i>	Simulations of the model CA PATHWAYS (https://www.ethree.com/public_proceedings/summary-california-state-agencies-pathways-project-long-term-greenhouse-gas-reduction-scenarios/) using data available for the São Paulo State, with initial focus on the energy demand side (residential, commercial, transport, industry, agriculture, other sectors)

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 York City | +1 (888) 233 0903
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5. Proposed deliverables for the activities you plan to achieve, and how they will be demonstrated	6 months progress report 1 year progress report
6. Proposed timeline for the completion of the activities <i>Interim progress update to be presented at Global Climate Action Summit</i>	12 months
7. Would the proposed activities support an existing climate change project being carried out by the state? If so, please specify how the current proposal would enable a new phase or widen the scope of activities.	The State of São Paulo's Energy Secretariat is developing its 2030 Energy Plan. Inputs from this project will be useful to help with developing strategies and gauging their effects.
8. How would the activities proposed in the project be shared for the benefit of sub-national members of the Under2 Coalition?	It is expected to be a realistic, first approach outreach of the California's 2050 Pathways. Adapted to local conditions, including institutional capacities, it will serve as a non-US subnational laboratory for the Californian initiative.
9. Name and contact details of any partner organization participating in delivery of this project	(to be contacted) Energy and Environmental Economics, Inc. (E3) 101 Montgomery Street, Suite 1600 San Francisco, CA 94104 Tel 415-391-5100 www.ethree.com Ricardo Cantarani, São Paulo State Energy Secretariat, Oil and Gas Undersecretariat, rcantarani@energia.sp.gov.br, www.energia.sp.gov.br

B: Peer-learning secondment (Activities Details)

1. Secondment title	São Paulo visit to California to gain expertise on developing 2050 Pathways (scheduled for September 2017)
2. Preferred peer Under2 government(s) to host secondment <i>Subject to capacity/availability of government. Applicants should be willing to host staff from the preferred government (reverse secondment) where necessary.</i>	State of California. It's actually the sole option, since that is the region which is developing the 2050 Pathways Project. Moreover, this visit could be attached to the Item C, Under2 Coalition, which means that travel costs will be the same for these two activities.
3. Brief description of the topics to be covered/itinerary during the three-day secondment	Meeting with the Energy+Environmental Economics to learn about the California State Agencies' PATHWAYS Project: Long-Term GHG Reduction Scenarios (https://www.ethree.com/public_proceedings/summary-california-state-agencies-pathways-project-long-term-greenhouse-gas-reduction-scenarios/). Desirable

Energy and Environmental Economics (E3) 101 Montgomery Street, Suite 1600 San Francisco, CA 94104 Tel 415-391-5100 www.ethree.com



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	<p>meeting with officials from the California Air Resources Board and the California Energy Commission to better understand the project, with aims to replicate/emulate the "California PATHWAYS model" for the State of São Paulo, mostly but not restricted to the Energy Sector. Primary goal is to establish a partnership for Part A here proposed.</p> <p>The State of São Paulo is a trendsetter in Brazil for subnational policies. It is also a pivotal game changer in terms of national climate commitments, now with the difficult task to help Brazil delivering its NDCs. São Paulo is a major energy consumer and needs to better understand how to build future emissions pathways.</p>
<p>4. Would your government be willing to host a secondment for another Future Fund government applicant? e.g. availing staff time/resources/site visits for peer-learning for up to 1 week</p>	<p>Yes, subjected to internal approval. We can provide site visits and meetings with government agencies and key stakeholders, identified jointly with the interested peers.</p>
<p>C: Travel support to Under2 Coalition General Assembly 2018</p>	
<p>1. Name and title of attending delegate</p>	<p>Oswaldo Lucon, Climate Change Adviser, Environment Secretariat Mauricio Brusadin, State Environment Secretary</p>
<p>2. Intended city of departure and return</p>	<p>São Paulo (GRU Airport)</p>

General Principle

Projects are to be implemented in consideration for the links existing between the mitigation of climate change and adaptation to its impacts, as well as the contribution of these activities to poverty reduction, in accordance with the principles of the Sustainable Development Goals and the Paris Agreement, and in the respect of human rights.

Criteria for project selection:

- Is the project aligned with the Under2 Coalition and the Future Fund's priorities?
- Does it contribute to developing the jurisdiction's mitigation policy framework (through 2050 pathways, transparency and disclosure or innovative policy solutions) and/or strengthening staff capacity? How?
- Does it encourage sub-national cooperation (north-south as well as south-south)?
- Does it increase the participation of developing regions in the Coalition?
- Additionality: do the funds enable the completion of an already existing/pipeline project in collaboration with a technical partner?

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York City | 1 (800) 222 0000
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- Maximum budget of \$25k per recipient

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Suggested additional criteria for all types of projects

- The proposal demonstrates the projects' potential feasibility and sustainability beyond the phase targeted by the current proposal.

Additional criteria for mitigation policy projects

- Policy capacity-building projects demonstrate their potential to lead to environmental gains and socioeconomic benefits to local populations.

General conditions

- Projects are to be completed within six months.
- Funding recipients must agree to evaluate and report on key outcomes of the projects. The final report should be submitted within six months of the completion of the project. An Interim progress update to be presented at Global Climate Action Summit.

Non-eligible projects

Projects that fall within regular activities, functions or recurring activities of the jurisdiction, as well as projects that have been initiated prior to the current proposal, unless the proposal aims at enabling a new phase or at widening the scope of activities.

SCHEDULE 1: Project Expenditure Budget The Climate Group - Future Fund Grant Terms & Conditions for Expenditure

The Climate Group through the States & Regions Future Fund Grants seeks to Grant Funds to organisations that meet the required criteria.

This grant if approved, will be governed by the main sub grant agreement with you and the conditions noted below. The agreements is contingent on specific outcomes to fulfil the financial sub grant being given and valid expenditure receipts.

All expenses claimed must include colour scans or images of the expenses incurred to validate the claims being made, which should meet local official tax regulations.

Any travel costs must include scans/images of the (i) paid invoice, (ii) flight /travel times and dates and (iii) boarding passes to be valid expense claims.

All expenses must be incurred within the guidelines with the grant agreement and the grantee acknowledges that any expenses that are deemed invalid will not be reimbursed and the final grant payment reduced accordingly.

Whilst we will not carry out any open book reviews, should we deem any individual supplier or costs over \$1,500 to be insufficiently backed up or evidenced, the grantee confirms and agrees that we are able to contact the supplier directly, without recourse or involvement of the grantee to obtain proof of payment or further clarification for our records.

The final grant may be lower if insufficient valid expenditure has occurred, and the final payment will reflect these changes. The Climate Group may in certain circumstances allow some insignificant costs where paperwork has been insufficient due to exceptional reasons.

No additional funds will be paid above the total sub grant sum, and no more than 10% movement (capped at \$500) from any budget expense category allowed without prior written approval from us.

These sub grants do not cover staff costs or administrative costs of your organisation.

The Climate Group - Future Fund Grant

SCHEDULE 1: Project Expenditure Budget (Cover)

Legend:	Yellow field	To be completed by applicant
	Grey field	Not to be completed by applicant - automatic data processing
	Blue field	Important instructions for completion of this form
	Red field	Error message - inserted data must be corrected by applicant

In case you need more rows for data entry you can unhide additional hidden rows at the end of each table in the sheets. To this end, mark the last row of a table and the following one in the sheet. Right-click on the marked rows and choose the function "unhide". To avoid unnecessary printing, please hide rows which are not needed by using the hide function.

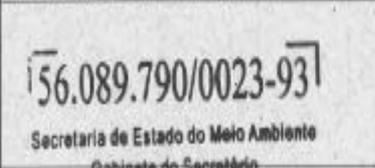
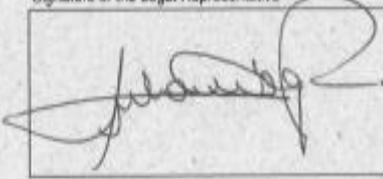
Grant Number	SR/FF/2017/001		
Grant Project title:	São Paulo State 2050 Energy Pathways		
Project duration:	Start date:	End date:	Duration: 12.0 month(s)
Local Currency	Brazilian Real E.g. Indian Rupee	Short Code	BRL e.g. INR
Conversion assumed to (one) US \$1	\$1:	3,550	e.g. 65.68
Maximum sub grant per budget, subject to final expenditure validation:	\$	21,254	
Applicant Entity Name:	São Paulo State Environment Secretariat (SMA)		
Applicant Project Lead:	First Name:	Oswaldo	Last: Lucon
Job Title:	Senior Adviser - Climate Change		
Key Contact email:	lucon@sp.gov.br, oswaldolucon@gmail.com		
Key Contact telephone:	5511 31333196, 5511 991164856		

Declaration by the Legal Representative of the Applicant Organisation:

- The project has not yet been started.
- The project is not being and will not be financed from any other publicly funded grants or commissions.
- No additional expenditure will be incurred by The Climate Change Organisation as a result of this project.
- The Terms & Conditions attached in Tab 2 are accepted and the Budget in Tab 3 represents costs directly in relation to the grant objectives.
- Expenditures are stated as gross amounts since no entitlement to input tax deduction exists.
 Expenditures are stated as net amounts since an entitlement to input tax deduction exists.
- Consent is hereby given for assessment of this project proposal by authorised experts/apprisers.

Official Stamp of the Applicant Organisation

Signature of the Legal Representative

 <p>56.089.790/0023-931 Secretaria de Estado do Meio Ambiente Gabinete do Secretário Av. Prof. Frederico Hermann Junior, 345 Prédio 1 5º andar Alto de Pinheiros CEP 05459-010 SÃO PAULO - SP</p>	
	<p>Name and position: ANTONIO VAGNER PEREIRA CABINET CHIEF Page and date signed: SÃO PAULO, MAY 10TH 2018</p>

The Climate Group - Future Fund Grant
SCHEDULE 1: Project Expenditure Budget Detailed Analysis
 Applicant: São Paulo State Environment Secretariat (SMA)

Total COPEB	Local \$	31,254
	Non-Local \$	-
	Total \$	31,254

This is in 2 sections, Section 1: Local Currency, Section 2 - Non Local Currency, please complete all columns for each cost.

Item	Local Currency	Section 1: Local Currency	Section 2 - Non Local Currency	Detail of service or goods being purchased	Class Type (Manufacture)	Local Currency	US \$
Name	Country that costs expended in:	Name of Supplier/Service Provider / Consultants (if not known at Budget)	State, TIC			BRL	
LC01	BRAZIL	TIC		5 2R' GOBETS GRU-SFO - BRU	Travel	20.550	5 7.859
LC02	BRAZIL	TIC		15' metros frete in SFO	Travel	10.550	5 7.000
LC03	BRAZIL	TIC		15' dias meals and transport SFO	Travel	2.250	5 634
LC04	BRAZIL	TIC		Fiscal receipt	Publications	15.000	5 4.225
LC05	BRAZIL	TIC		Matobok computer compatible with PAT models 2050 printers	Hardware	12.000	5 3.360
LC06	BRAZIL	TIC			Printing	35.000	5 4.225
LC07							
LC08							
LC09							
LC10							
LC11							
LC12							
LC13							
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LC41							
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LC43							
LC44							
LC45							
LC46							
LC47							
LC48							
LC49							
LC50							

SCHEDULE 1: Project Expenditure Budget Detailed Analysis

Section 2: Non Local Currency Expenditure

Name	Country that costs expended in	Name of Service Provider / Contractor	Cost Type (Ministratory)	Currency # e.g. BRL	Local Currency Value	Exchange Rate to US\$	US \$
KL01	Any B.A.						
KL02							
KL03							
KL04							
KL05							
KL06							
KL07							
KL08							
KL09							
KL10							
KL11							
KL12							
KL13							
KL14							
KL15							
KL16							
KL17							
KL18							
KL19							
KL20							

Analysis Of Costs	Non Local	Local	Total
Accommodation	5	5	10
Participations	5	5	10
Printing	5	5	10
Consultants	5	5	10
Consumables	5	5	10
Copyrighting & Eminent	5	5	10
Design Costs	5	5	10
Shipping	5	5	10
Insurance	5	5	10
Logos	5	5	10
Miscellaneous	5	5	10
PR Agency Support	5	5	10
Printing / Photocopying	5	5	10
Research / Policy Work	5	5	10
Software Licenses	5	5	10
Scholarships	5	5	10
Travel	5	5	10
Website	5	5	10
Workshop	5	5	10
Translation	5	5	10
Tuition	5	5	10
Total	5	5	10

ANNEX 4. Approval of the São Paulo proposal

----- Mensagem original -----

De: Mathilde BATELIER <MBatelier@theclimategroup.org>

Para: "olucon@sp.gov.br" <olucon@sp.gov.br>, "oswaldolucon@gmail.com" <oswaldolucon@gmail.com>

Cc: Tim ASH VIE <tashvie@theclimategroup.org>, Subaskar SITSABESHAN <ssitsabeshan@theclimategroup.org>, Sarah Duffy <sduffy@theclimategroup.org>, Eduardo Trani <etrani@sp.gov.br>, Mauricio Brusadin <mauricio@sp.gov.br>, Antonio Vagner Pereira <avagner@sp.gov.br>, Virginia Dorazio <vdorazio@sp.gov.br>, Margarette Escobar Sabella <mesabella@sp.gov.br>, Jussara de Lima Carvalho <jlcarvalho@sp.gov.br>, Bianca Amaral Mazzuchelli <biancamazzu@sp.gov.br>, Ricardo Cantarani <rcantarani@energia.sp.gov.br>

Assunto: Future Fund outcome - secondment

Data: qua, 27 de jun de 2018 10:17

Dear Oswaldo,

I hope this email finds you well. Thank you for your patience during the analysis and selection process of the Future Fund proposals – we received a total of 24 proposals, which was a fantastic outcome. **We would like to inform you that the Future Fund Advisory Board has provisionally selected your secondment proposal to visit California to gain expertise on 2050 Pathways to go ahead and be a beneficiary of the Fund.** This selection is conditional on São Paulo being able to provide The Climate Group and the Future Fund Advisory Board with a proposed outcomes of the secondment and a detailed itinerary including planned dates. We have contacted California to arrange the secondment and they wish to have an idea of the proposed timeline, with a preference around October/November time, in order to make arrangements to accommodate two government representatives from your region. The funding of São Paulo's secondment would also be contingent with the commitment to provide a letter of gratitude to funding governments in September 2018 with information on the details of the secondment, and the necessitation of Future Fund to continue similar programs in future. Furthermore, we hope that São Paulo will be able to commit to knowledge-sharing with members of the Under2 Coalition, and provide a final post-secondment report to The Climate Group that may be shared with the Advisory Board. Please reply with a schedule for the secondment for further checks before we may move ahead with signing an agreement and making travel arrangements.

Do not hesitate to contact me in the meantime if you have further questions. Congratulations and kind regards, Mathilde

Mathilde Batelier
Project Coordinator Under2 Coalition

t: +44 (0)207 960 2987

[Mbatelier@theclimategroup.org](mailto:mbatelier@theclimategroup.org)

The Climate Group

Second Floor, Riverside Building, County Hall, Belvedere Road, London, SE1 7PB, United Kingdom

: +44 (0)20 7960 2970 e: info@theclimategroup.org TheClimateGroup.org

ANNEX 5. Historical of arrangements with Wales

On Wednesday, November 21, 2018, 3:24:42 PM GMT-2, Mathilde BATELIER <MBatelier@theclimategroup.org> wrote:

Hello Oswaldo,

I hope you're well and not too busy with the new elections and preparations for COP! I am writing to follow-up on the secondment that Sao Paulo was selected for though the Future Fund. I am very pleased to share with you a number of different updates.

- Given the transition period in California, we thought it preferable to look at an alternative to host the secondment. Therefore, we have been working very hard with Wales, United Kingdom, to ensure this secondment on 2050 Pathways. Given Wales' strong experience on 2050 Pathways and emissions reduction more broadly, we thought that it would be an ideal jurisdiction for a secondment with Sao Paulo.
- Wales has developed its own 2050 Pathways in partnership with the University of Cardiff to map the region's future emissions. You can find more information [here](#) and [here](#) (official report). Wales is also at the forefront of climate policies on the international scene, both in terms of adaptation and mitigation. You can find more information on the [government website](#).
- Wales is also working with the British Government on [2050 pathways calculator tool](#). This would offer the opportunity to learn about 2050 Pathways from different governments and therefore learn about 2050 Pathway from multiple perspectives.
- As you might know, [REOS Partner](#) also has staff based in Wales. We worked with REOS Partners last summer to deliver a successful 2050 Pathways workshop in Santa Fe. REOS Partners could also be part of the secondment.

Considering all the factors mentioned above, a secondment with Wales would most surely benefit Sao Paulo's overarching goal to engage with the global initiative of the Paris Agreement and develop a 2050 Pathways initiative. The secondment would allow you to have a fantastic and useful view of the development of another Pathways' initiative, learn about its success and challenges, as well as link it up with other climate policies occurring in Wales. We recently had a chat with Calum Shaw, the Welsh representative who will be leading on the secondment, and he proposed April 2019: I wanted to check if that would work on your side? I will wait for your response before going forward. I'm looking forward to hearing from you soon, and please contact me if you have any questions and comments!

Best,

Mathilde

Mathilde Batelier
Project Coordinator Under2 Coalition
t: +44 (0)207 960 2987

[Mbatelier@theclimategroup.org](mailto:mbatelier@theclimategroup.org)

The Climate Group

Second Floor, Riverside Building, County Hall, Belvedere Road, London, SE1 7PB, United Kingdom
t: +44 (0)20 7960 2970 e: info@theclimategroup.org TheClimateGroup.org

On Friday, November 30, 2018, 1:17:12 PM GMT-2, <Calum.Shaw@gov.wales> wrote:

Hello Oswaldo,

My name is Calum Shaw and I work for the Decarbonisation team in Welsh Government. I have very kindly been given your contact details from the Climate Group. Firstly, I believe you have been in discussion with the Climate Group regarding a visit, through the future fund, to Wales next year. We would welcome you coming to see us and taking you through the 2050 pathways we have developed. Secondly, I along with my colleague Jonathan Oates (Head of Clean Growth) will be attending COP24 between the 10-12 December. I would very much like to set up a meeting between us if your schedule allows. If you have capacity I would be grateful if could let me know a preferred date and time.

Kind regards

Calum

Calum Shaw

Carbon Budget Regulation Officer/ *Swyddog Rheoli Cyllidebu Carbon*

Climate Change and Natural Resource Policy Division/ *Yr Is-adran Polisi Newid Hinsawdd a Adnoddau Naturiol*
Welsh Government/ *Llwyodraeth Cymru*

Phone/ *Ffon*- 03000 256308

Email/*E-bost*- Calum.Shaw@gov.wales

1st Floor, West Core, J03

----- Mensagem original -----

De: Mathilde BATELIER <MBatelier@theclimategroup.org>

Para: Oswaldo dos Santos Lucon <olucon@sp.gov.br>

Cc: Oswaldo Lucon <oswaldolucon@yahoo.com>, "oswaldolucon@gmail.com" <oswaldolucon@gmail.com>, Subaskar SITSABESHAN <ssitsabeshan@theclimategroup.org>, Sarah Duffy <sduffy@theclimategroup.org>, Marcelo Donnabella Bastos Elias <marceloelias@sp.gov.br>, Natalia Torres D'Alessandro <nataliatd@sp.gov.br>, Bianca Amaral Mazzuchelli <biancamazzu@sp.gov.br>, Jussara de Lima Carvalho <jlcarvalho@sp.gov.br>, Eduardo Trani <etrani@sp.gov.br>

Assunto: RE: Future Fund secondment - updates

Data: ter, 18 de dez de 2018 08:06

Dear Oswaldo,

I hope this email finds you well and fully recovered from COP. I am following up on the Future Fund secondment with Wales – Calum Shaw told me that you had a chance to speak in Poland which is great ! Calum told me that you discussed either week commencing 1st of April or week commencing 8th ? Would you be able to let me know which date you'd prefer and we can start organizing the trip? Please let me know if you have any questions!

Best, Mathilde

From: Oswaldo dos Santos Lucon <olucon@sp.gov.br>
Sent: Tuesday, December 18, 2018 11:21 AM
To: Mathilde BATELIER <MBatelier@theclimategroup.org>
Cc: Bianca Amaral Mazzuchelli <biancamazzu@sp.gov.br>; Eduardo Trani <etrani@sp.gov.br>; Jussara de Lima Carvalho <jlcarvalho@sp.gov.br>; Natalia Torres D'Alessandro <nataliatd@sp.gov.br>; oswaldolucon@gmail.com; oswaldolucon@yahoo.com; Sarah Duffy <sduffy@theclimategroup.org>; Subaskar SITSABESHAN <ssitsabeshan@theclimategroup.org>
Subject: RE: Future Fund secondment - updates

Dear Mathilde

thank you for the message. The week commencing on April 8th works best for me. As in the previous one there will be an IPCC authors meeting in Edimburgh, I think I can make my way to Wales over the weekend. Still for final decisions I am depending on the next incumbent Administration, which will start in January. We could set up conference calls in the meantime. The Climate Group breakfast at CoP24 was a huge success. As you know I've met Calum Shaw from Wales, but also Ken Alex (Director and Senior Advisor to Governor Jerry Brown, California) and Michael Northrop (from the Rockefeller Brothers Fund, www.rbf.org). They mentioned that the Rocky Mountain Institute (www.rmi.org, a think tank created by Amory Loviins) would be interested in joining the Subnational 2050 Pathways Project. This would have a massive impact worldwide. How about streamlining all these ideas?

On behalf of São Paulo, please convey all our gratitude and best Season's Greetings to all friends at the Climate Group!

Saudações / Regards,

Oswaldo Lucon

Assessor em Mudanças Climáticas / Climate Change Adviser

Secretaria de Meio Ambiente do Estado de São Paulo / São Paulo State Environment Secretariat

UNDER2 COALITION FUTURE FUND

SECONDMENT AGREEMENT

BETWEEN

THE CLIMATE CHANGE ORGANISATION LIMITED

KNOWN AND T/A THE CLIMATE GROUP

AND

THE STATE OF SÃO PAULO,

SECRETARIAT OF INFRASTRUCTURE AND ENVIRONMENT

GRANT NUMBER: UC/FF/2019/001

PROJECT: SECONDMENT WITH THE WELSH GOVERNMENT:

2050 PATHWAYS

KNOWLEDGE AND EXPERTISE EXCHANGE

FEBRUARY 2019

This Secondment Agreement (“Agreement”) dated February 2019, is between The Climate Group (“TCG”) and The State of São Paulo, Secretary of Infrastructure and Environment, hereinafter collectively referred to as the “Participants”.

1. Background and Common Objectives

- a) The overarching objective is to enable subnational governments around the world signatories of the Under 2 Coalition to estimate greenhouse gas emissions trajectories from their jurisdictions until mid-century. This so-called “2050 Pathways Initiative” is in line with national commitments in accordance with Article 4, paragraph 19, of the 2015 Paris Agreement of the United Nations Framework Convention on Climate Change. It is also related to the Conference of the Parties (CoP) decision 1/CP 21, paragraph 35, inviting Parties to communicate, by 2020, to the secretariat mid-century, long-term low greenhouse gas emission development strategies.
- b) Given their respective programs of work, TCG and the State of São Paulo have entered in this Agreement to lay out the framework of cooperation and understanding that will facilitate collaboration between the Participants to further their shared objectives towards the exchange with the Welsh Government around 2050 Pathways knowledge and expertise exchange, focusing on secondment activities around TCG’s Under2 Coalition Future Fund.
- c) The nature, mission, purpose and areas of collaboration, as well as the participation conditions, are described in the present Agreement.

2. Nature and Mission

- a. The *2050 Pathways Knowledge and Expertise exchange* project, principally funded by the Under2 Coalition governments of Quebec, Scotland, and Wales is a TCG program aiming to arrange a secondment for two government staff members to a peer Under2 member government (Welsh Government) with the expectation of learning and replicating the 2050 Pathways program. The State of São Paulo-TCG collaboration, set forth in this Agreement, aims to facilitate knowledge sharing and enhance engagement within the Coalition, and to showcase the outcomes to the wider Coalition, as well as build on the potential for the State of São Paulo to develop its 2050 Pathways program in their region.

3. Purpose of Collaboration

- a. The State of São Paulo will collaborate with TCG in furthering the principle objectives of the project, which are the following:

Objective 1: To visit the Welsh Government for two working days to learn about the Welsh 2050 Pathways program. The main purpose of the secondment is to enable the State of São Paulo to then develop its own 2050 Pathways program, to further implement a policy and legal framework to reduce greenhouse gas emissions in line with the Paris Agreement and the Under2 MOU.

Objective 2: To collaborate and engage with the network of Under2 Coalition members by bringing together all relevant government stakeholders that are interested in the 2050 Pathways Program and the Under2 Coalition Future Fund to exchange and share best practice. Examples of knowledge sharing are: the publication of two blogs on the secondment on the Under2 Coalition website, and the dissemination of findings with other potential interested members through an online webinar.

Objective 3: To collaborate and establish a comprehensive report to be eventually shared with other members of the Under2 Coalition.

4. Scope of collaboration

The State of São Paulo will:

- a. Become a Beneficiary of TCG's Under2 Coalition Future Fund;
- b. Collaborate in the lead up to and implementation of the secondment with the Welsh Government and publish an evaluative final report;
- c. Provide a letter of gratitude and a short video message regarding the secondment, as well as the necessitation of the funding for its implementation;
- d. Provide access to and share technical information, as appropriate, for possible inclusion in the project completion report and at www.under2coalition.org;

- e. Credit and acknowledge The Climate Group and the Under2 Coalition Future Fund in all publications arising as a result of the project and use the name and logo of TCG in approved publications or reports relating to the project;
- f. Provide comment and quotes for external media activity and promote the events to high-level government and business leaders through online channels as appropriate;

TCG will:

- 1) Facilitate the Under2 Coalition Future Fund in São Paulo by collaborating with the State of São Paulo locally and other state and regional governments across the world with whom TCG has existing partnerships through its global network; and
- 2) Showcase the State of São Paulo and the Welsh Government's secondment and share success stories as appropriate – including web content, high-profile events, publications and a flagship project completion report.

5. Financial Aspects and Implementation Arrangements

- a. This Agreement does not commit either party to the potential or actual transferal of funds.
- b. Only airfare and accommodation will be covered by the Under2 Coalition Future Fund. All airfare and accommodation costs arising from the secondment will be borne by TCG, in line with the current Future Fund arrangements. Arrangement and reservation of air travel and accommodation for secondment staff is also the responsibility of TCG. The State of São Paulo shall ensure that TCG receive a scanned colour copy of the travelling individual's passport, both front covers and ID pages, including any relevant visas.
- c. Secondment staff will provide a completed Travel Request Form (Schedule 1) to TCG as well as a signed copy of the Travel Policy (Schedule 2) in order for travel arrangements to be arranged on behalf of the State of São Paulo.
- d. The State of São Paulo will ensure that all boarding passes, tickets and invoices/receipts are retained and scanned copies are sent to TCG, in line with the Travel Policy (Schedule 2).

6. Report Schedule

- a. One Final Evaluation Report shall be submitted by the State of São Paulo to TCG on or before the following dates, all reports must be submitted electronically and include the Grant number:

i. June 10, 2019 (Final evaluation report).

b. These reports shall include details:

- Initial plans and objectives for the secondment with the Welsh Government to gain knowledge and expertise about 2050 Pathways.
- Daily breakdown of secondment activities, including people involved.
- Results and report of the outcomes of the secondment.
- Details of technical information.
- Acknowledge the Under2 Coalition Future Fund contributors.
- Knowledge shared with Under2 Coalition peers.

7. Nature of the Agreement

- a. Nothing in this Agreement should be construed as creating a joint venture, an agency relationship, or a legal partnership between the Participants. This Agreement does not and is not intended to commit either Participant to the potential or actual commitment of funds.
- b. Personnel of either Participant working on any activity contemplated by this Agreement shall be and remain employees of the Participant that they represent.

8. Focal Points of the Participants

- a. Communications in relation to this Agreement will be made by email, fax and/or letter to the Focal Points of the Participants as follows:

For The Climate Group:

Ms Mathilde Batelier

Under2 Project Coordinator

The Climate Group

Second Floor, Riverside Building, County Hall,
Belvedere Road, London SE1 7PB

+44 (0)207 960 2990

finance@theclimategroup.org

For the State of São Paulo:

Dr. Oswaldo Lucon

Climate Change Advisor

Av. Prof. Frederico Hermann Jr. 345 Pinheiros,

São Paulo SP, Brazil, 05459090

+551131334120

olucon@sp.gov.br

- b. As needed, the Participants will notify each other in writing of any update in the names of their Focal Point. Any non-Contract or non-finance-related queries (e.g. Secondment deliverables, travel arrangements, content and communications etc.) should be related to mbatelier@theclimategroup.org

9. Names and Logos

- a. In accordance with their respective regulations and rules, each Participant reserves the right to approve the use of their names or logos. The Participants' name or logos will not be used without the written consent of the relevant Participant.
- b. In no event will authorisation of the State of Sao Paulo's name, logo, or any abbreviation thereof, be granted for commercial purposes.

10. Data Protection

- a. The Participants shall (and shall procure that any of its staff involved in connection with the Project under this Agreement shall) comply with all notification requirements, and all of their

obligations, under the Data Protection Act 2018 (“DPA”), which arise in connection with this Agreement.

- b. The Participants shall ensure that all personnel who have access to personal data are obliged to keep such personal data confidential.

11. Effectiveness, Modification, Discontinuation

- a. This Agreement will become effective upon signature by all Participants and will thereupon be effective for a period of six months.
- b. No modification of this Agreement shall be effective unless it is in writing and signed by both Participants.

12. Dispute Resolution

- a. In case of a dispute, controversy, or claim between the Participants arising out of or relating to this Agreement, the Participants will attempt to reach an amicable resolution through consultations in good faith.

13. Entire Agreement

- a. This Agreement, together with any documents referred to in it, constitutes the entire agreement between the Participants and supersedes and extinguishes all previous agreements, promises, assurances, warranties, representations and understandings between them, whether written or oral, relating to the secondment.

14. Third Party Rights

- a. Except where expressly provided, a person who is not a party to this Agreement shall not have any rights under the Contracts (Rights of Third Parties) Act 1999 to enforce any term of this Agreement.

15. Governing Law and Jurisdiction

- a. This Agreement, and any dispute arising out of or in connection with it, or its subject matter or formation (including non-contractual disputes or claims) shall be governed and construed in accordance with the laws of England and Wales.
- b. The Participants irrevocably agree that the courts of England and Wales shall have jurisdiction to settle any dispute or claim arising out of, or in connection with this Agreement or its subject matter or formation.

16. Signature

- a. The foregoing represents the understanding reached between the Participants on the matters referred to in this Agreement.

SIGNED in two copies in English and two copies in Portuguese language

- a. This Agreement, and any dispute arising out of or in connection with it, or its subject matter or formation (including non-contractual disputes or claims) shall be governed and construed in accordance with the laws of England and Wales.
- b. The Participants irrevocably agree that the courts of England and Wales shall have jurisdiction to settle any dispute or claim arising out of, or in connection with this Agreement or its subject matter or formation.

16. Signature

- a. The foregoing represents the understanding reached between the Participants on the matters referred to in this Agreement.

SIGNED in two copies in English and two copies in Portuguese language

FOR THE CLIMATE GROUP

[Signature] 
 [Name] Tim Ash VE
 [Function] DIRECTOR
 [Date] 28/2/2019

FOR THE GOVERNMENT OF THE STATE OF SÃO PAULO


 Eduardo Trani, Environment Undersecretary,
 The São Paulo State Secretariat for
 Infrastructure and Environment
 26 February 2019

Schedule 1 – Travel Request Form

TRAVELLING PERSONS' DETAILS			
Name of Persons Travelling	1. Oswaldo dos Santos Lucon	Persons' Organisation	São Paulo State Infrastructure and Environment Secretariat
NAME OF PROJECT		Under2 Coalition Future Fund	
GRANT CODE:			

ANTICIPATED EXPENSES	Arrangements/services to be booked and paid for by?				
	Please tick the appropriate option				
Requirements:	Required	Arranged by Admin	Paid by Persons Travelling	Paid by TCG	Cost (Admin Use)
Airfare – return x1	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
Hotel accommodation for 2 nights x1	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
Subsistence x1	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		
Public/local transport			<input checked="" type="checkbox"/>		
Final report and publication x1	<input checked="" type="checkbox"/>				
Total					
Description of other anticipated costs?					

TRAVEL INFORMATION	
Destination traveling to	Cardiff, Wales, UK
Name of Government visiting	São Paulo State
Government full Address	Av. Prof. Frederico Hermann Jr. 345 Pinheiros, São Paulo SP (Brazil) 05459090
Government Phone Number	+55 11 31334120
Contact Name	Oswaldo Lucon

Contact's phone number and mobile number	Landline: +55 11 31334120 Mobile: +5511991164656
--	--

FLIGHT/TRAIN DETAILS	Information for Arrangements to be made by TCG	
Date of OUTBOUND travel	April 7, 2019	
Preferred departure time	22:00	
Arriving into - Preferred Airport/Station	Cardiff Airport	
Do you require a Taxi to the airport/station	No	Collection from:
Date of INBOUND travel	April 12, 2019	
Preferred departure time	19:45	
Do you require a Taxi from the airport	No	Dropping to:

SIGN OFF	Print Name	Title	Signature	Date
Travelling Person				
TCG Authorising Manager				
Budget holder (if different)				

Schedule 2 - The Climate Group Travel and Expenses Policy for Future Fund Partners

Last updated: February 2019

1) Introduction

The Climate Group's ("TCG") Travel and Expenses Policy for Future Fund Partners applies to partners where payment of travel costs has been agreed as part of any agreement or contract.

A large portion of TCG’s funding is government public funding and it is therefore key that TCG, and its partners, follow guidelines for the disbursement of expenditure consistent with those of TCG and funder requirements, and UK taxation practice.

The guidelines, as set out in the following pages, provide high level summaries of the travel and expense policies as they currently apply to Future Fund Secondment Partners. Should more detail or information be required please contact Mathilde Batelier, Under2 Project Coordinator at mbatelier@theclimategroup.org and TCG’s Finance Team at finance@theclimategroup.org.

General Policy

- Any expense must be a genuine business expense, and be justifiable, reasonable and in line with the Policy.
- All expenses should be discussed and agreed during the contracting process and must be pre-agreed ahead of any up-front payment/s, where applicable, in line with agreed payment schedule/s.
- TCG’s partners should ensure their own internal processes require authorisation of expenses prior to payment. Individuals may be personally liable for expenses not approved in line with agreed protocols.
- TCG reserves the right not to recompense for ineligible expenses. These include but are not limited to expenses that fall outside the project scope and its deliverables; that have not been pre-agreed in the project/secondment budget; and that do not comply with the procedures and limits of the Travel and Expenses Policy.

Exchange rate conversions

OANDA Currency Converter is to be used, applying an average rate for the trip/month. Where an expense is paid for by credit card, the exchange rate applied by the credit card company is to be used. In the instances where foreign currency is bought/exchanged, the exchange rate applied at the time of purchase/exchange is to be applied.

Types of expenses and guidelines

Table 1 below shows the types of expenses and guidelines. The list in the table is not exhaustive - please contact TCG for other expenses.

Table 1: Types of expenses and guidelines

Expense	Guidelines
Travel insurance	<p>Partners are not covered by TCG's Business Travel Insurance and as such are required to have their own cover in place.</p> <p>Cover should include recovery of all travel, accommodation and incidental costs, costs in the case of cancellation or curtailment when cutting short a trip, illness, delay, loss of luggage and personal belongings etc.</p>
Visas and vaccinations	<p>Partners are responsible for obtaining their own visas and ensuring they seek out and receive any minimum required vaccinations ahead of travel.</p>
Air travel	<p>Boarding passes need to be kept along with e-ticket and itinerary.</p> <p>Only economy class fares will be covered. First Class, Business and Premium Economy travel will be for partners' own account unless required in exceptional circumstances or where medical conditions warrant so. Such circumstances need to be approved by TCG prior to reservations being made.</p>
Rail travel	<p>All rail travel should be standard class, unless a business or medical case warrants otherwise. Exceptional circumstances must be agreed in advance.</p> <p>Rail travel does not include normal commute.</p>
Local ground travel: taxis, public transport, own car (mileage), rental cars	<p><i>Taxis:</i> Should only be used where public transport is not convenient and should not be used for long journeys.</p> <p><i>Public Transport:</i> Should be used whenever possible and when deemed safe to do so.</p> <p><i>Own car:</i> Mileage claimed should be based on the standard mileage permitted by your employer and may not exceed the tax guidelines. Should mileage rates not be available, please refer to TCG for TCG's standard mileage rate.</p> <p><i>Rental car:</i> Rentals above Class C³² will not be permitted. Full receipts covering all fuel and insurance costs must be provided.</p>

³² Car Classification Code set by [the Association of Car Rental Industry Systems Standards \(ACRISS\)](#)

Expense	Guidelines
Hotels	<p>Hotel rates should be reasonable and in line with geographical criteria and time of year of travel. Five and Four-star accommodation will not normally be approved and prior approval from TCG must be sought on such occasions.</p> <p>Please check bills upon checkout to avoid erroneous charges. Hotels may charge for phone calls even if they do not connect - please ask to have these removed.</p>
Meals / subsistence	Partners are responsible for their own meals/subsistence costs.
Telephone	Partners are responsible for their own telephone costs.
Business entertainment	TCG does not cover the cost of entertainment expenses incurred by partners.
Other incidentals	Incidental expenses, such as use of the mini bar, room service, leisure facilities, laundry charges and Pay T.V. will not be reimbursed.