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RESEARCH PAPER

**BUILDING INSTITUTIONAL CAPACITIES FOR
CLIMATE CHANGE POLICIES FORMULATION IN
DEVELOPING COUNTRIES: THE CASE OF MAPS
CHILE**

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countries exploring
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compatibility

BUILDING INSTITUTIONAL CAPACITIES FOR CLIMATE CHANGE POLICIES FORMULATION IN DEVELOPING COUNTRIES: THE CASE OF MAPS CHILE

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Developing countries exploring pathways to climate compatibility

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INTRODUCTION

Climate change has become a significant issue for countries that have gradually integrated this topic into the public and political agenda. However, there is still no approach that provides coherence and consistency to guide the framework of national states in order to deal with the complex and long-term challenges of climate change (Giddens, 2009).

While climate change poses significant challenges for public policy everywhere, for developing countries, under the current climate regime, the scenario seems particularly difficult. There is need for new skills and institutional capacities at both technical and political levels to formulate and implement mitigation actions and compromise Intended Nationally Determined Contributions (INDC) that will certainly impact the development path of the different countries.

Countries are challenged to define public policies regarding climate change under conditions of risks and uncertainty. Making projections for the future and having to make decisions for the present using information that is always incomplete poses challenges in terms of creating prudent political agendas that are long-term and consistent with the various interests and political priorities in the country (Giddens, 2009). At the same time, in order for them to be effective, decisions regarding action against climate change must be taken preventively: they should be taken now to impact in the future. The decision-making processes and the cost and benefits of moving forward should transcend the particular interests of any particular government.

Additionally, climate change policies must guarantee coordination between different sectors and actors in society. Climate change policies require political and public consensus for they to be guided action (Giddens, 2009). In the climate change realm, decision-making is transitioning from analysis to implementing measures that call for significant socio-economic changes. In order for this transition to be successful, there needs to be high levels of interaction between the various stakeholders along the policy making cycle – through information generation, planning, implementation and evaluation.

Faced with these challenges, how can public policy re-edit strategic management for the long term under conditions of risk and uncertainty? The question applies particularly in countries like Chile (and others in Latin America), where the state over the last neoliberal period has lost experience in planning and strategic definition for its public policies. How can we facilitate cooperation and coordination among multiple stakeholders across the state and the private sector thorough the policy cycle?

Practitioners and academics say there is an urgent need for documenting and analysing the processes of building climate change policies across the world, with an emphasis on integrating expert knowledge and broader social views in the process of generating evidence to support decision making, in defining mitigation actions and adaptation measures, in implementation, and in evaluating potential impacts. It is necessary to systematize and generate knowledge in order to tackle these challenges and to identify contributions towards forming climate change policy in the future (Kasemir et al, 2003).

As part of its climate change policy, in 2010 Chile took on the task of gathering national data for making long-term projections of scenarios and options of greenhouse gas (GHG) mitigation in the country to support its position at the international negotiations on climate change and to evaluate alternatives contributing to low-carbon development in the country. It was carried out through the MAPS-Chile project, an experience that emerged from a South-South cooperation

initiative and which consist of a process of co-production of knowledge through scientific research and multi-stakeholder involvement for estimating the emissions baseline and evaluating measures and mitigation scenarios. The process included the participation of numerous stakeholders from the private, academic and public sectors, which were coordinated by a public-private partnership and directed by government bodies.

The MAPS project led to many contributions: building estimations of GHG emissions for the country taking the entire economy into account, generating information regarding mitigation actions, and estimating the macroeconomic impact of implementing different mitigation scenarios. However, beyond such results, it is of central interest to describe and analyse the methodological approach used in the project, specifically the design and management of the project, the system of governance applied, and the articulation of the relationship between scientific research, multi-stakeholder participation and the public sector. The analysis of MAPS is particularly interesting in providing an opportunity to observe a model that can be used to improve decision-making and policy design around complex issues characterised by high levels of uncertainty and requiring systematic action from different stakeholders and institutions on sectorial, local and national levels as well as seeking responses and actions for the medium and long terms.

To this end, the present study analyses the MAPS-Chile project from a processes perspective, which emphasises decisions, strategic and methodological actions that articulate the relation and interaction between the various institutions and stakeholders involved. The research method applied was qualitative, to understand the reality and social phenomenon from the perspectives, views, perceptions, experiences and practices of the actual stakeholders. The analysis was based on a review of secondary data – mainly official project documents, digital sources such as videos and webpages, meeting minutes and reports on results, as well as on individual semi-structured interviews. The central analysis comes from the interpretations and evaluations made by the stakeholders of the processes they participated in, together with a post-analysis by the researcher to conceptualise and construct a narrative from the content.

This paper proceeds to, first, present a review of literature relevant to the topic in order to contextualise the project and develop a framework for the analysis from the perspective of sociology of science and technology. Then the main aspects of the MAPS project are described: its origin, organisation, system of governance and how it deals with two strategic issues – the effect of uncertainty and the challenges linked to a long-term approach for the definition of climate change policy. Thirdly, the MAPS participation process is described and analysed, with the aim of understanding its contribution to co-producing knowledge for policy making. Fourthly, the most important project impacts to date, both on public policy and individual levels, are looked at; and, finally, the main lessons and future challenges are outlined.

PUBLIC POLICY IN AN UNCERTAIN WORLD: CHALLENGES FOR SCIENCE AND MULTI-STAKEHOLDER PARTICIPATION

In recent decades, various authors have highlighted the need to recognise an epistemological shift that puts risk and uncertainty at the centre of scientific development and therefore changes the way in which science and public policy relate (Callon, 2009; Jasanoff, 2010). This approach proposes that, despite higher levels of knowledge and technological sophistication in modern societies, there has not been an associated increase in levels of certainty: on the contrary, perceptions of risk and ignorance have deepened (Beck, 1992). The knowledge frontier is being shifted constantly and at a faster pace and it is never possible to approach a truth, so science offers formal evaluations based on logical reasoning but provides no absolute truths to rely on (Engels, A. 2005; Van den Hove, S., 2007; Jasanoff, 2010; Sarkki, S. et al, 2014). Risk becomes endemic to technological systems of a contemporary society where scientific advancement has created important benefits that are accompanied by higher levels of uncertainty and failures, affecting the credibility and validity of their

results (Jasanoff, 2003). While the political system uses scientific inputs to clarify options or qualify positions from a technocratic perspective, it meets with high levels of questioning from the public. For topics such as environmental issues, biotechnology, energy and health, scientific evidence is no longer the source of unequivocal solutions, resulting in a socio-technical conflict (Callon, 2009).

In this context, the concept of 'post-normal science' has been developed and argues that when formulating a public policy that is complex in nature due to high levels of uncertainty (such as with climate change), science can provide valid but not complete knowledge on the topic, due to the existence of unknown or undeterminable elements. This makes it necessary for the scientific system to open up to different types of logic and opinions, having to share and validate its conclusions with a wide spectrum of society (Sedlako, M. et al, 2013). In view of this, it is important to create methods centred around structured multi-stakeholder participation based on creating spaces for direct and formal dialogue amongst various stakeholders throughout the different stages of the decision-making process (De Marchi, B. and Ravetz, J.R., 2001). At the root of this is the idea that participatory processes make it possible to incorporate people from outside the formal political arena, such as NGOs, consumer groups and scientists, into public decision-making and evidence-creation processes, thereby contributing to the quality and legitimacy of results.

On environmental issues, where there is a high probability of uncertainty in results, or measures are evaluated using incomplete data, the involvement of different stakeholders and perspectives contributes to identifying problems and specific knowledge that had not been considered, or were not known, by the project management team. Equally, the risk of irreversibility of the damages caused to the environment makes it necessary to take action before the negative effects are detected, and sometimes even before scientific consensus on the existence of the problem has been reached. This situation presents a challenge to the politicians responsible when creating prudent, long-term policies that benefit society. In this context, it is proposed that participation by a wide range of stakeholders in building evidence for policy making processes provides greater legitimacy to decisions already adopted, as the different knowledge, values and logics are taken into consideration. This process results in more robust proposals but also appeals to procedural legitimacy where shared rules link the participants to the results.

A well-managed participatory process can involve peer review communities, which allow any interested persons to contribute and ensure the quality of a process by reviewing scientific methods and conclusions as well as through dialogues between experts and ordinary citizens. A model of this type would be considered more democratic and legitimate as it accepts a variety of perspectives and contributes to the relevance and strength of scientific validity for citizens (Funtowicz, S. and Strand, R., 2007).

PROJECT DESCRIPTION

Defining The Project And Its Origins

The MAPS programme was born out of an initiative by the government of South Africa to construct a long-term GHG mitigation strategy for the country. This was called 'Long-term mitigation scenarios' (LTMS) and took place between 2005 and 2007. The LTMS was tasked to do the following:

- Involve stakeholders in a series of ambitious but realistic scenarios for action regarding the future climate, based on the best available information, specifically long-term emission scenarios and cost implications;
- Prepare and define clear positions for the South African delegation for the post-2012 dialogue;

- Get approval by the Cabinet for a long-term climate policy and positions for negotiations in the United Nations Climate Change Convention Framework (UNCCCFF) and its Kyoto Protocol; and
- Create public awareness and support for the government initiatives based on analyses of scenarios.

The World Bank conducted a review of the finalised LTMS project in South Africa and recommended that the focus of the LTMS be replicated in other developing countries. Therefore the MAPS Programme was begun, supported by seed funding from the Children's Investment Fund Foundation (CIFF). The Programme was thus conceptualised with a focus on supporting collaboration between developing countries in creating actions, plans and scenarios for low-carbon development. The MAPS project has created a methodological approach, which includes a participatory process involving stakeholders from all national sectors in collaboration with the best local and international research. Each participating country, however, independently defines the manner in which the country develops the project according to its own institutional, political and economic contexts. During the first phase, between 2010 and 2015, the MAPS Programme has worked with Brazil, Peru, Chile and Colombia.

As part of the South-South collaboration, the programme has a knowledge platform for researchers and facilitators from all MAPS countries to share lessons and construct good practices for research and participation.

How Was The MAPS Project Carried Out In Chile?

At COP15 in Copenhagen in December 2009, Chile announced its willingness to contribute to global mitigation efforts by achieving a reduction of 20% from its emission baseline by 2020. The definition of this goal was a political commitment, in which there were no formal estimates of the emission baseline for the country and of how much the deviation of 20% equalled in tonnes of CO₂.¹

During the first quarter of 2010, the government's National Environmental Ministry headed an inter-ministerial taskforce, through the Inter-ministerial Technical Committee for Climate Change, in order to come to an agreement on the information Chile would present to the United Nations to be included in Appendix II, where developing countries register Nationally Appropriate Mitigation Actions (NAMAs) to be implemented by 2020. The President of the Republic declared in a speech on the 21 May, that 'On matters concerning greenhouse gases, global warming and biodiversity, Chile commits to achieving a reduction of 20% by 2020' (Piñera, 2010), thereby entrenching further the political commitment to the goal proposed by Chile. In mid-2010, the Ministerial Committee for Climate Change approved the declaration and officially communicated Chile's voluntary commitment to the UNCCCFF Secretariat through a national focal point, carried out by the Ministry of Foreign Affairs on 23 August 2010. Chile's voluntary commitment formalised in 2010 set out the following: 'Chile will implement Nationally Appropriate Mitigation Actions (NAMAS) in order to achieve a 20% deviation from the business-as-usual emission increase trajectory by 2020, based on projections from 2007.' The declaration also stipulated the need for a relevant degree of international support to achieve this goal. It stated that 'the main focus of the NAMAS would be on measures relating to energy efficiency, renewable energies, land-use, land-use change and forestry'.

Parallel to this, in mid-2010 the director of South South North, Stefan Raubenheimer, who designed and implemented LTMS in South Africa, together with Harold Winkler, the director of the Energy Research Centre at the University of Cape Town, presented the MAPS programme in Chile inviting the country to participate. As a project that was part of South-South cooperation, the first point of contact was through the Chilean Chancellery. According to interviews conducted with officials and ex-officials from the Climate Change Office of the Ministry of Environment, the initiative seemed innovative and of

¹ To date there was no baseline for the country, however there was an energy baseline (which includes energy, transport, mining, industry and CPR) and a non-energy baseline (which includes agriculture, forestry and waste). These cannot be added, as they are methodologically different and were developed by consultants contracted by the Ministry of Energy and of Environment independently of one another.

interest in that it provided the possibility to discuss evidence (based on constructing scenarios) for decision-making and for strengthening Chile's position in the international arena, that might facilitate the articulation with the other ministries and institutions across the Chilean government. The MAPS initiative was presented to the Ministerial Climate Change Committee on 13 August 2010, where an expression of interest was granted to the initiative, in order to begin developing a low-carbon development strategy for Chile. The collaboration was formalised through a letter to South Africa, dated 17 August, from the Directorate of Environment of the Ministry of Foreign Affairs stating Chile's interest in participating in the MAPS programme.

The MAPS Chile design was overseen by a local consultant, Eduardo Sanhueza, who was central to setting up the programme in Chile. The initial structure of governance was based on the international model, comprising a steering committee, an executive secretariat, a scenario building team and technical working groups. During the first stage of development, the Ministry of Environment assumed the role of Executive Secretariat and officiated the national ministries for nominations for the steering committee. The first Inter-Ministerial Steering Committee meeting was held in January 2011, attended by representatives from the Ministries of Foreign Affairs, Finance, Transport, Energy, Agriculture and Environment. Here Stefan Raubenheimer presented the programme and the key issues to be addressed by the Steering Committee. It was also agreed that Eduardo Sanhueza would continue providing technical support for the development of descriptive reports and defining the roles of the various working groups (steering committee, scenario building team, research team, facilitation team); the definition of the key questions Chile should address during the process; and the difficult task of obtaining a high-level mandate to provide political support for the initiative.

The Steering Committee met monthly and had, by April 2011, selected the two leaders of the project, a head of research and a head of processes, as well as an agency for implementing funding and a preliminary list of members of the scenario building team. By mid-2011 the project design was developed in detail in the 'Project Document, PRODOC' which enabled communication on the project and procurement of international funding.

Once the Project Executive Committee was formed, including the leaders of research and processes, a research team and an executive secretariat, the Steering Committee took a more decisive role and the project progressed at a quicker pace.

The personal skills of individuals in the Climate Change Office of the Ministry of Environment allowed them to leverage international funding. New members were committed to achieve funding to support the activities of the Climate Change Office even as a new office with minimum resources (interview with OCC Official). They used their language skills, their political and personal networks and their ability to work with international organizations. In addition, these people had the ability to network politically with the main authorities in different institutions, particularly in the Ministry of Finance that can veto any important issue for the government, and in the Ministry of Foreign Affairs, the institution responsible for formalizing the Chilean position on climate change in the international arena. With them, the Office of Climate Change built a relationship of collaboration and political support (interview with OCC official).

In January 2012, seven ministers under the leadership of the Minister of Environment, Maria Ignacia Benitez, signed a high-level political mandate in Cerro Castillo, a Presidential Palace in Viña del Mar and the location of important national political events. Funding for the project was successfully gathered from international donors, and the members of the scenario building team were invited to meet with the Minister of Environment. In March 2012, the MAPS Chile project was formally launched at a public event attended by various high-level authorities. The first scenario building team meeting took place in March 2012, inaugurating a work project of two years – later extended to four years.

The initial stages of MAPS Chile occurred in a favourable political context for climate change issues. The country had recently made its political commitment to reduce emissions by 20% by 2020, which required a technical base to advance

the formalisation of Chile's agreements in international negotiations. In that context, the project was presented as a non-binding process that would rely on the best scientific research available in the country to build the numbers to support the Chilean definitions. In addition, other experiences with climate change issues in the country, such as the round table discussions between civil society organisations and the private sector to evaluate the 2008–2012 Climate Change Action Plan made it clear to the Climate Change Office that there was a strong demand for the creation of participatory spaces and to involve more people interested in these discussions, as well as to generate information that could provide an integrated view in terms of methods and coherence of results. Moreover, the Climate Change Plan established a series of goals and GHG projections on a sectorial level, made independently by each sector using its own methods and assumptions, making it difficult to establish a global view of future emissions in the country.

Faced with this challenge, MAPS International presented a valuable opportunity as it offered an approach and work methodology that resonated with the national authorities for the following reasons:

- (i) The possibility to define an emission baseline for the whole economy of the country;
- (ii) Its focus on gathering technical information, a strategic way to address the agreements with the different institutions and stakeholders;
- (iii) Its approach to building mitigation scenarios, leaving political decisions to the government; and
- (iv) The possibility it provides to identify the impacts of mitigation strategies on the country's economy. The component of participation, which is central to MAPS' proposal, was understood and valued throughout the project process.

The technical and political skills of the individuals who headed up this stage of the project were critical as they were able to engage authorities, generate political support for developing the initiative, and engage on the international arena in order to obtain the resources for the project.

Project Structure: Designing A System Of Institutional Governance

From the outset, the MAPS project has been characterised by its organisational structure, which assigns different roles and functions to different institutional bodies. Together, these constitute a system of institutional governance in which public and private stakeholders coordinate around the task of producing information for decision-making on public and private levels. The figure below shows the main organisational bodies that make up the project and their functions.



Figure 1: Project Structure

The organisational bodies defined in the project were:

- Strategic Advisory Committee (SAC): This was specified as the highest political body, with a direct communication link with the ministers. The SAC met on five occasions between 2011 and the beginning of 2013. Its purpose was less complementary than had been anticipated with the Steering Committee, which eventually took responsibility for guiding the strategic definitions of the project from the political stage.
- The Steering Committee (SC) is responsible for making the main decisions on the project. It meets monthly and is made up of representatives from the seven participating ministries: Foreign Affairs, Finance, Transport and Telecommunications, Agriculture, Energy, Mining and Environment. The executive team coordinates the meetings. Participants at the meetings were the leaders of research and participation, representatives of the Ministry of Environment and the project administrative body. The SC revises proposals and preliminary and final results and it can partner up and assist with studies developed for the project that are in its line of competence and interest.
- The Executive Committee (EC) was integrated by the secretariat, administrators of the project (UNPD), sectorial researchers from the University of Chile, the macroeconomic analysis team from the Catholic University and the participation processes team.
 - > The project secretariat is defined as the coordinating body and is responsible for national and international communications on the project and for supervising the Executive Committee, reviewing administrative and technical research and participatory matters. In practice, the head of processes together with representatives from the Ministry of Environment took on the main coordinating role and passed on the administrative functions to the technical secretariat.
- The head of research, Rodrigo Palma, oversaw design and supervision of all research activities. He monitored the quality and integrity of results.
- The head of processes and facilitation, Hernán Blanco, oversaw the design; implementation, monitoring and reporting on all activities related to the participatory, research and dissemination processes.
- The UNDP was in charge of implementing the project in phases one and two and managing administration of funds.

- The Scenario Building Team (SBT) is the multi-stakeholder group that participates in developing the project. It is made up of nearly 70 individuals with proven experience in climate change and related topics (mitigation, adaptation and sustainability issues). The participants are from the public, private and academic sectors, and organisations and institutions from civil society. Participation is on individual, not institutional, terms. The group works according to guidelines provided by the SC and the head of processes facilitates the sessions. It is an advisory group and its recommendations are not binding.

Setting up the SBT was a particularly sensitive task. It was formed after a discussion on criteria for participation proposed by Hernán Blanco (leader of participation), Rodrigo Palma (leader of research) and Andrea Rudnick (Head of the Office of Climate Change) to the SC. The criteria for participation were: to have people with knowledge and experience regarding climate change and related topics, with knowledge of and access to information in the relevant sectors (such as energy, forestry, agriculture and technologies), with strategic thinking skills, the ability to take action beyond the parameters of a specific sector, an understanding of and agreement with the project rules; in short, people with a known track record who are recognised for their technical leadership.

Individuals from academia, the public sector and NGOs formed part of the team. One of the notable shortcomings identified was low participation by NGOs. A fund was created to cover the costs of their participation but it was not as successful as expected. Some of the reasons cited by individuals who did not attend regularly were: a need to focus on specific and contingent topics in view of the urgency and relevance of the short-term agendas for environmental issues in the country, a lack of interest resulting from the way that the problem was approached because of an over emphasis on sectorial issues without addressing local and territorial challenges, and a preference for implementation and political issues opposed to the focus on research adopted by MAPS, among others.

- Technical working groups. Specific and ad-hoc working groups supported the technical work per sector. The technical working groups were composed of SBT members and individuals invited in their capacities as experts. Their main contribution was to gather information about the micro-dynamics in sectors in order to refine modelling and evaluations of mitigation measures, specifically where there was a dearth of information or records making it impossible for researchers to work independently to establish appropriate assumptions and methodological definitions.
- Consultants were in charge of developing specific studies outlined in the project research framework. The use of consultants is the main difference between the Chilean and South African experience. In South Africa, consultants were not employed: in contrast, a permanent team of 30 people was responsible for conducting all studies necessary for the project.

Impacts Of The System Of Governance

The structure and organisation of the MAPS project created a system of governance that, according to participants, offered an alternative approach to responding to relevant challenges when defining climate change policy. It also offers an approach on how to deal with uncertainty and information gaps when estimating and projecting mitigation measures for the long term, as well as creating cross-sectional long-term agreements to advance in finding solutions.

Uncertainty

The modelling of GHG emissions for the long term posed significant methodological and technical challenges for the project management, particularly the estimation of GHGs for 2050, which required critical sectorial information to ensure project success. On the one hand, it was important to have complete and robust sector-level databases, and ideally time series so

that trends could be identified. On the other hand, it was necessary to formalise validated assumptions in order to make projections and clarify entry-parameters for modelling. Finally, it was necessary to define a sensitivity analysis, which would address uncertainty associated with long-term modelling and the specific conditions of climate change and potential mitigation measures.

Based on this, since the MAPS project was formulated in South Africa, it has emphasised the construction of scenarios for informing decision-making. This made it possible to keep the task of constructing and evaluating of alternatives within the project scope, and in the political arena, the evaluation of the options according to different criteria, priorities and conditions aside from scientific evaluation. In the same vein, the proposed methodology incorporates expert judgement to identify validated sources of information and to supplement limitations created by a lack of secondary information, which is a condition typical of developing countries.

At the same time, the method opened up the exercise of scientific modelling to experts, thus giving transparency and also sharing the process of defining the assumptions and entry-parameters of modelling with researchers and interested stakeholders using the best available information.

In this vein, the Ministry of Finance made its growth projections available for validation by the SBT members. The working teams, consultants, SBT and GTT discussed the projections – at different stages of participation with consultation – and proposed technology-penetration rates that they considered technologically, politically and economically feasible in the long term, and submitted information on the potential investment and operational costs associated with the mitigation measures.

As a result, the combination of input from experts and the information generated by consultants made the results of the estimates more robust – considering how difficult it is to make long-term projections and particularly in a country with insufficient and low quality data for making successful projections (interview with research team member). Further, incorporation of the expert and technical input of the researchers and consultants made it possible to identify the parameters for including sensitivity in the estimates, those that account for the uncertainty related to modelling.

The process of consultation and formulation of information during the project was organised as follows:

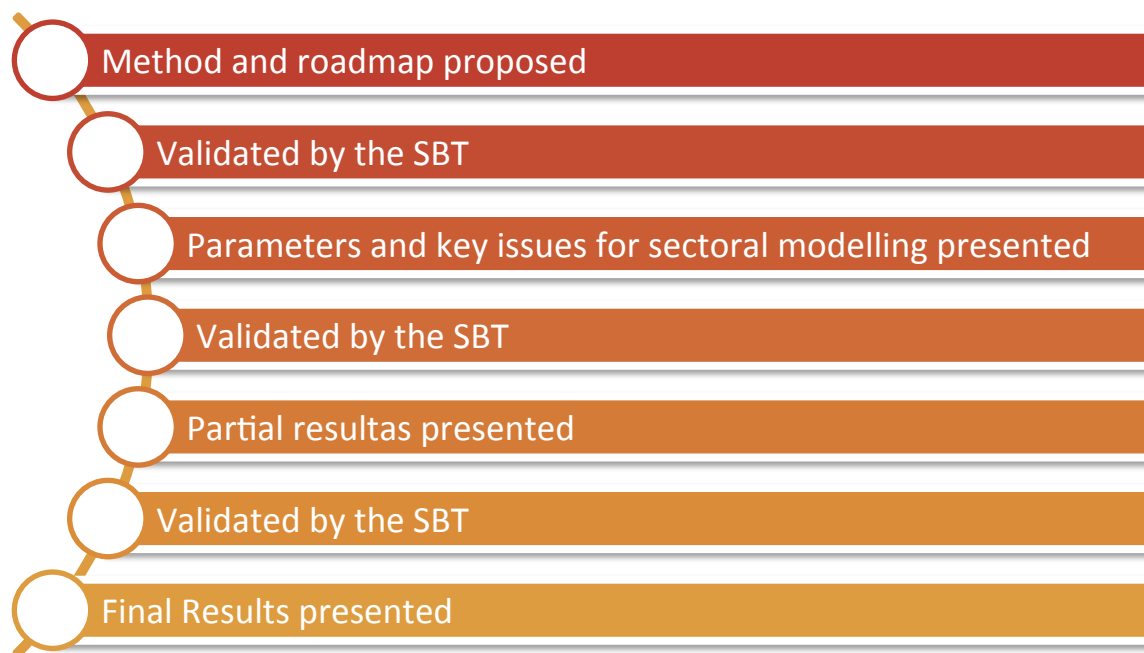


Figure 2: Iteration of Results

There are two aspects of this sequence that need to be highlighted. Firstly, in discussions the executive team always made a proposal or a clarification on the topics that the SBT could or could not rule on. Secondly, the issues that the SBT could address and decide on were relevant topics in that they directly influenced the quality of the results (assumptions, baseline data, methodological definitions, parameters etc). As such, the conversation dealt with technical and clearly delimited topics, while, at the same time, the conversation was relevant in that the participants effectively influenced the final results of the process.

Constructing Long-Term Outlooks: The Autonomy Of Political Administration Versus Political Articulation.

As part of the challenges of defining a long-term outlook, the need for two principles was considered when putting the project team together (including all the stakeholders involved). It was necessary to ensure that the project work remained sufficiently independent and that the results would not be directly linked to a specific government's agenda, while also ensuring that work would stay within the radar of politicians and the government, and would be relevant to the political agenda of the country. In order to maintain this precarious balance, a major role was played by the project governance, and therefore by the SC, the SBT and the Executive Committee. The SC made sure that the project remained politically pertinent and relevant throughout the project. Continuous report-back on the progress of the project results kept the authorities, at least the middle ranks, continually linked, and at the same time it facilitated a connection between the EC and the needs and interests of the multi-sectorial representatives of government. In addition, the SC played a role in resolving conflicts as it took on the role of political authority for resolving differences between the SBT and the EC.

The EC – made up of a research team that included two prestigious local universities (the University of Chile and the Catholic University) provided institutional backing to the technical definitions, adding to the credibility and legitimacy of the results (Interview with member of the scenario building team).

Based on this, interviewees considered the organisation around dealing with the change of government in March 2014 as a project success. The change posed a significant threat to continuity of the political support for the project, especially since

the opposition to the current government (which was managing the project) became the new administration. The head of processes, Hernán Blanco, played an important role in coordinating and overseeing the internal project process, as well as the project's relation to its social and political environment. In anticipation of the change of government, Blanco held numerous personal meetings with members of the SBT, with potential new authorities and with people linked to the incoming government, in order to introduce the project and create awareness of its relevance.

Although these efforts were considered relevant by the interviewees, one of the conditions evaluated as critical for facilitating the transition was the significance to the project of the SBT, where members and consultants became new government authorities and people linked to the government who left their posts, sustained their technical involvement in the topics, thereby providing the best conditions for the project's continuity.

At the same time, the proximity of COP 20 in Lima and the need to provide contextual information during the negotiations generated political support for the continuity of the project. In view of this the next phase of the project, after COP 20 and upon finalising the Phase 2 results,² will probably represent the real political shift that needs to be dealt with and overcome.

The SBT was provided with the opportunity to write a chapter of the final report – which is an example of its autonomy and independent expression. The aim of the chapter was to develop a narrative³ around the statistics generated in the study, and an interpretation of the results according to the participants' expertise. This ensured that a group of at least 12 people from different sectors conducted an in-depth study of the results and formalised their impressions on the scope of the results. The exercise had the primary goal of creating an independent narrative by the SBT (developed by voluntary participants) and also to enable the possibility of creating a closer link between the project results and the public policy agenda.

WHAT IS UNIQUE ABOUT WHAT THE MAPS CHILE PROJECT OFFERS?

The official project definition, which is found in the results reports, states that MAPS Chile is a governmental project that, resulting from a process of research and multi-stakeholder participation, provides evidence, projections and options for reducing GHG emissions in Chile. The project aims to provide support for decision making by public and private stakeholders by offering options for public policy and private initiatives that are compatible with the goals of an inclusive, competitive and low-carbon development path.

According to stakeholders who participated in the project, there are three characteristics of the project that were highlighted by everyone: i) its governmental connection – with the potential of influencing the public agenda despite not being binding; ii) the quality of research conducted; and iii) the innovativeness of incorporating a method for a broad participatory process for generating information to define a public policy. Below are some observations made on each of these characteristics

² Phase Two results are available here: <http://mapschile.cl/documentos-de-interes/>

³The Narrative Document forms part of the executive summary of the MAPS Chile Phase 2 results. Available online: http://mapschile.cl/files/resumen_MAPSChile_Fase2_102014.pdf

Governance

The government – through representatives from the Ministry of Environment and, particularly, the Climate Change Office – was seen as the leading body of the project, maintaining a continual governmental presence throughout the project development. The project mandate, which was incorporated from the beginning of the project, was signed by six ministers and explains the goals and scope of the project. This is recognised as an important element in terms of providing political relevance to MAPS Chile and of explicitly expressing government support.

For the project participants, the creation of a steering committee that included representatives from seven ministries represented the political relevance of MAPS and is recognised as a positive indicator in terms of the project's potential capacity to have an influence on decision-making.

Quality of Research

The research conducted as part of the project is considered to be of a high quality for being rigorous and innovative, but the value of generating information based on empirical data was emphasised (interview with SBT). It was a common view that the results of MAPS Chile provide the best available information for estimating emissions in the country and for evaluating potential mitigation measures and scenarios (interview with SBT and consultants).

Contracting the Centre for Energy at the University of Chile provided a stable team for the project, which enabled the topics to be developed and the lessons learnt to be integrated throughout the project duration. This view signals a counterpoint in terms of the difficulties of working with consulting teams, which generally experience frequent rotation, particularly for projects of more than two years.

The research was organised by sectors and tendered to institutions and specialists. In addition, economic issues connected to sectorial evaluations and general equilibrium analysis of the mitigation measures were handled by economist Rodrigo Fuentes and his team from the Catholic University. Initially José Miguel Sánchez from the Catholic University acted as head of the team and contributed to the methodological design of the project. The MAPS research team included people from the two main universities in the country, strengthening the credibility of the project results.

As previously mentioned, the research team was made up of professionals from the Centre for Energy at the University of Chile and the Faculty of Economics at the Catholic University. Initially the universities could not provide climate change experts. This, according to the head of the Climate Change Office, Andrea Rudnick, was an advantage at the beginning of the project as it reduced the bias between mitigation measures and the possible methodologies to be used. However, at critical points, when embarking on certain studies or integrating results, it was a handicap in that contributions from an expert view on materials for negotiations and climate change in general were needed in order to guarantee the usefulness and pertinence of the results. Specifically, as part of the process, it was important to remain aware of the requirements for international negotiations, for clarifying the necessary inputs and of the relevance of the activities and results to the project mandate. The mandate plays an important role in maintaining clarity on the developments and scope of the project, but one person was needed to be in charge of monitoring a connection to the original questions directing the project so that its goals are met in full and within the proposed timeframe.

The research team operated as partners to the sectorial consultants, who conducted studies to estimate baselines, define and evaluate mitigation measures and build scenarios. It also took responsibility for integrating the results and ensuring the necessary consistency for integration. According to the interviewees, the role played by the research team was critical to the project success.

The interviewees recognised the professionalism of the members of the research team and the high standards they set for the consultants, stating that they felt ‘the pressure of there being a person who would review the reports in detail and who was an experienced consultant’, as well as the amount of time dedicated to monitoring and evaluating the consulting processes. This, according to public sector interviewees, differs from the way that the state generally coordinates studies and consultants, as usually the technical partners lack the time and expertise to supervise the studies. One consultant reflected this situation saying that ‘generally I am contracted as an expert and therefore my counterpart is interested in the recommendations I make. In this case, I had a person who reviewed everything to the last detail and continuously questioned the methodological decisions and results, thereby collaborating continuously in improving the work’ (interview with consultant).

Participation

The active participation of so many people is recognised as an achievement, expressed in these words: ‘Contributions by participants were considered without hindering the pace of progress and the achievement of results. Participation was particularly broad and managed to remain focussed on the achievement of goals and results.’ Although the participants had high expectations of the project, it was widely agreed that the participative process adequately clarified the scope of the exercise and its results. For the majority of participants, based on its design, the project was realistic and it was clear from the beginning that, while it would provide key inputs for decision-making on climate change, the results would not be binding for political decision-making. According to interviewees, their expectations were met and properly managed by the head of processes in his role as facilitator.

THE PARTICIPATORY PROCESS

Initial Definitions Of The Participatory Process

The participatory process was initially conceived of as providing support to the research team on decisions over design, implementation and monitoring of participatory stages. It was proposed that the SBT would contribute information, experiences and key opinions and that the final decisions would always be proposed by the EC and approved by the SC. At the same time, an additional component considered was of creating awareness and knowledge on climate change, expressed as ‘fertilising the ground’ for installing and implementing the mitigation measures.

Criteria for membership of the SBT were defined as follows:

- To facilitate generation of information based on expert perspectives – assessed in terms of their knowledge of or experience with climate change on issues of mitigation, adaptation, emitting or absorbing sectors, co-impacts, technologies, sectorial knowledge and access to information.
- To facilitate a purposeful creation of solutions based on individual involvement: the invitation to participate was on a personal basis and not as representatives of an institution or sector; the strategic thinking of the participants and their acceptance of the ‘rules of the game’ were evaluated positively.

During the phase of defining which stakeholders to invite to participate, the question was raised of whether to incorporate NGOs in the exercise and it was finally considered necessary to invite individuals from this sector who complied with the criteria stated above in order to validate the knowledge they could contribute, the information they could access, and the

diversity they represent in terms of the predominant opinion among the public sector and academia. In addition, the legitimacy, credibility and relevance they contributed to the project were considered.

As part of the definition generated by the head of processes, Hernán Blanco, the design and implementation of the participatory process focussed on facilitation – understood as the role of looking after the process, guaranteeing fairness, creating a constructive and creative atmosphere, preventing and managing conflicts, creating trust and creating a safe space for people to participate in as freely as possible.

Underlying the focus on work, the participatory process should consider the different dimensions of the participants and teams, integrating content (think), interaction (feel) and procedures (do).

The global project design identifies specific work cycles to be completed, in which interaction is organised between the proposals to share content of how and what from the research team and contributions from the consultants and technical work groups, feedback from the SBT, presentation of preliminary results, feedback and presentation of final results.

MAIN IMPLICATIONS OF THE PROJECT RESEARCH AS A RESULT OF THE PARTICIPATORY PROCESS

According to the interviewees, the main contributions to the project and to its design (which included a process of multi-stakeholder participation integrated with research on climate change matters) are as follows.

Improvement Of The Quality Of Scientific Research, Enrichment Of Contextual Information For Public Decision-Making

Opening Up The 'Black Box' Of Modelling,

Which usually stays in control of the individual definitions by the researcher: For the majority of interviewees, the results generated by MAPS have been significantly enriched by being developed in a collaborative way, integrating the experiences of researchers (the research team and consultants), expert perspectives of the SBT and political validation by the SC and representatives of the Ministry of Environment. The exercise of collaboration and co-production of baseline information is understood as a process of explaining the assumptions used, defining them together, questioning data (quality and availability) and explaining the scope and limitations of the methods used. This, according to interviewees, increased non-experts' understanding of the limitations and opportunities that sectorial and macroeconomic modelling offers and also provided credibility and validity to the results, while recognising the levels of uncertainty that prevail in the results. In addition, this method provided procedural legitimacy to the results. Results were obtained through inputs, assumptions and data that were agreed upon throughout the project process, never giving precedence to anticipated results. In this way, the consensus reached at each stage of the process protected the results from manipulation and modification. The project managed to validate intermediate decisions and create legitimacy and validity of results through reaching agreements.

Increasing The Pertinence Of Results

Integration of local knowledge through local experts and researchers made it possible to include in the exercise, in the best possible way, the micro-dynamics of the sectors, a better understanding of the productive structure in the country for

emission estimations, and a better understanding of the technological conditions and preferences. In particular, the discussion on the penetration rates of measures and the identification of the measures themselves is valuable in that it was held between individuals directly involved, as opposed to external stakeholders who would be out of touch with the reality of the country. However, issues relevant to the discussion could not be dealt with in as much depth as anticipated – whether because of the makeup of the consulting groups (SBT, GTT) or the availability and quality of the discussion on a national level on issues associated with the availability of experts, such as in the waste sector.

The process of iteration between proposals of ‘what/how’ put forward by the research team with contributions by the consultants and technical working groups (GTT), feedback from the SBT members, presentation of preliminary results, feedback and presentation of final results generated a peer review community where the assumptions, methods and results were subjected to public scrutiny by any interested stakeholders at many stages. This activity met with resistance from some stakeholders, particularly the consultants whose work was exposed to public review. However, they revealed in interviews that they valued the final results because the results had reached a wide audience, had been validated and had been strengthened through the process (Interview with MAPS consultant). According to the researcher, leadership of the research process by academics at the universities contributed to improving the process of review and validation of results by the mere fact that peer reviewing is at the heart of academic scientific research, in which studies are published in journals or presented at conferences. The scope and depth of the peer reviews is questionable, however, since the level of involvement of the consulting groups varied. Despite a high level of participation, detailed reviews of the CAPEX and OPEX studies were generally fewer and, in fact, the results were validated during meetings where the quality of the research team was relied on.

Improvement Of Public Decision Making, Enriching Understanding Of The Causes, Dynamics And Implications Of Problems

The process of integrating research through modelling, through participation of experts and through broad connections with the public sector facilitated a ‘socialisation’ of complex results – the term ‘knead awareness’ was used by the interviewees through the project. In contrast to the traditional process of conducting studies through consultants, the MAPS project does not value only the final result but also the lessons learnt along the way, which include ‘the opportunity to learn about the dynamics of other sectors’, ‘the opportunity to find complementarity with other colleagues and topics’, ‘the opportunity to learn from methodological tools’.

Although the project results tend towards synthesis and simplification, the process of co-production has provided the best possible transparency of the uncertainties and complexity of the estimates and methodological decisions at the base of the studies.

Lastly, the process of co-production of results allowed stakeholders to identify the variables that influence estimations, thus providing better opportunities for recognition of the solutions and obstacles to implementing the mitigation measures.

PROJECT IMPACTS

The impacts of the MAPS results co-exist on different levels. Firstly, the project has made methodological contributions that strengthen the capacity and knowledge for addressing the discussion on climate change in the country. The interviewees reported having used methods they had learnt in other consultations and governmental projects. Secondly, the project contributed to improving availability and to ‘socialisation’ of better sources of information and methods for estimating emissions and evaluating mitigation measures. Lastly, through the project, participants learnt and integrated in their

practices a different approach to evaluating the possibilities for integrating science and multi-stakeholder participation for decision-making. With reference to this, note the methodological transfer between MAPS and the long-term planning exercise being developed by the government via the Ministry of Energy. Although it is a different exercise, there are principles, methodological design and processes aspects that strongly resemble the MAPS project and which include participants holding different roles in the project who recognise the influence MAPS has had on formulating this project.⁴

In addition, on another level of influence, the MAPS results, which were developed with the aim of guiding decision-making without being binding, ended up being the main source of information for formulating the axis of mitigation of the draft contribution to be presented to the United Nations (Ministry of Environment, 2014). Under the framework of the international climate change negotiations, the member states of the UNCCCF, which includes Chile, are in a process of negotiating a multi-lateral climate change treaty under the United Nations system that will be applied globally and will result in binding obligations to reduce emissions for all countries, including developing countries. This agreement should be signed in December 2015 in Paris, France, within the framework of the 21st Conference of the Parties (COP21) of the UNCCCF. Chile intends to formalise its commitments by 31 June 2015.

In order to define Chile's contribution, the country drew up a draft project outlining mitigation contributions from all sectors in the country. The Ministerial Council for Sustainability and Climate Change submitted this draft for public consultation so that citizens could comment on the options proposed by the government before a final evaluation. Methodologically, the draft project takes two components into account: a) a carbon intensity target, expressed in GHG emissions per unit of economic development (GDP) which includes all sectors susceptible to taking mitigation action in Chile – except the forestry sector; and b) a target exclusive to the Chilean forestry sector. The project draft presents two options for commitment. Option A proposes a reduction of CO₂ emissions per GDP unit of 30–35% below the 2007 level by 2025. In addition, Chile commits to reducing its CO₂ emissions per GDP unit by 40–45% below the 2007 levels by 2030. Option B proposes a reduction of CO₂ emissions per GDP unit of 2530% below the 2007 levels by 2025 with a commitment to reducing these by 35–40% by 2030. MAPS contributed to defining these figures through defining the scale of GHG emission mitigation efforts based on the 80/20, medium and high mitigation scenario results, all of which were defined and evaluated, with the technical and modelling support, as part of the project.

MAPS also contributed to the macroeconomic foundations, which ensure that the mitigation effort brings positive results in terms of the development goals and priorities of the country. Together with the proposed goals, the government presented the anticipated results of the GDP and unemployment rate for 2025 and 2030, which come from the MAPS macroeconomic analysis, which included a dynamic stochastic general equilibrium model.

Lastly, although MAPS contributed mainly to the project draft with its focus on mitigation, in the component addressing strengthening capacities – also part of the project draft contribution – it considers the possibility of Chile collaborating with other countries on estimating measures and on methodological tools. This would provide an opportunity to contribute, based on the MAPS experience, to South-South cooperation, thus strengthening the capacity of other countries to generate information to inform their climate change policy.

⁴ The official documents presenting the 2050 Energy methodology identify MAPS as one of the relevant sources for carrying out the work, together with the results and experiences of the 'Energy scenarios' and 'Sustainable mining'.

MAIN CONCLUSIONS: LESSONS LEARNT AND FUTURE CHALLENGES

The MAPS project succeeded in achieving its goals through the methods and criteria set out in the project design from the beginning. These methods and criteria gradually gained acceptance and were validated by project developers and participants as the project rolled out. In addition, despite its definition as a project with non-binding results, its results have been significantly influential in producing the main statistics used in the draft proposal of Chile's contributions.

After three years of the project rollout it is possible to collect a number of the lessons learnt and challenges for the future in a project design, process and research plan.

Project Design

It has been significantly beneficial to the MAPS Chile project to have a project design proposal based on the MAPS South Africa experience, which had already been tested. The transfer of the project design experience was useful in that it identified:

- Guiding principles (credibility, validity and legitimacy),
- Critical aspects of the governance structure, which included local authorities signing a political mandate providing support and relevance to the project,
- And the need for interaction between research and local practitioners and experts

All other aspects and methodological definitions were possible to be adapted by the Chilean team to the reality of the country context. Under these guiding principles and design features, the EC took tactical decisions during the project, with a degree of flexibility but always maintaining clarity on the final results they aimed to obtain. It was expressed in interviews that participants valued the clarity of the project roadmap and the pertinence of the various meetings and activities that were organised, saying that their time was well spent. This partly explains the high level of project loyalty, whereby, for three years to date, an average of 50 people continue attending working meetings every two months.

The MAPS project transfer was benefitted by having a mix of guiding principles and clarity on critical aspects of the system of governance together with the required degree of flexibility for the team to be able to define the processes, methods and project management freely.

Processes

In the interviews, a high level of appreciation was expressed for the participatory process that was developed as part of the MAPS project, particularly for the way in which it was carried out. The work pace was appreciated, as it made it possible to express intensity – the urgency and demandingness of the work load – while respecting the timeframes to consider in depth and reflect on the work. On the other hand, leadership was considered as a significant part of the process. Having a leadership that stakeholders trust to make decisions impartially and not to abuse their positions given the diversity of opinions and interests of the members of the SBT. The interviews revealed that the project's capacity to be impartial in its treatment of the different sectors of the economy was considered a positive element. Hernán Blanco's leadership was recognised as impartial, formal and clear – critical aspects in strengthening a good system of governance.

At the same time, the charisma of the research team contributed towards creating a work environment based on collaboration among the SBT members. Despite tensions around developing the project, participants positively valued the

opportunity to participate as SBT members, as they knew their time was valued, they had the opportunity to learn from their peers and they recognised the value of taking part in an influential group, which was made up of people recognised nationally. As such, during the whole project process, the exclusivity and status associated with belonging to the SBT was respected. Its members always had access to first source information, under confidentiality clauses that were respected and they added specific status to the information they dealt with. Their participation in the project was on a personal level and not transferable, therefore their institutions did not have the option of replacing them. The interviews with members of the SBT communicated the value they attached to membership.

Another lesson to take from the experience is the understanding that participation is not only a way of gathering information from interested stakeholders while decision-making remains in the hands of experts, but also a way of organising the relations between research, stakeholders and government. Along these lines, participation means more than interacting at the SBT meetings every two months and becomes a way of relating throughout the whole project. The head of processes held bilateral meetings when necessary to respond to consultations, to clarify definitions, anticipate conflicts and to provide detailed explanations on methodological decisions that were being taken. The research team also provided open spaces for revising and explaining the results in detail, which were occasionally used by people from the scenario building team.

One of the main challenges that stand out concerns the conformation of the SBT and the technical working groups. In terms of political representation, the project lacked the capacity to actively involve the main heads of the civil society organisations that were strategically identified for the project development. Lack of participation by NGOs was seen as reducing the legitimacy of the final results, a criticism mainly made by the project implementers. This affected the project stage of disseminating the results, in which NGOs highlighted project results in a biased manner. The lack of active NGO participation also compromised the quality of results since their views were not included as part of the (contextual) information. Even though funds were made available to finance independent professionals, according to the head of processes, NGOs are under greater pressure in terms of time and resources which makes it difficult for them to participate in a project with demands on time commitment and which cannot clearly define its capacity for influencing policy. NGOs were more concerned with more immediate action and less with long-term discussion and planning. This aspect of participation is critical and strategies must be developed in future to ensure sustained participation of civil society representatives.

The member composition of the SBT and the technical working groups needs to be improved regarding technical abilities. Although the value of the information generated through expert perspectives is recognised, there was also a technical shortfall due to a lack of experts able to identify and resolve critical issues and information relevant to the project. It is therefore necessary to be more selective of the participants, considering in a more flexible manner the incorporation of people with the knowledge and competence required for the project development and to integrate other mechanisms of consultation with experts that can strengthen the work – such as conducting personal interviews.

Research

One aspect to learn from was the research approach of generating information on context through building mitigation scenarios and incorporating analyses of uncertainties in the estimates. Building scenarios provided decision-makers with options, thereby leaving the consideration of background information, together with other technical and non-technical criteria, to the political space for public decision-making. It also made the information available in a simplified form, based on mitigation measures organised by different criteria that were adapted to the political 'language' and relevant to the stakeholders participating in the project (energy efficiency, non conventional renewable energy, renewable energy, etc.).

The method for building scenarios was developed by the executive team, who initially organised the information in the mitigation measures in terms of their abatement potential, costs and feasibility levels, identifying clusters of measures that correspond to low, medium and high levels of effort. This was reviewed by the SBT, who classified the measures accordingly and also incorporated other categories for classifying the composition of scenarios based on the content of the measures. This led to the creation of the Energy Efficiency, the Renewable Energy, Nuclear Energy and 80/20 Scenarios (which includes the measures with the greatest potential for reduction). The EC also included an additional scenario – a carbon tax scenario. The result was that the criteria used for grouping the scenarios presented the information in a simplified format, incorporating into the decision the priorities and language familiar to and valid for interested stakeholders.

In terms of analysing uncertainty, although political stakeholders are less accepting of uncertainty in technical information for backing up decisions, it is also more and more the case that credible public policies are required to be explicit with regards to the limitations of the knowledge in order for a decision to be irrefutably founded (Manksi, 2013). Participants therefore valued the methodological aspect of integrating analyses of sensitivity into parameters considered critical in reflecting uncertainties in global and sectorial dynamics. It is, however, important to note that the project has no control over the ex post use of the results, over how they will be discussed or taken up by public opinion nor over how they will be used by political stakeholders. However, the project can disseminate, and has done so, the results within the technical and academic spheres, making their databases, models and results available to anyone who requests them, and creating peer-review communities and publishing academic papers that give access to the methods and results of the project.

Contracting academic institutions – the University of Chile and the Catholic University – to form part of the research team was an aspect of the project appreciated for adding value to and strengthening the project and its results. In a second level of analysis, it was also critical to contract key people (Rodrigo Palma and Rodrigo Fuentes) who took on specific responsibilities and ‘prominence’, providing guarantee of academic rigour. Given the academic capacities of the heads of research, the quality of the research was ensured, as there is an interest to guard one's reputation in the academic sphere. In addition, throughout the project there was sustained interest in generating new knowledge and responding proactively to the different methodological challenges in the team and to guarantee a higher level of continuity of researchers on similar studies that could have been carried out by consulting companies, which, according to interviewees, are characterised, by a high level of rotation.

Among the challenges that have been identified is to find an appropriate balance between the independence and technical rigour of the research team and a harmonious interaction with the political system. On occasions there have been tensions around the political use of the results and tensions on the political side around the pertinence of the results. In this regard the horizontal composition of the executive team, composed of the research and processes team, and representatives from the Ministry of Environment, made it possible to make these tensions explicit and resolve them during the project rollout.

It is necessary to have ways to bridge the interaction between the two spheres – individuals who can report to the political sector on the results of the technical team and at the same time, direct the technical teams regarding political requirements. Good examples of this interface are the refinements made post Phase 2.

The decision was taken to work with consultants in order to complete the research, as there are companies in the country with the capacity to do the work well, and these companies were intentionally incorporated into the project. This decision had many implications that the interviewees considered extensively. Despite the important challenges project management was faced with (managing contracts, filling spaces, selecting the most suitable contractors, etc.), the experience turned out well in terms of involving the majority of the researchers and consultants dealing with climate change in the country, facilitating wide socialisation of the results and the project amongst informed stakeholders.

In terms of the quality of results, deciding on the type of work that included consultants and also making sure that there were counterparts that were informed and had time to devote to following the studies was critical. The process of relating between the SBT and the different consultants was not easy. The peer review method used in the project was not a usual process for the consultants, so being exposed to comments (feedback) from a large group such as the SBT was problematic and put them under a lot of pressure (interview with consultant). Despite this, the consultants who were interviewed were positive about the project and the opportunity to gather information on the dynamics of the sectors from individuals connected to industry operations and to specific sectors. Regarding this, the main criticisms of the project are that the detailed interactions with sectorial experts could have flowed better, in order to maximise the opportunity to incorporate relevant information that is not available traditionally.

Regarding challenges, an issue that needed resolution was project administration, particularly regarding consultants. It was complex to align payments and contracts with the demands of the development of a project with a strong participative component – where time pressure required high levels of flexibility and capacity for responding to contingencies.

Although the Phase One and Two project results were fundamental for drawing up the draft project containing Chile's contributions, the project mandate posed questions about mitigation measures and policy instruments that would make it possible to achieve the anticipated results. In this way the project design could incorporate a focus on disseminating results to high-level ranks of public and private decision-making in the country (company directors, ministers, trade associations, congress commissions, etc.) and could use such a robust method to gather background information for formulating public policies on climate change issues.

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