

CHILE LO **HACEMOS TODOS**

8th workshop of the Facilitative sharing of views

Chile

Jenny Mager Climate Change Office Ministry of **Environment** Madrid, Spain 09/12/2019





Part I: Summary of 3rd BUR and recent development

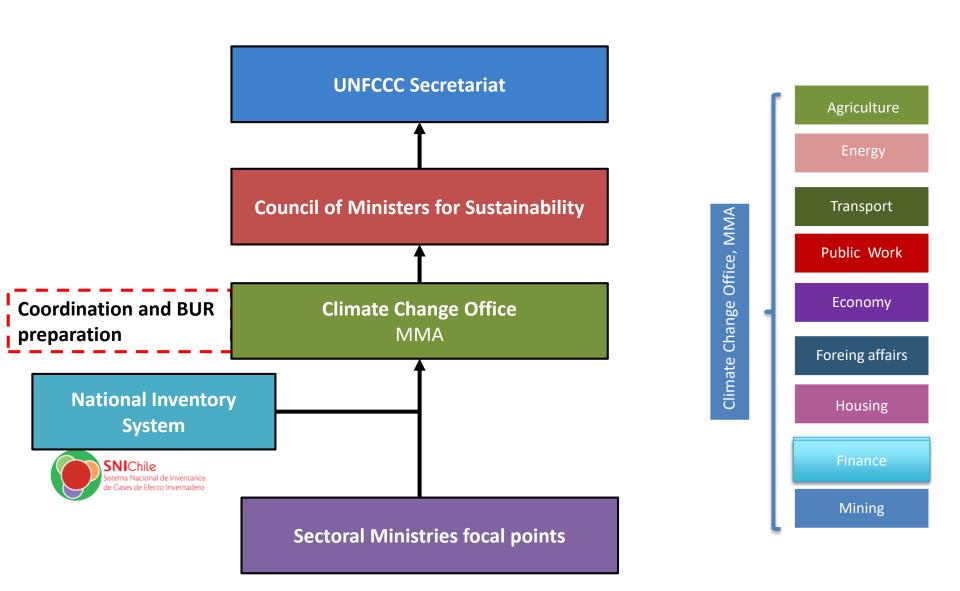
Brief context of Chile

- Despite representing only 0.25% of global GHG emissions, Chile is highly vulnerable to Climate Change
- Developing country with increasing GHG emissions
- According to economic assessments, the effects of Climate Change could cost 1.1% of National GDP annually



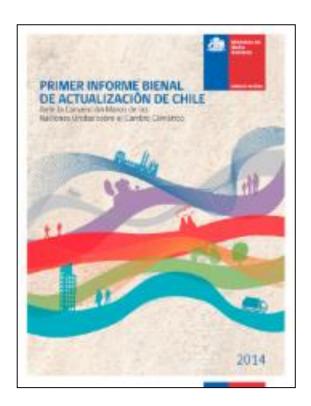
2009	2010	2012	2014	2015	2016	2017	2018	2019
Chile presents its voluntary mitigation commitment (COP15, Copenhague)	Ratification of the voluntary commitment	MAPS-Chile Proyect begins: Key information for decision making process	Public consultation of the INDC and Submission of the 1st BUR	President Bachelet announces the Chile's INDC in the UN general Assembly	Public consultation of the National Action Plan on Climate Change; 2 nd BUR	Ratification of the Paris Agreement and publication of the PANCC (next)	Submission of the 3rd BUR	Public consultation of Chile's new NDC. Presidency of COP 25 in Madrid

Institutional Arrangement for international report elaboration



Past BURs submitted by Chile

Chile's second biennial update report November 2014



Chile's second biennial update report
November 2016



Chile's third biennial update report

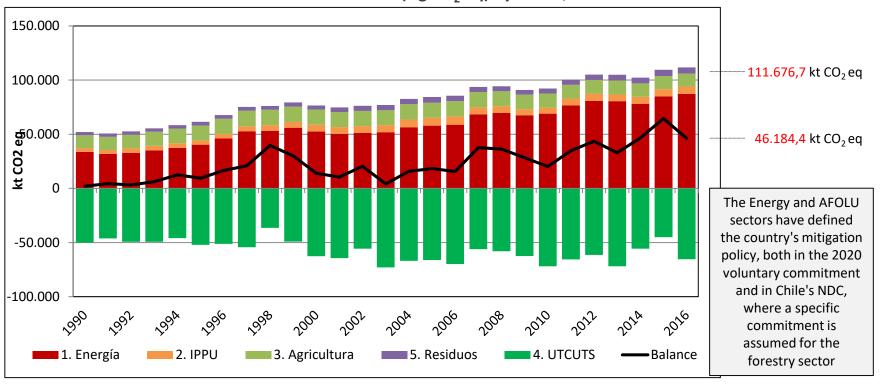
November 2018

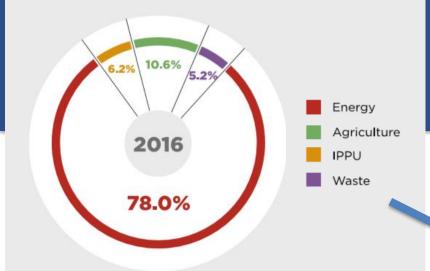


GHG inventory – Trends

- In 2016, Chile's balance of GHG emissions and removals (inc. FOLU) amounted to 46,184.4 Gg CO₂ eq.
- Chile's total GHG emissions (exc. FOLU) amounted to 111,676.7 Gg CO₂ eq,
- An increase of 115% since 1990 and of 7% since 2013. The main GHG emitted by Chile was CO_2 (79%), followed by CH_4 (12%), N_2O (6%), and F-gases (3%).

Chile's NGHGI: emissions and removals of GHG (Gg CO₂ eq) by sector, series 1990-2016

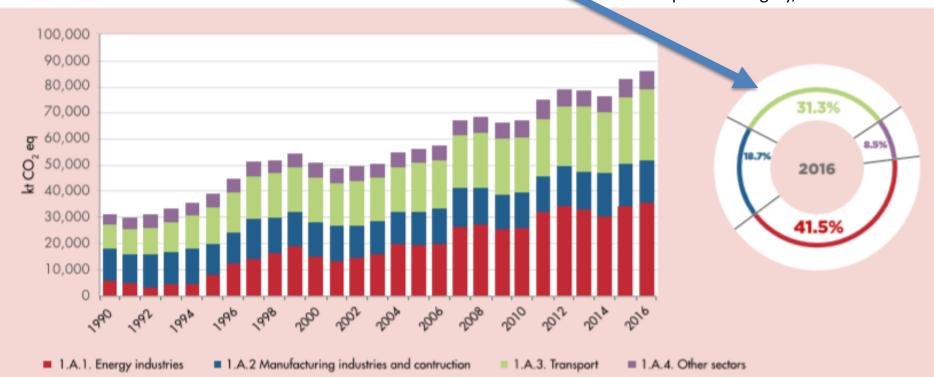




Energy sector subcategory

Chile's NGHGI – Total GF (kt CO2 eq) by sector,

Energy – GHG emissions (kt CO2 eq) per subcategory, series 1990-2016



Recalculation

When comparing the GHG balance of both inventories for the year 2013, a considerable difference is detected in the results. (approximate values).



Parameter (ktCO2e)	Year 2013 (NGHGI 2016)	Year 2013 (NGHGI 2018)
GHG Balance	+70.000	+33.000
GHG Emissions	+95.000	+105.000
GHG Removals	-25.000	-72.000

The main difference is attributed to improvements in the management of data in the LULUCF sector, the inclusion of new sinks and the development of new country-specific emission factors. Specifically:

- Incorporation of parks and reserves, such as forests under management;
- State of equilibrium of renewable forests (changed from 50 to 60 cm mean square diameter);
- Period of permanence of forests with management plans (extends to perpetuity);
- Reconstruction of the time series of the forest species Eucalyptus nitens;
- Incorporation of soil carbon deposition and litterfall according to the 2006 IPCC Guidelines;
- More detailed information for fires; and parametric data on growth by forest type with greater precision.

Mitigation Actions

Sectoral actions and policies

e.g. National Energy Policy (PEN 2050); Energy Route 2018-2022; National Electromobility Strategy; REP Law; ENCCRV; Infrastructure Plan 2017-2022

Nationally Appropriate
Mitigation Actions (NAMA)

6 NAMA registered (transport, APLs, energy, forestry, waste and agriculture)

Mitigation efforts at subnational level

e.g. Regional Efforts on Climate Change; SCAM Certification

Mitigation initiatives in the private sector

Public-private actions (APL, HuellaChile); Voluntary actions developed by the energy, forestry, agricultural, mining and cement sectors, among others.

Implementation of carbon pricing instruments and mechanisms

e.g. CDM; PRM; Carbon tax; Social price of carbon

Measurement, Reporting and Verification

MRV initiatives and actions in development and vision for the future







Mitigation actions and their effects

Table a Measures related to the mitigation of CHC emissions in the energy sector

Table 3. Meas	sures rela	tea to the	mitigation of (GHG emissi	ions in the energy sector	r	
Name	Type ⁸	Year and status	Descrip	tion	Objectives/Goal	Implemented actions	Progress
Short Law I (Law 19.940) (*)	Regulatory and incentive	2004 Imple- mented	connection to the gr	rid for non-con- generation and eration (less	F Short Law I: Exception of pay- ment by transmission to means of non-conventional generation. Right to distribution connection for small generators.	Development of technical regula- tions and standards. Advertising campaign. Pre-investment support instruments.	Fully operational law. More than 100 projects connected to distribution using the mechanisms contemplated by the Law. Estimated quantification in the package of "Non-Con- ventional Renewable Energy (NCRE) in Generation"
Regulation on Geother-	Regulatory	2004 Imple-	Within the framewor		The exploration concession:	The Regulation was amended in	10 Exploration concessions,
mal Energy Concessions		mented				RENEWABLE ENERGY ACT (N	NCRE)
(Law 19,657 of			or legal person to re thermal energy con	Official Insti	tution: Ministry of Energy		
2000) (*)			participate in a publ granting of a geothe concession.	It introduces	modifications to the General La	w of Electric Services, which estal ation of NCRE in the electricity go	
				Sector(s): Ele	ectric generation		
				Gas(es) cove	red: CO ₂ ; CH ₄ ; N ₂ O		
Non-Conven- tional Renew- able Energy Act (NC(E) (*)	Regulatory	2008 Imple- mented	It introduces modifications and the stablishes for ity generation compinstalled capacity at the obligation to proof the participation.	Δ E=E(MWh) : Where E is the factor of the S	reduction is quantified using the *FE(tCO ₂ eq/MWh) e energy generated and FE is the	e following formula: e emission factor. In the SING the ne SING is calculated analogously.	
			electricity generation Chile.	Assumptions		ing the year 2013 is raised with N	NCRE sources for both SIC at

- The real energy information generated during the year 2013 is raised with NCRE sources for both SIC and SING. According to these references, the SIC and SING generated 3,245 GWh² and 22 GWh with NCRE during 2013, respectively.
- A sensitivity analysis is performed with respect to the emission factor.
 - 1) Emission factor for the SIC and SING estimated in the study of the electricity generation sector of the MAPS-Chile project. The 2013 emission factor was estimated based on the energy projection for 2013, not real energy from 2013. The values used are: 1,03 tCO_e/MWh for SING and 0,31 tCO_e/MWh for SIC.
- 2) Emission factor for the SIC and SING estimated from the real energy generated by the plant during the year 2013, considering the specific consumption, higher calorific value and the emission factor of the IPCC 2006 guidelines. The resulting emission factors are: 0.78 tCO_e/MWh for SING and 0.38 tCO_e/MWh for SIC.
- 3) Emission factor of a diesel engine was calculated assuming that, had there been no generation with NCRE sources, it would have been replaced by the generation of one or more diesel units. The emission factor used in this case is 1.06 tCO_e/MWh.
- Sensitivity analysis regarding the recognition of contribution due to the promulgation of the Law. Five scenarios are defined:

Scenario 1 (most optimistic one): 100% of the emission reduction associated to the NCRE sources is recognized.

Scenario 2: It recognizes 100% of the reductions associated with solar and wind sources. Only 75% of biomass and hydraulic sources are recognized.

Scenario 3: It recognizes 50% of the energy generated for all types of sources.

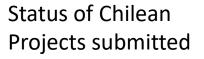
Scenario 4: It recognizes 25% of the energy generated from wind, solar and biomass sources. The contribution of the hydraulic energy is not recognized.

Scenario 5 (most pessimistic one): The contribution of any ERNC source is not recognized.

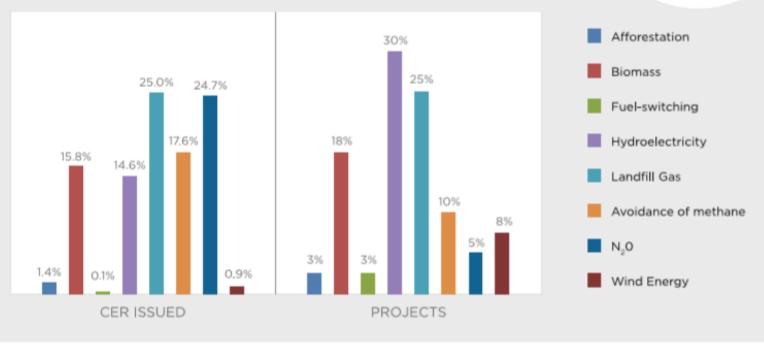
Expected / Reached Reductions: The estimated reduction to the year 2013 (MMtCO₋e) is estimated between 0.44-3.05

Carbon Pricing

- CDM Status







% of CER Issued and type of projects

- Green Taxes

Tax on CO2 emissions of USD 5 a ton: sources made up of boilers or turbines that together add a thermal power greater than or equal to 50 MWt

Needs and Support received

Ministry of Energy

Ministry of Energy

Ministry of Energy

Renewable Energies.

Promotion of biogas in the industry.

Capacity building to implement the MRV system of local energy strateg

Increased participation of Non-conventional Renewable Energy in the

Technical and technological assistance to maintain information platform

Table 2. Summary of needs, gaps and barriers reported by the energy sector (mitigation)		arriers reported by the energy sector (mitigation)	Gap	Barrier	Priority
	Action/measure Action plan of Energy	Need Agency for Energy Sustainability	Lack of financial resources (USD 13,000,000) to replicate and expand the recipients of energy efficiency projects.	Potential beneficiaries have limited resources allocated to priority actions, making the necessary investment for the execution of the project difficult.	High
80	Efficiency (PAEE2020)*	To expand coverage of energy efficiency projects.		Little trained market, client/beneficiary does not have information and knowledge on the subject.	
ial Resou			Lack of adequate financial instruments to finance energy efficiency projects in the industrial and housing sectors. (USD 326,000,000 per year).	Projects financing	Very High
Frank	2018-2022 Energy Pathway	Ministry of Energy Financial resources are required to enable industries implementing an			
	2050 Energy Policy	management system within the framework of the future Energy Efficience and to support the thermal reconditioning of existing housing.	It is required a prioritization methodology to carry out the mitigation project portfolio, with coordination between the public and private sectors.	Projects financing. Access to and/or development of cost effective technologies to mitigate, store, renewable energy and/or deliver	High
	2018-2022 Energy Pathway 2050 Energy Policy	Ministry of Energy Technical assistance to define, implement and monitor a portfolio of pro Mitigation Plan in the energy sector.	(USD 1,400,000 per year).	flexibility to the network in supporting the renewable energy. Regulatory policies.	
			It is required to improve the knowledge on the climate change issues in the energy soctor. To increase the number of professionals trained in the	This is a new work line that will require allocating funds, professional support, advice and taking advantage of superaies with other lines of work.	Very high
	Ministry of Energy Generate sub-national capacity on the mitigation issue and adaptation in the energy sector.		climate change issues at an institutional level in the sub-national level. Not quantified.		
ssistance			It is required to increase the knowledge on the climate change issues and specifically on the monitoring, report- ing and verification of mitigation measures at a local		

This gap is valued at USD 100,000.

safety standard of the system.

platform information.

There is a need to improve forecasting systems, implementation of the market of complementary services (entry in force) and development of transmission systems to avoid cuts of renewable generation, and maintain the

It is required to increase the technical knowledge and technology improvements to develop a high-quality

Lack of information with regarding quantification and

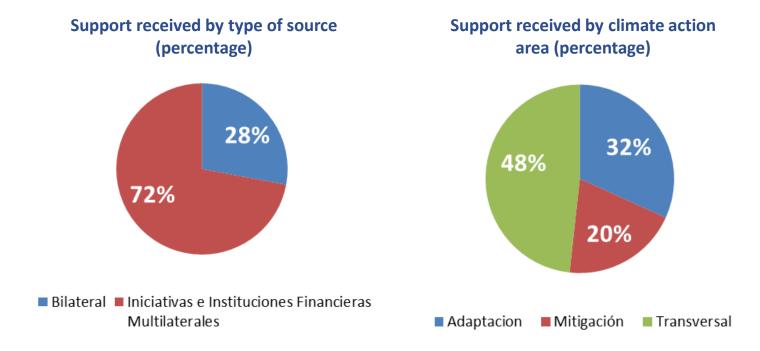
georeferencing of organic waste generated in the industry



IV.
NEEDS AND SUPPORT
RECEIVED IN THE FIELD
OF CLIMATE CHANGE

Needs and Support receivedpoyo Recibido en Materia de Cambio Climático

USD \$40.327.701 awarded to Chile during the reporting period



It includes initiatives that also correspond to support received for capacity building. Resources committed/allocated in reporting period (July 2016 - March 2018). Amounts correspond to donations

Needs and Support received

Main Needs

Transversal Level

Institutional strengthening for long-term planning and implementation of climate action

Financing

Increased availability of resources, consistent with current agenda and NDC commitments.

Climate finance strategy.

Capacity Building

Permanent and specialized teams in public agencies.

Capacity building at subnational level.

Technology

Updating of the country's technological needs, consistent with sectoral agendas and climate finance strategy.

Part II: Experience and lessons learned in participating in the ICA process

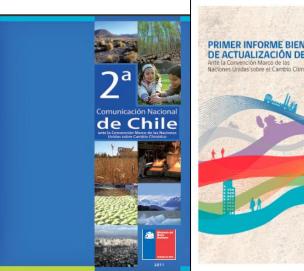
Information on Chile's climate action

Chile has submitted 6 National reports to de UNFCCC

 After COP16 and COP 17. Chile established some new institutional arrangement in order to meet the requirements.

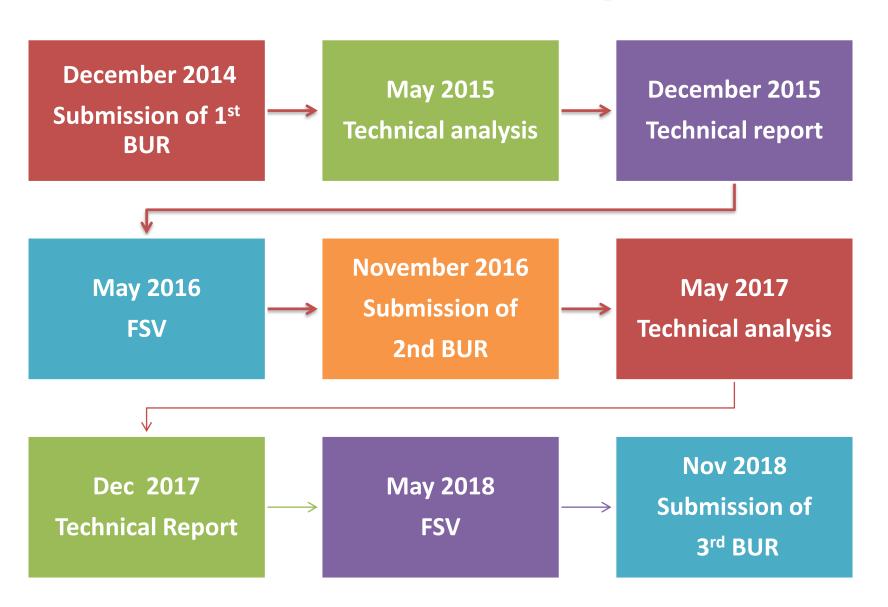
 Chile was the First Latin American Country to submitted first and second BURs on time.







Chile's BUR and ICA Cycle



Elements for the improvement of the BUR

Chapter teams addressed different recommendation and needs as part of our QA/QC process

GHG Inventory

- Need for improvement identified by the country
- Recommendations from voluntary review by International experts
- TTE recomendation from the ICA process (In depth)

Mitigation actions

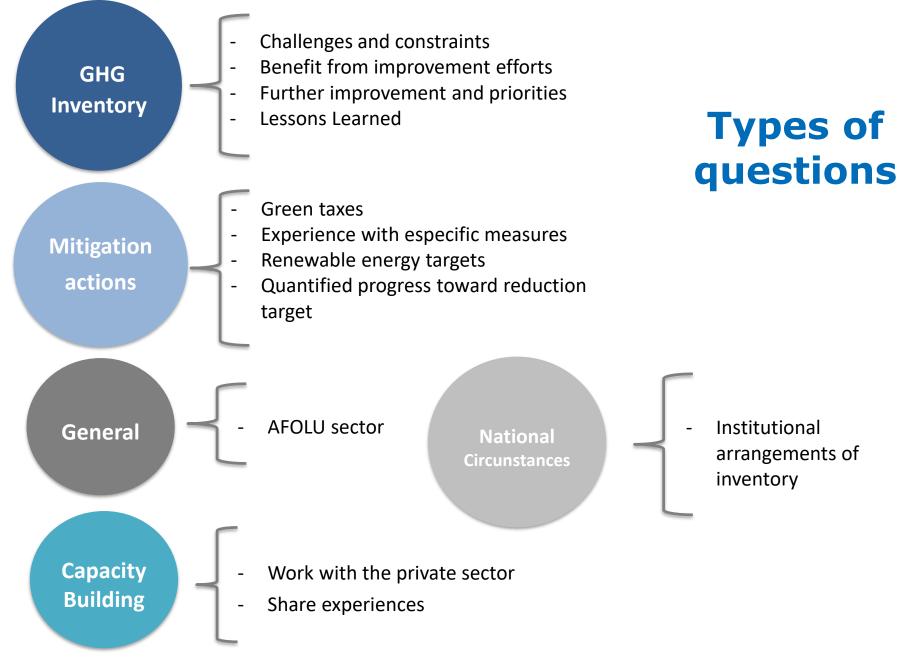
- Need for improvement identified by the country
- TTE recomendation from the ICA process

Remaining challenges

- Sustainability of current arrangements
- Integration of climate change indicators and MRV as an assessment tool for sectoral institutions
- Improve capacities on tools for estimate mitigation impacts
- Centralize information gathering and management trough a unique platform, to improve and optimize reporting times (MRV hub)
- Include the lesson learned during BUR elaboration process and ICA for the new arrangement and design for the NDC's MRV

Part III: Response to questions received







Ministerio del Medio **Ambiente**

CHILE LO HACEMOS TODOS

Gobierno de Chile









Category	Question	Answer	From
National circumstanc es and institutional arrangement s	1. Chile reports its national GHG inventory for the years 1990 – 2016, providing consistent time series and overachieving the requirements for BUR reporting, which requires developing for the reporting time frame of no more than four years prior to the date of submission. Could Chile provide some more information on the robustness of its arrangements, that have allowed the country report BURs (and NIRs) regularly and overachieving current requirements?	Three main activities from the SNICHILE allows us to meet the requirements for BUR reporting: first is the creation and strengthening of technical capacities, focusing on the individuals that develop the inventory and assuring that this created capacity stays in the institutions. Second, the reporting tables and system are organized in a simple and easily accessible way, facilitating the compiling process. And third, the methodologies and assumptions are transparent in the National Inventory Report.	Ge rmany
National GHG inventories	2. What are the challenges for Chile in developing and reporting a consistent time series up to 1990 and what experiences can Chile share on how they have been overcome?	The reporting process has many challenges, mostly because every source and sink is different in terms of data collection. In general terms, techniques such as extrapolation, overlapping and proxies are used when data is not available. Additionally, recalculations are carried out whenever a better methodology or parameter is used. This increases significantly the amount of work needed but its worth it. It is very useful to have the timeseries because it help us understand better the history of our emissions and what triggers the main changes in them.	Germany

Category	Question	Answer	From
National GHG inventories	3. "Chile reports for most GHG inventory categories applying tier 1 methods. Tier 2 methods were used for some categories, e.g. for non-CO2 GHG emissions from transport, CH4 emissions from enteric fermentation for cattle, and some LULUCF subcategories, such asCO2 emissions from living biomass for forest land. During the technical analysis, Chile clarified that determining country-specific EFs for key categories, especially in the energy sector, may require additional capacity-building. Could Chile provide more information on what challenges and constraints it is experiencing to apply tier 2 methods to other key categories in the GHG inventory, especially those in the energy (and IPPU) sector(s)?"	all of them key categories. Additionally we are planning to determine country specific EFs for the energy sector starting with	Germany
Mitigation actions and their effects	planning and actions in the context of its voluntary goal to reduce emissions by 20 per cent by 2020 below the 'business as usual' scenario projected from the 2007 level of emissions. In tracking progress towards achieving its 2020 goal, Chile reports a GHG Balance 1990- 2016 compared to BAU 2007-2020 revised, and 20 % progressive deviation respect to the BAU. Can Chile share its	responsibilities are expected to be define, including the reporting	Germany

Category	Question	Answer	From
Mitigation actions and their effects	5. Chile reports in its 3BUR that the energy sector is the main GHG emitter in the country, representing 78.0 % of total emissions in 2016. Accordingly, 31 mitigation actions, tackling emissions from this sector, are being implemented and reported in the BUR, mainly in the areas of renewable energy and energy efficiency. Estimated emissions reduction outcomes as well as the emission reductions achieved so far are given for some measures. Can Chile provide more information on the impact of these measures in the development of its GHG emissions in the energy sector? What are the challenges Chile is experiencing to measure progress and providing GHG emissions reduction estimates in the implementation of these measures?	The Ministry of Energy (MEN), in coordination with the Ministry of Environment, is implementing a Measurement Reporting and Verification (MRV) platform for the mitigation actions implemented in the energy sector. Currently, the ministry is developing quantification methodologies that will allow us to measure the climate impact of our policies and projects. The platform is expected to be launched during 2020. The main challenge is collecting the data needed to measure the GHG reduction in order to have a robust number to present in our reports, and also the capacity building in all the sectorial divisions of the MEN. The Climate Change Unit of the MEN is working on an internal MRV technical group to train potential MRV platform users.	Germany
Mitigation actions and their effects	6. "In its BUR3, Chile describes a national energy policy, with a medium-term goal for 60 percent of the country's electricity generation to come from renewable energy sources by 2035. Can Chile elaborate on the steps it is taking to achieve this goal, as well as clarify the specific renewable sources it expects to install?"	Chile has established a coal phase out by the year 2040 and is currently working on a Flexibility Strategy that will allow greater integration of renewable generation, as well as a new power auction system. The electric transmission system also plays an important role, enabling renewable sources set in different parts of the country. As for the specific technologies, preliminary analysis indicate that coal phase out along with the projected electricity demand will lead to an increase in renewable participation (mainly solar and wind), as well as natural gas and energy storage in its different technologies (batteries , hydro pumping, compressed air, salts, etc).	

Category	Question	Answer	From
National GHG inventories	7. "Could Chile share its data collection regulations and processes to collect and track activity data for the IPPU category of "product uses as substitutes for ozone depleting substances", including how Chile had uncovered a change in activity data that led to recalculations for this category (Section 8.3)?"	The climate change office (in charge of the elaboration of the BUR and the NGHGI) has been working together with the office in charge of the Montreal Protocol and with Customs. Many studies have been carried out, in the context of the Kigali amendment, to describe and quantify the HFCs market. A study was done to analyze the information of imports and exports reported to Custom with the information of the main users and equipment fabricators. This study, ended in the first trimester of 2018, was the basis to the NGHGI. This new information suppose a change in the previous information, including data from 1999 to 2016. The data implied a increase of the bank, and also bank emissions, changing the trend of IPPU emissions.	Singapore
National GHG inventories	8. Does Chile have any plans to improve the completeness of its GHG inventory through the acquisition of national activity data that were identified as missing sources in its previous NIR e.g. to enable estimates of PFCs in its future GHG inventories?	Yes, in the past the country has agreed that our NE categories are not significant GHG sources, so they have not been a priority in the previous NGHGIs. However, after three (3) voluntary reviews the country is checking for new data sources to improve the completeness of its inventory. This process has already started, with the commitment of submitting the 4th BUR in December of the next year (2020), were some sources in IPPU are also being checked.	Union

Category	Question	Answer	From
Mitigation actions and their effects	that it expected to achieve greater completeness in terms of quantifying the impact of its mitigation measures (and transparently outlining its methods and assumptions) as a result of its new accounting rules and centralized MRV platform development.	This platform, will pursue to maintain permanent communication	
General	10. What measures are being undertaken to reduce emissions from the AFOLU sector?	Currently, Chile is developing sectorial mitigation actions for the AFOLU sector, which contribute to the mitigation of GHG emissions and promote carbon sequestration. A key instrument for this goal is the National Strategy for Climate Change and Vegetation Resources (ENCCRV), which aims to reduce the social, environmental and economic vulnerability generated by climate change, in order to increase ecosystems' resilience and contribute to mitigate climate change, promoting emissions reduction and increased capture of greenhouse gas in Chile. To meet this goal, 26 measures were established with operational goals, considering seven activities associated to the prioritized causes, and a crosswise activity to all causes, which respond to various areas of application. For this, there are two types of measures, the ones that directly impact mitigation actions in the territory and those that support and/or facilitate the implementation of the first ones.	=

Category	Question	Answer	From
Constraints and gaps, and related financial, technical and capacity building needs, including support needed and received	identified twelve capacity-building needs (TASR.3/CHIL paragraph 96). Could Chile elaborate on its plan to enhance and formalize working relationships with private companies to ensure continuous and automated data collection for the GHG inventory(paragraph 96(a))? Could Chile share its experiences with internalizing the knowledge by building the	1. The country is currently working in two agreements. One with a company that has confidentiality issues but is willing to give us information with a confidentiality agreement. The second is a workplan with the RETC (registry of emissions and transferences of pollutants), an office of the Ministry of the Environment, which can make private companies to report emissions and are currently working in including GHGs for some sources. RETC still needs to improve some quality control issues, but in the future will be a reliable, automated and continuous source of data. 2- The Ministry of the Environment created the Climate Change Interministerial Technical Committee (ETICC, in spanish), which is conformed by 30 institutions of the public sector, related to climate change. The main objective is to participate in the elaboration, implementation and monitoring of climate change policies and plans, coordinated by the Ministry of Environment. The ETICC has been the workspace to train officials of public sector institutions that must present background information for the development of the BUR. Through formal meetings, they have been trained on how to deliver information, complementing it with specific guidelines and instructions, within the framework of data collection for the BUR. The creation of the ETICC has allowed the continuity of the work carried out with the representatives of each institution, improving the coordination at the intersectoral level and allowing the capacities to be installed in the different ministries and institutions that comprise it.	

Category	Question	Answer	From
National GHG inventories	using the 2006 IPCC Guidelines. Can Chile share how their key categories have been	Chile has not made explicit the link between our key categories and our improvement plan, however, when the system prioritizes actions of improvement, these key categories are considered, both at the national and sectoral level. It is important to highlight that even though the National inventory system started in 2012, there is not a regular budget to improve the inventory itself. This happens in all the ministries and institutions involved in the inventory process. In 2018, for the first time the system received a national budget and it is being used to improve the waste sector data. Given the lack of a regular budget it's difficult to elaborate a formal and robust improvement plan. In order to overcome this issue, the System will be formally established in the Climate Change Law of Chile. This will allow the system to ask for a budget for improvement.	Canada

Category	Question	Answer	From
Mitigation actions and their effects	the first two years of its implementation of it "green taxes" emission levies for large energy producers, including an emission levy for CO2 (BUR p. 156). Are there lessons learned that Chile can share with other Parties, including issues related to monitoring, reporting, and verification of CO2 emissions from large energy producers? Does Chile have any current information about the impact of the CO2 emission levy in reducing CO2 emissions in the electricity sector? Has Chile applied the proceeds received from the CO2 emission levy to emission reduction projects, or used it for	(complementary to the carbon tax) such as offsets systems and	

Category	Question	Answer	From
Mitigation actions and their effects	The BUR describes Chile's current Nationally		

Thanks!