

RELEVANCE & EFFECTIVENESS OF THE MRV OF GHG MITIGATION ACTIONS

DISCUSSION OF CURRENT DOMESTIC PROGRAMMES CHALLENGES & OPPORTUNITIES



AUGUST 2020

This synthesis report reflects on select aspects related to the domestic measurement, reporting and verification systems for GHG mitigation actions (MRV-MA) in the member countries of the Pacific Alliance (PA).

When viewed from a national perspective, MRV-MA is relevant to monitor the progress and impacts of energy and climate goals; improve the effectiveness of national level decision making, investments and policies; capture co-benefits towards sustainable development goals, as well as comply with ratified multilateral climate conventions.

From a regional perspective, the goal of aligned MRV-MA processes will strengthen national implementation, while delivering transparency and accountability; elevating credibility of policies and targets, raising ambitions, benchmarking progress, building confidence and trust, improving the equitable distribution of benefits, and progressing towards regional offsets and a fungible carbon market mechanism.

Pacific Alliance Country Baseline Reports “The MRV of Mitigation Actions”

Chile
(July 2019)

Mexico
(forthcoming)

Colombia
(July 2019)

Peru
(July 2019)

BACKGROUND

The country focal points of the Pacific Alliance's Technical Subgroup on Climate Change and MRV (SGT-MRV), in their [Coordinating Framework](#), identified the **MRV of Mitigation Actions** as one priority component of an integrated, comprehensive National Climate MRV System; complementary to the MRV of Climate Finance, and the MRV of Climate Emissions. The framework's objectives include “building on” and “enhancing” the MRV of Mitigation Actions in the PA countries (*with an eye on improved harmonization and regional alignment*). Subsequently, the SGT-MRV called for the preparation of comprehensive **baseline reports** by domestic technical experts in each country, that describe the components and status of the domestic systems for the MRV of mitigation actions. These were prepared and [published](#) in July 2019 for Chile, Peru and Colombia¹; with public discussions realized shortly thereafter.

Specifically, the MRV of mitigation actions (MRV-MA) is concerned with tracking implementation, and accurately assessing the impacts of GHG mitigation projects on national climate emission targets. Ideally, this process also includes assessing the impacts of emission mitigation actions on other non-GHG development goals—namely changes in economic, social or other environmental conditions; such as employment, income levels, attracting additional private sector investments, air pollution, health benefits, social equity, biodiversity and other sustainability goals.

Mitigation “actions” can encompass a broad range of measures, from policies to hard new infrastructure— such as vehicle fuel efficiency standards, or electricity generation from methane captured at solid waste landfills. At the same time, the MRV of mitigation actions applies to initiatives not only in early concept phase, but also at ongoing performance monitoring (i.e. ex-ante, in progress or ex-post). Adding another layer of complexity to measurement and tracking; these mitigation actions can be public sector projects and policies implemented via national government institutions, or realized by various levels of sub-national government departments. What's more, these strategic actions may be entirely or partially driven by the private sector— in urban to rural environments and all industries stretching between.

As substantiated by the Pacific Alliance country baseline reports, the current domestic MRV systems for mitigation actions are in various stages of early development and operation, as they grapple with a broad range of challenges— not least among them, permanently establishing the MRV systems as legacy; to be operational, **relevant and effective to national decision making, thus moving beyond the motivation of international reporting compliance and the reliance on international donor support.**

Nevertheless, as each national baseline report conveys; significant ambitions are being realized, systemic change is underway, and the MRV of MA is on a strong trajectory towards more effective shaping of equitable, low carbon development policies and investments.

NDC Climate Emission Reduction Targets in the Pacific Alliance (unconditional)

Chile: 95 MtCO_{2e} /yr by 2030

(2020 update: total emission 10 yr budget 2020-2030 not to exceed 1.1 GtCO_{2e})

Mexico: 22% GHG + 51% Black Carbon vs BAU al año 2030

Colombia: 20% vs BAU

Peru: 20% vs BAU

¹ Implementation in Mexico is ongoing, publication forthcoming in 2020.

THE MULTILATERAL EVOLUTION OF MRV-MA

The inception of the MRV of mitigation actions in both developed and developing countries was primarily due to the UNFCCC process. Looking back, many years and national elections have passed since government delegates at the 13th Conference of the Parties to the UNFCCC highlighted the practical importance of the MRV of mitigation actions in the 2007 [Bali Action Plan](#). At that time, understandably, much of the driving logic was focused on how to **best match financial support (i.e. “new money”) with actual “shovel-ready” GHG mitigation opportunities**; as well as the recognition that understanding the diversity of mitigation actions submitted by developing country Parties, their underlying assumptions and methodologies, would **build confidence and trust among Parties**.²

Later, despite the recognition expressed in the 2009 CP.15 decisions of the [Copenhagen Accord](#) on the importance of markets to promote and enhance the cost-effectiveness of mitigation actions— no countries have been able to achieve the aspirations of decision 2/CP.15— to report their mitigation actions, as subject to their domestic MRV systems, through their national communications (NC) every two years.

The next year, in 2010 with decision 1/CP.16, the Parties enhanced the NC reporting protocol, inviting non-Annex I Parties to report their inventories of mitigation actions, their effects, and support received. To note, since 2010 the **PA countries have not been able to regularly deliver an NC every 4 years**.

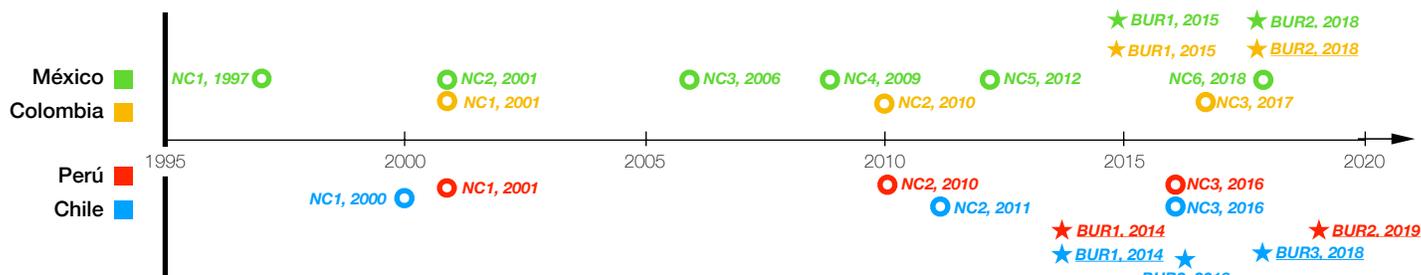
Then in 2011, modifications were made by CP.17 decisions, that the first Biennial Update Reports (BURs) from non-Annex I Parties— *consistent with their capabilities and the level of support provided for reporting*, were to be submitted by December 2014.³ Specifically, the scope of the BURs is to provide an update of the most recently submitted national communication and, to **provide additional information in relation to mitigation actions taken or envisaged to undertake and their effects** as well as support needed and received.

Key design elements of the BURs related to MRV-MA include:

1. Name and description of the MA; including information on the nature, coverage (i.e. sectors and gases), quantitative goals and progress indicators.
2. Methodologies and assumptions (to track GHG mitigation actions).
3. Objectives of the action and steps taken or envisaged to achieve the mitigation action.
4. Progress of implementation of the MA and the underlying steps taken or envisaged, and the results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions to the extent possible.
5. International market mechanisms.
6. Description of domestic measurement, reporting and verification arrangements (general). (Decision 21/CP.19)

Today, despite the harmonized international reporting framework and its labor-intensive generation of reams of information⁴, the **PA countries’ BURs do not convey real advances from one reporting period to another**. In particular, the descriptions of national MRV systems for mitigation actions are inadequate to properly understand their progress from a global or a regional perspective.

PA Country Reports Presented to the UNFCCC (with links)



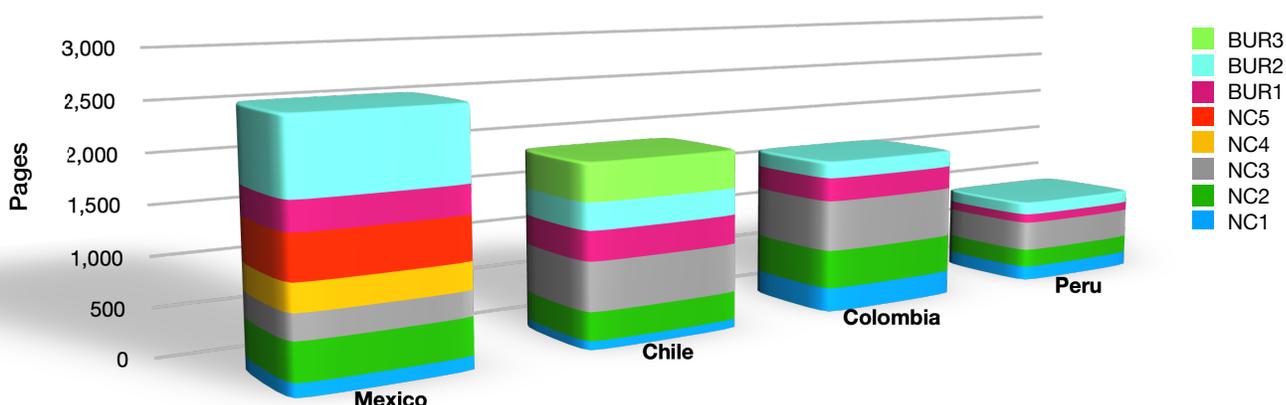
² Relevant SGT-MRV informational resource; “[Confidence in Mitigation Programmes](#).” March 2019 meeting of the SGT-MRV in Mexico City on the Anticipated Role of Market and non-Market Mechanisms to achieve the NDCs.

³ with subsequent submissions every two years, either as a summary of parts of the national communication in the year when the national communication is submitted or as a stand-alone update report.

⁴ See Table “[PA Reporting Volume - NCs & BURs \(1997-2019\)](#)”. Page count reflects Spanish versions, except NC1 in Chile and Mexico refer to the English versions. Mexico’s BUR2 includes NC6.

PA Reporting Volume - NCs & BURs (1997-2019)

	NC1	NC2	NC3	NC4	NC5	BUR1	BUR2	BUR3	Total Pages
Mexico	134	376	252	274	441	290	757	-	2,524
Chile	89	292	505	-	-	306	281	397	1,870
Colombia	255	414	545	-	-	252	180	-	1,646
Peru	155	204	329	-	-	100	140	-	928
	633	1,286	1,631	274	441	948	1,358	397	6,968



Reviewing the most recently prepared BUR from each PA country reveals that overall understanding of MRV-MA is nascent and inconsistent— not only between countries, but between national reporting periods as well. There are wide differences in the national relevance of MRV-MA and level of detail presented by each country. A comparison of key MRV-MA elements reported in the BURs across the PA countries is included in [Appendix 1](#).

A brief description of the relevant MRV-MA sections in each country’s most recent BUR, characterizes the principal differences in approach.

Colombia - BUR2, chapter 4, “MRV Mechanisms.” This chapter covers general aspects for MRV-MA; but also MRV of climate finance, and MRV of adaptation.

- i) Describes the MRV system components for MA and climate finance. For MRV-MA system the description includes:
 - Scopes (GHG emissions, reductions and removals).
 - Instruments for the MRV system (national GHG inventory system, forest and carbon monitoring system, national registry of emission reduction, and accounting system for the reduction of emissions and removals of GHG emissions).
 - Types of projects and programs (NAMAs, CDM or projects and programs for low carbon development and climate resilience).
- ii) Identifies the existing sectoral and nation-wide data systems useful for MRV-MA. This includes public and private information systems and databases.
- iii) Provides information on the processes currently in place to develop technical guidelines for GHG estimates of MA. These processes are mainly related with:
 - Disaggregation and coherence of the information in three levels: national, subnational and sectorial.
 - International methodologies available to estimate the emissions according to each of the levels.

Chile - BUR3, chapter 3, section 7 “MRV Mechanisms.” In this chapter there is an emphasis on MRV-MA, although a brief mention on MRV for financial incentives is included.

- i) Description of the technical studies on three main MRV aspects for the 2014-2016 period:

- Guidelines for MRV on NAMAs, to assure coherence and coordination in the MRV approaches for the different mitigation actions.
 - Basic accountability rules for MA and the definition of what a national platform for MA-MRV should include.
 - The identification of links and synergies of different national databases, as data sources for the MRV-MA national system.
- ii) MRV-MA technical team: Description of the conformation process for the Technical Chilean Team for MRV in Climate Change. The relevant main results to date of this workgroup are:
- The generation of a database with technical documents and studies on MRV-MA.
 - The generation of different mechanisms aimed at coordinating efforts among the team members.
- iii) Description and status of ten different MRV-MA initiatives: carbon tax MRV, MRV for MA on energy, MRV for energy districts, energy project savings certificates, MRV for renewable energy projects, MRV for retrofitting housing projects, MRV for the national strategy for climate change and vegetation resources, and the Technical Subgroup on MRV within the Pacific Alliance (SGT-MRV).
- iv) Next step in MRV-MA: The development of the National MRV-MA platform (objectives and its main characteristics are presented).

México - BUR2, no dedicated chapter for MRV-MA. Section 3.1 on MRV of Policies and Mitigation Actions.

Highlights three broad aspects related to MRV-MA progress;

- i) Modifications to the National Law on Climate Change to specify monitoring functions and responsible entities
- ii) The progress in a draft for a GHG emissions' verification standard
- iii) The low maturity stage of MRV-MA in comparison with the National Emissions Registry System and the GHG inventory system

Section 3.1 describes two main components in a greater level of detail:

- i) The steps for building the MRV-MA system:
 - Starting with the review of sectorial databases and their synergies with a National MRV system
 - Developing the necessary legal basis for MRV-MA and the regulatory updating process
 - Institutional arrangements
 - The implementation of a voluntary mechanism to register GHG mitigation projects and to report their progress
- ii) The technical studies developed to support the MRV-MA system (for the 2016-2017 period):
 - Good practices in MRV.
 - Identification of needs in national and sectoral information systems
 - Identification of institutional arrangements for the MRV-MA
 - MRV-MA in the AFOLU sector
 - Sectoral analysis to define scopes, methodologies for MRV-MA

Perú - BUR2, no dedicated chapter for MRV. Section 2.3 on Institutional Arrangements in the National MRV Framework,

The section highlights that the national framework for the MRV-MA is on its design stage. It also outlines two aspects in greater detail:

- i) The current tools available for MRV-MA:
 - Infocarbono as the main tool to track the NDC progress
 - Peru carbon footprint to track the efforts in GHG mitigation from private and public entities
 - A national registry platform for MRV-MA (designed and implemented in the future)
- ii) The envisaged steps to implement the national registry for MA:
 - Definition of the entity responsible for the administration of the registry
 - Expected relation between the registry and other national MA tools
 - Registry alignment with international requirements
 - Acknowledgment of the international cooperation agencies involved in the process
 - No implementation timeline or intermediate outputs are presented

The desktop review of the BURs' inclusion of MRV-MA does highlight some good practices. These are listed below.

Examples of Good Practice; MRV-MA in BURs

Summary tables to characterize mitigation actions:

- **Chile** presents in the main document for each sector a summary table for each MA including: name of the MA, type of the MA (economic or regulatory, project, voluntary, policy or technical), state (implemented, active, finished). In the Annex, a table is presented with further information for each mitigation action: name, type, state, description, objectives/goals, implemented actions, progress, and further steps.
- For NAMAs, in the annexes, **Chile** presents uniform and complete data in tables for each NAMA, including: description, objectives, barriers, quantitative goals, indicators, methodologies, assumptions, state, GHG mitigation achieved and expected next phases, co-benefits, costs, financing sources, progress on MRV, policy, and regulation related, responsible institution, contact person.

Progress on GHG mitigation by MA and comparison with national goals:

- **México** clearly presents the progress on GHG mitigation by each MA and the aggregated results by sector. This information is compared to national goals. The other PA country BUR comparisons between mitigation progress with national goals are not straightforward.

EMERGING NATIONAL RELEVANCE

Beyond international reporting, the emergence of regional climate MRV goals within trade blocs such as the Pacific Alliance—as a presidential mandate no less, demonstrates that national governments indeed are pursuing low carbon development across different economic sectors and beyond national administrative political cycles. The nations have identified real value in decarbonization. A key point of departure for prioritizing the development of sovereign climate MRV systems in the Pacific Alliance is relevance to national development targets and the well-being of their citizens.

This is how the SGT-MRV came to define **the objective of identifying mechanisms and strategies to align and more accurately track and assess the impacts of mitigation actions**; with the rationale that improving the comparability and accuracy of projected emission reduction impacts and sustainable development co-benefits from MA project pipelines will build confidence, reduce risks, accelerate investments and enable the use of market mechanisms (national and regional) towards achieving both the NDCs and SDGs⁵. The first SGT-MRV action item towards this objective was the creation of the [Baseline Reports](#) in each country on the status and components of domestic MRV of Mitigation Activities.

In general terms, the shared goal is for each PA country to actively pursue an efficient sovereign process that effectively informs national development policy. A process that can identify, capture and scale lessons learned to improve decision making. An effective national MRV system for GHG mitigation actions will enable corroboration between various national inventories/registries and project pipelines, which the SGT-MRV has identified **as critically important for minimizing potential double accounting of emission reductions**. Effective MRV-MA systems will also help direct resources (expenditures and investments) to capacity development priorities, resolve inequities and infrastructure gaps, along with identifying opportunities and coordinating strategic investments. What's more, the real-time **tracking of mitigation actions creates explicit links with wider co-benefits, such as employment and public health**. In return, this type of information has been shown **to help stimulate public and private sector support for increased GHG mitigation ambitions**. It is also recognized that achieving this level of national relevance and effectiveness is necessary in order to mature from reliance on international donor support for climate MRV; to sovereign, financially stable domestic climate governance.

That said, within the PA countries the status of MRV-MA systems is more limited and less mature than the MRV systems for national GHG emission inventories. For example, MRV-MA presents significantly more challenging communication issues, working across ministries and levels of subnational government, with the need for more accurate, real time information. **The importance, and challenge, of institutional arrangements becomes immediately apparent.**

⁵ UN Sustainable Development Goals. <https://sdgs.un.org/goals>

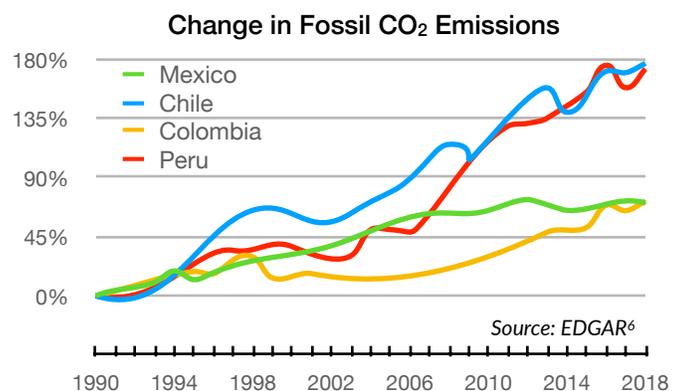
In each country; Chile, México, Colombia, and Perú—the process of addressing national MRV priorities towards achieving their respective NDC is well underway. This includes defining and ratifying new laws, creating new departments, stimulating inter-ministerial collaboration, increased application of “climate finance”, pricing carbon, engaging the private sector, expanding the scope and coverage of emission registries and more.

Below a few highlights are discussed. For a more comprehensive presentation on activities in each country, please consult the specific [MRV-MA Baseline Reports](#).

SIGNIFICANT AMBITIONS AND SYSTEMIC IMPROVEMENTS

Bold Ambitions

To be forthright—all four PA countries have a significant percentage of energy use dependent on fossil fuels.⁶ In fact, three of the nations have a very high historic reliance on revenue from fossil fuel production. Nevertheless, despite the quixotic nature of rapidly transforming locked-in carbon intensive development pathways, each nation has ratified ambitious GHG emission reduction targets into national law. Actually, Chile delivered a revised, more aggressive target in early 2020. Consequently, notable transformational governance and market changes are indeed underway in all of the nations. The MRV of MA will play an increasingly crucial role in efficiently and equitably achieving these bold commitments.



Institutional Arrangements and Multi-level Governance

With firm intent, the Government of Perú commissioned a Multi-sectorial Working Group (GTM-NDC), commencing in February 2017 and operating through December 2018— with the mandate to create a strategic technical roadmap that defined specific priority GHG mitigation activities to achieve the NDC. The GTM-NDC was composed of 13 government ministries and the National Planning Center (CEPLAN). This process convened regular meetings between national, regional, and local governments to coordinate across diverse sectoral directorates that resulted in a strategic specification of 62 mitigation initiatives across 6 sectors, with a potential 23% reduction of GHG emissions by 2030. This was a **good example of ex-ante analysis and stakeholder involvement**.⁷

The GTM-NDC process in Perú helped to identify and prioritize mitigation opportunities and localize them within Regional Climate Change Strategies. This in turn has enabled the sub-national public entities involved to budget their NDC compliance goals within the framework of their Institutional Operating Budgets, as well as apply them to their Results-Based Budgets. This de-facto “sectoral programming roadmap” for implementation of the NDC in the short and medium term, will allow the Ministry of Economy and Finance to ensure that the necessary resources are available to support those priorities, while the Ministry of Environment (MINAM) is tasked to monitor their progress in each sector.

However, Perú **now must confront the sequential challenges of tracking and assessing the progress and impacts of these projects** (as well as other mitigation actions)— coordinating across various ministries, political transitions, public and private sector actors and several tiers of subnational government. While the Framework Law on Climate Change establishes MINAM as ultimately responsible for this monitoring and assessment, the law also empowers regional and local governments to coordinate, monitor and evaluate climate change actions in their jurisdictions. This law has now passed through public consultations and was approved into law in late 2019.⁸ Among various activities, the norm calls for the creation of National Registry for Mitigation Actions as an efficient system that can register, monitor, assess progress, communicate across all key actors and levels of government, and report on; MA implementation status, projected and actual GHG emission reductions, access to payments for results, transfers of GHG reduction units and more. While some climate emission monitoring products in Peru are operational (e.g. InfoCarbono), other core products are in various stages of a design process (REDD registry, Carbon Footprint Peru). While other products are still in a design proposal stage (National Registry of Mitigation Actions), or still in conceptual framework proposal (MRV System of Mitigation Actions). There are very challenging limits of technical, institutional and financial capacity that make this next phase of MRV-MA system evolution formidably difficult.

⁶ Annual Fossil CO₂ Emissions (EDGAR - Emissions Database for Global Atmospheric Research) Fossil CO₂ emissions include sources from fossil fuel use (combustion, flaring), industrial processes (cement, steel, chemicals and urea) and product use.

⁷ Relevant resource: SGT-MRV Experience Spotlight Paper. (2020) Orbegozo, C. “[Experience Spotlight: Peru. Creation of a Multisectoral Working Group to prepare the implementation of the Nationally Determined Contribution \(NDC\)](#).”

⁸ [Decreto Supremo N° 013-2019-MINAM](#) que aprueba el Reglamento de la Ley Marco sobre Cambio Climático.

In a similar manner, **Colombia** also implemented a prioritization process of sectoral and territorial mitigation actions; and created different Sectoral Mitigation Plans (PAS) within a larger “Colombian Low Carbon Development Strategy” (ECDBC). This was used by Colombia’s Intersectoral Commission on Climate Change (CICC) to create sectoral guidelines for actions across 33 strategic areas to achieve the 20% GHG emission reduction 2030 target, at the sectoral, territorial and corporate levels. These must be reflected in the Comprehensive Climate Change Management Plans (PIGCC) created and implemented in the sectors and territories. The Baseline MRV-MA report from Colombia goes on to assess the status of MRV in each of the 33 strategic lines of mitigation actions. It concludes that **more than 80% of them are still at a basic level of MRV-MA development**. Achieving effective MRV-MA systems in each of these heavily contextual strategic lines of action is a challenge. Nevertheless, the need to follow the implementation progress of the new Climate Change Management Plans (PIGCC) will be a crucial requirement to push forward from territories and sectors for having an effective MRV-MA system across Colombia.

Chile has well defined institutional arrangements to support their efficient pursuit of GHG mitigation targets, involving virtually the entire state apparatus, as well as clear linkages to the private sector. These include the Council of Ministers for Sustainability (CMS - *the highest governing body*); the Ministry of Environment; the Ministry of Foreign Affairs (MINREL- *which has the role of focal point for the UNFCCC and before any other international body -Multi or bilaterally - linked to the issue of climate change*); the Inter-ministerial Technical Team on Climate Change (ETICC- *comprises Foreign Affairs, Environment, Finance, Energy, National Defense, Social Development, Agriculture, Education, Health, Housing, Transport, Public Works, Mining and Economy to discuss technical issues related to Climate Policies*); the Inter-ministerial Task Force group (comprises Foreign Affairs, Environment, Finance, Energy to discuss and evaluate issues related to Art 6 of PA); and another Technical Team focused specifically on MRV (ETMRV). What’s more, there are official designated focal points for climate actions within various ministries in an effort to coordinate and harmonize mitigation activities across different sectors towards achieving the NDC and the SDGs. For example, the Ministry of the Economy supports the Production Development Corporation (CORFO- *Corporación de Fomento de la Producción*), which was established in 1939 to stimulate economic growth. Today, CORFO hosts the Agency of Sustainability and Climate Change (ASCC), with the mission to strengthen the participation of the private sector and territories in ambitious climate actions.

Indeed, one impressive component of Chile’s comprehensive institutional arrangements is the **intersectoral and territorial approach that integrates across multiple levels of governance** via the creation and empowerment of the **Regional Committees of Climate Change (CORECC)**, that was initiated in 2017. The mission of the CORECCs is to promote and facilitate development within their subnational regions— that is low in carbon emissions and resilient to climate change— in line with the NDC target, and with the SDGs as well. Each CORECC committee is chaired by the corresponding Regional Governor (*Intendente*) and consists of various representatives of the Regional Government (GORE); the Regional Council (CORE); the Regional Secretariats of the Ministry of Environment (SEREMI-MMA); as well as other Regional Secretariat delegates from other Ministries (SEREMI) that are members of the Inter-ministerial Task Force on Climate Change (ETICC). Importantly, while the CORECC efforts are nascent, they are actively working to identify resources at the regional level to not only implement mitigation activities, but also it is intended that they will eventually establish mechanisms to quantify and register the progress and impacts of mitigation activities, as well as adaptation and capacity building efforts within the region. Notably, the efficient communications and flow of information enabled by these effective institutional arrangements has allowed Chile to be the only PA country, and one of the few globally, to generate a third Biennial Update Report to the UNFCCC in 2018.

It is also important to highlight the thematic and structural **consistency between Chile’s 2nd and 3rd BUR as a standout good practice** among the PA countries. ([See Appendix 2](#): Comparison of subsequent BURs) Chile has utilized the same MRV-MA chapter and sub-chapters; allowing a very clear presentation of progress of each NAMA in BUR3 with respect to BUR2; while highlighting new, additional MAs. Chile’s expansive institutional arrangements have undoubtedly contributed to this reporting consistency and clarity.

Further demonstrating the value of Chile’s well established institutional arrangements, this current SGT-MRV initiative to prepare the MRV-MA Baseline Analysis in Chile was utilized to follow up with some of the developers of the MA initiatives discussed in the BUR3, to conduct more detailed interviews on the progress and status of their implementation, and the main challenges they are encountering.

Advances in Policy and Legal Instruments

The Baseline MRV-MA Report for **Colombia** presents several notable enabling political and legal instruments to advance the national relevance of MRV-MA across multiple sectors and levels of governance across the country. Among the several climate milestones in the 2014-2018 National Development Plan, Article 175 **established a mandate to to design and establish a national GHG emission reduction monitoring system** for sectoral and territorial climate change plans.

This together with Resolution 1447/2018 led to the regulation of the national MRV-MA system and the implementation of the National Emissions Reduction Registry (RENARE) in 2018 (starting with a phase of tests). Resolutions 144/2018 describes the components, functions, scopes of RENARE and the accountability systems for GHG reduction and removals. It also establishes the main methodological requirements to formulate, register, and implement MA in Colombia.

During this period, the National Climate Change System (SISCLIMA) was also established that enabled inter-agency coordination for managing climate actions and included the formalization of various technical committees. Among them, the “Intersectoral Commission of Climate Change” with the **mandate to distribute the GHG emission reduction target across the various sectors, along with structuring the**

monitoring scheme for tracking mitigation actions and progress in each sector. Also included in SISCLIMA is the “Technical and Scientific Committee”; whose responsibilities include not only to oversee and establish national accounting methodologies, but also to address the information gaps to harmonize GHG inventories with ongoing mitigation actions.

Private Sector Collaboration

Specifically, in **Chile**, the Agency of Sustainability and Climate Change (ASCC) in CORFO has the particular mission to promote “clean development for greater sustainability, production modernization and competitiveness, with an emphasis on small and medium enterprises through public-private cooperation.” One of ASCC’s successes was the creation of the “Clean Production Agreement (APL)” mechanism, that leveraged “cleaner” production goals by formalizing commitments between businesses and public agencies for sustainable development targets. The sectors involved include agriculture, manufacturing, construction, mining, hotels and restaurants, fishing, and others.

In the early years (1999-2010), the APLs did not track GHGs. However, in 2010 an analysis was able to estimate that the programme had likely delivered GHG emission reductions (ERs) over 4 MtCO_{2e}. Realizing the value of this mechanism, in 2012 the ASCC registered the APL with the UNFCCC as the first NAMA of Chile and the world, that for the period through 2020, anticipates GHG ER of more than 18 MtCO_{2e}. The NAMA is in operation and counts with an established system that provides operational monitoring of the implementation of various existing voluntary GHG ER commitments adopted. ASCC is currently working to develop a computerized registry, that will also create the opportunity for efficient transactional support as well as inform “business intelligence” inquiries.

Building on the legal advances, **Colombia’s** National Development Plan (2018-2022) went on to establish a [GHG Emissions Mitigation Voluntary Mechanism](#) to involve the private sector by creating a tool that provides a methodological framework to estimate GHG emission inventories and reductions. The programme also includes a **corporate reporting platform**. Several private initiatives in GHG mitigation have been identified. Sectors with mitigation programmes implemented include the building sector, the palm industry, and the wood industry, among others. However, these private sector initiatives are not yet reflected in the national MA registry system. As presented in Colombia’s BUR2 there is the participation of different private sectors in NAMAs. For example, the implementation phase of the Industry NAMA involved the participation of industrial companies spread across the country.

Advances in Methodologies, Technologies and Information Systems

As discussed above, **Perú** is in the process of designing a dedicated National Registry for Mitigation Measures. While this is currently in a conceptual framework stage, it is a priority for MINAM because it will allow planning for the recognition of emission reductions as either to be retired for the NDC or to be eligible for certification and sold on the international market under Article 6 stipulations, as an “ITMO.”¹⁰ Peru also aspires, to capitalize on the creation of a robust MRV System for Mitigation Activities to help generate a voluntary domestic carbon market that would allow mobilizing resources from the private sector towards mitigation measures that contribute to the NDC.

With respect to advances in MRV-MA methodologies, **Colombia’s** strong technical capacity in GHG calculation methods, coupled with solid policy and legal frameworks, has made it possible to identify and exploit opportunities to improve methodologies. For example, Colombia recently delivered an annex to their BUR2, a “Report of the National GHG Emissions Inventory” which summarizes recommendations to strengthen MRV-MA. These include **strategies to improve the detail of emission factors** and the **disaggregation of activity data** in the energy, waste, transport and agriculture sectors. In the SGT-MRV MA Baseline Report, several advances that have made methodologies more effective are highlighted. Among them, Resolution 1447 of 2018 on the “Regimentation of the MRV of Mitigation Actions.” This resolution **provides very specific guidance for sectoral GHG mitigation and REDD+ projects** including; methodologies for formulating projects, calculating GHG baselines, setting ER targets, understanding additionality criteria, validation and verification requisites, and procedural guidelines for project registration with RENARE.

In their National Strategy for Climate Change and Vegetation Resources (ENCCRV) 2017-2025), **Chile** has defined 26 actions to achieve the forestry goals set in the NDC. While the actions in the territories have the potential to generate significant carbon benefits, they also **have important co-benefits for the communities** that depend on these agricultural and forestry resources. At present, the National Forestry Corporation (CONAF), through the Unit for Climate Change and Environmental Services (UCCSA) is developing a comprehensive information management platform, referred to as the System of Measurement and Monitoring (SSM) that will include and integrate MRV-MA relevant information, with a registry system, a benefit distribution system (SDB), financial strategy and co-benefit monitoring system (SCB), among other relevant indicators. The intent is that results on emission reductions from the MRV-MA registries will be integrated into a “system transaction log” which would allow for eventual access to payments for results. Importantly, this system will be integrated with other relevant information management systems to allow assessment of priorities. This means that the overall integrated system will also, for example; **enable monitoring and compliance with the CBD Aichi Targets**, as well as **reporting on the progress of the SDGs**. At present, the SMM platform has some components still in the design phase, while others are under construction.

⁹ Previously the National Council for Clean Production - Consejo Nacional de Producción Limpia (CPL)

¹⁰ Internationally Transferred Mitigation Outcome.

Chile's Pollutant Release and Transfer Registry (PRTR) began its design in 2003 (with support from Environment Canada and others), with implementation commencing in 2005, the first report published in 2007, and the regulation approved in 2013.¹¹ Today, the PRTR has a solid regulatory basis and is supported by technical guidelines. The PRTR is a “single window” registry platform that allows access to the different environmental information systems and yearly updates data from different sources¹², including; the National System for the Declaration of Waste, Systems for the Declaration of Non-Hazardous Waste, System for the Declaration of Emissions from Stationary Sources to the Atmosphere, System for the declaration of emissions of Volatile Organic Compounds (VOC), System for the Declaration of GHG, the Green Tax (which includes CO₂ and is discussed in more detail below), the thermoelectric power plants information system, as well as other related information systems.¹³

Meanwhile, Colombia commenced their PRTR design in 2016, followed by a pilot phase in 2018. Currently, the PRTR's technical and advisory committee (established between 2016 and 2018) is working on the regulatory instrument to support the tool, which is expected for 2020. The registry is designed to be a publicly accessible data base, that is part of an effort to fulfill reporting commitments to the OECD. Essentially, it creates an inventory of chemicals or pollutants released to the air, water and soil, or transferred off-site for treatment. It complies detailed information about the specific chemicals being released, where, how much, and by whom. The PRTR will integrate six other sectoral data systems that are part of the Colombian Environmental Information System, including; the Water Resources Information System, Air Quality Information System, National Forest Information System, Resource Use Information System, Information System on Biodiversity of Colombia, and the Marine Environmental Information System.

In Colombia, the relevance of the PRTR for MRV-MA stands out for two main reasons; it creates the possibility for aligning national MRV-MA with international reporting processes, and it would shift the private sectors' GHG reporting from voluntary to mandatory.

In México, PRTR reporting is mandatory for the industrial, commercial and services entities. The Official Mexican Standard NOM-165-SEMARNAT-2013 establishes which compounds to report on a yearly basis, including the mandatory report of the use, transfer, and emissions of toxic compounds. The regulation of the PRTR (originally published in 2004) establishes the conditions for the administration and operation of the registry. It defines; the roles and responsibilities, reporting periods, formats, inspection and surveillance requirements, rules for the disclosure of public environmental information, among other aspects. In addition, the PRTR in Mexico compiles the information from the municipal, state and federal levels. Then, the private sector entities receive an Annual Operation Card (COA by its acronym in Spanish), which aggregates five types of data: emission inventories from fixed sources of federal jurisdiction; the PRTR; generation and transfer of hazardous waste; hazardous waste management; and the National Registry of GHG Emissions (RENE by its acronym in Spanish).

Perú has experienced a more lengthy process; with the PRTR idea initiating in 2009 with the critical support of UNEP. The concept transitioned to a planning phase which lasted until 2012. Then design, development, trainings and voluntary implementations taking place through 2015. Later, in 2018 the PRTR began to adapt to OECD standards, which included the creation of a mechanism to give public access to the data. It was also in this year that Perú signed the Escazú Agreement¹⁴, as a binding instrument that requires all signatory countries to implement a PRTR. In Perú, there is a regulatory project to be implemented in 2021. The sectors included in the PRTR reporting process are: manufacturing industries, mining and quarrying, power generation, agriculture and livestock.¹⁵

Escazú Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean

Art. 6: Generation and dissemination of environmental information

3. “Each Party shall have in place one or more up-to-date environmental information systems, which may include, inter alia: an estimated list of waste by type and, when possible, by volume, location and year.”
4. “Each Party shall take steps to establish a pollutant release and transfer register covering air, water, soil and subsoil pollutants, as well as materials and waste in its jurisdiction. This register will be established progressively and updated periodically.”

¹¹ <https://retc.mma.gob.cl/wp-content/uploads/2019/12/REPORTE-RETC-2005-2017.pdf>

¹² http://www.unece.org/fileadmin/DAM/env/pp/PRTR%20Bureau/GRT2013-Item2-3-Chile_How_PRTRs_could_function_as_a_single_window_for_environmental_reporting.pdf

¹³ <https://www.better.cl/registro-de-emisiones-y-transferencias-de-contaminantes/>

¹⁴ Peru, Colombia and Mexico have signed the Escazú Agreement. It requires ratification by 11 countries to enter into force. Today, despite 22 signatures, it has only been ratified by 9 States. None of the PA countries have ratified the agreement.

¹⁵ http://cwm.unitar.org/cwmplatformscms/site/assets/files/1444/scm3_pre3_peru.pdf

National Market Mechanisms/ Pricing Carbon

México approved a carbon tax in 2013, and was implemented in 2014 on fossil fuels, setting a price of approximately **US\$ 3.50/tCO_{2e}**. However, there are some notable exemptions. For example natural gas and aviation fuel are not subject to the tax. In addition, any fossil fuels utilized by industry for non-energetic uses are not taxed. **The revenues from the carbon tax are not intended for a specific purpose, they go to the general budget.**

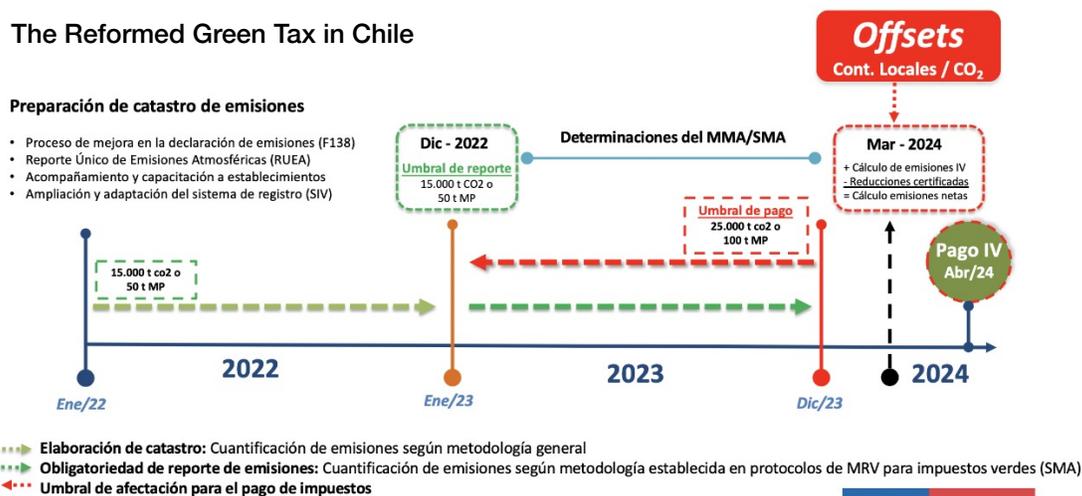
In **Colombia**, the carbon tax was established by the National Law 2819 in 2016. In operation since 2017, it covers fossil fuels including; natural gas, liquefied petroleum gas (LPG), gasoline, kerosene, aviation fuels, diesel and fuel oil. It applies to both nationally produced and imported fuels. The exceptions are; natural gas used for transportation fuel is not taxed; and LPG is only taxed for industrial uses (not residential).

The carbon tax covers approximately 51 MtCO_{2e}; which is about 62% of the energy related emissions in 2014, and 22% of the total national inventory in the same year. In 2017, it started with a price of **US\$5/tCO_{2e}**. Each year this rate is reviewed and will be incremented gradually until it reaches **US\$10/tCO_{2e}**. **The revenues from the carbon tax are not exclusively for environmental programs. There is an emission offset mechanism** established in 2017 by the National Decree 926, which compensated 7.2 MtCO_{2e} in offsets through 2018. A requisite to apply for the No Causation Mechanism will be the registry of the emission offset actions in the national emission registry platform.

In 2017, **Chile** implemented a Green Tax on local and global pollutant emissions (including CO₂ at **US\$5/tCO_{2e}**), covering sources with thermal boilers and turbines with a capacity above 50 MW. The entities affected by the Green Taxes must be registered into the Pollutant Release and Transfer Registry and report their emissions periodically. Interestingly, for local pollutants (PM, NO_x, SO₂), the tax responds to “social cost” and responds to the variance in carrying capacity of the surrounding environment to the source—specifically analyzing the maximum people per surface area and the exposed population. This adjusted dynamic social cost results in a variable Green Tax dependent on pollutant and municipal district. This “social equity” approach to Chile’s Green Tax has been recognized globally as a pioneer tax instrument.

During the first year of operation (2017), 94 entities with more than 303 emission sources reported and paid Green Taxes. By 2018, the 93 entities subject to the tax, with adjusted rates based on the formula for local pollutants, **generated over US\$188 million**.¹⁶ Notably, this 2018 amount of green tax receipts, was slightly less than 2017. This is consistent with the design purpose of the tax; CO₂ emissions reduced by 1.1%, PM down by 7%, NO_x by 2%, and SO₂ reduced by 0.01%.

This success has raised ambitions in Chile, and has led to the recent national congress approval in the tax reform of February 2020 to new criteria in the Green Tax. This has expanded coverage of the Green Tax, to now apply to all fixed instillation sources that emit more than 25 ktCO₂ or produce 100 tPM annually. The tax **revenue generated will continue to enter the National General Fund.**



fuente: Ministerio de Medio Ambiente de Chile, 2020

REFLECTIONS TOWARDS EFFECTIVENESS

Clearly, as substantiated by the Pacific Alliance country baseline reports, the **emerging MRV-MA systems grapple with several challenges:** limited individual, institutional and systemic capacities; inconsistent methodologies and emission factors; unrealized relevance to complementary national development goals; domestic communication and coordination challenges; burdensome international reporting

¹⁶ <https://www.litoralpress.cl/sitio/msolotexto.cshtml?session=EhBjDGdv60/sKxLX8war6WFxnSfGJ39frvYkl2Y+waw>

obligations; integration of climate registries with pre-existing PRTRs; sufficient and stable financing; and gaps in institutional arrangements, motivations, and accountability.

Stakeholder engagement is critically important when designing and expanding climate MRV systems. Consultations have been sporadic and inconsistent during the evolution of climate MRV systems in the PA countries. The MRV-MA Baseline Reports all made a concerted effort to consult key stakeholders on the needs and gaps they see in the components of their national MRV-MA system.

For example, from the MRV-MA **Chile** report, the challenges with CONAF's emerging System of Measurement and Monitoring (SMM) include; a **lack of clarity on accounting rules**, no available capacity to host the MRV platform in CONAF due to **inadequate data infrastructure and information technologies**, nor is there sufficient technical capacity to manage it. It also mentions a **lack of relationships and linkages with public and private agencies at the local level**, so that methodologies, work plans and reporting procedures can be implemented. What's more, currently the UCCSA unit of CONAF which coordinates the SMM platform, only has consultants working on the platform whose **fees are financed by international donor support**. On top of this, back in 2018 the SGT-MRV conducted "MRV Landscape Surveys" in each PA country. In Chile, 14 Institutional Actors from ETMRV responded, saying that **biggest challenge the climate sector faces was a "Lack of articulation between public institutions."**

In the Baseline Report from **Perú**, the **need for technical capacity building and financial support** comes up repeatedly. However, due to the low technical capacity of the country in data infrastructure and registry systems, Peru has concluded they will **outsource the design and day to day management of the intended National Registry of Mitigation Initiatives (RNIM)** to an offshore, 3rd party from the private sector. This exploratory effort too is being financed by international donors. There may be a more immediate opportunity via south south cooperation within the SGT-MRV, for Peru to work with their counterparts in the other countries to learn, build local capacity and eventually establish their own sovereign MA registry system, as a national legacy.

Interestingly, in the 2018 MRV Landscape Survey in Peru, 9 institutional actors from 3 separate ministries participated in the survey. (MINAM did not participate.) The respondents were asked to rate the National Registry of Mitigation Initiatives (RNIM) in terms of their entities involvement with mitigation activities. **"Interoperability with other registries"** was flagged as basic challenge, and would require improvement. Respondents were also **worried about the "transparency"** of the registry.

Across the reports, the value also emerges of the effective application **of consistent methodologies to track and compare mitigation initiatives between countries**. Such an approach could assist countries to advance their own sovereign MRV-MA approaches. For example, from the 2018 MRV Landscape Survey in **México**, a clear desire was expressed to develop linkages for MRV-MA registries and guidelines for implementation across different levels within the country; including subnational districts, and across the private sector.

A similar challenge is expressed in **Chile**. In 2015 the Ministry of Environment published the Guidelines for a Generic MRV Framework for Nationally Appropriate Mitigation Actions (NAMAs). This provided the minimum requirements for MRV that the country's Mitigation Actions should consider. However, since then, its use has been inconsistent, with **most MA projects creating ad hoc MRV protocols** for their projects. On top of this, Huella Chile— which is free and voluntary, has no real verification nor oversight. The input data depends on the institution, meaning that **they are estimating their own carbon footprint**. Other challenges on the path to improved effectiveness include: **traceability schemes have not been solved**, there is **inadequate data infrastructure to support sharing**, lack of methodological approaches to monitor mitigation initiatives, define baselines, project business as usual, fix accounting rules, or appropriate actual reductions.

Another shared challenge expressed in all of the baseline reports was the critical **need to develop widely compatible information management systems and platforms**, especially accessible to the subnational levels and the private sector (PRTRs, MRV systems of GHG emission inventories, mitigation actions, climate finance, databases, monitoring systems, GIS, etc.) This would help to keep the community informed about the objectives and monitoring plans and local-provincial measures.

On top of the pursuit of more effective domestic MRV-MA systems, is the shift to produce a BUR every two years. This will require the PA countries to make the transition from what has often been temporary institutional arrangements for the preparation of NCs, towards a more continuous, sustained process involving permanent, financially stable, national expert teams. Sovereign national systems for the MRV of Mitigation Actions will be most effective ("*more permanent*") when they provide a strong basis for national policy making. National governments are right to focus on relevance as they develop their trans-institutional MRV system of mitigation actions.

OPPORTUNITIES

- The increased interest and demand for MRV-MA systems continues to grow beyond the preliminary rationale of complying with international reporting requirements. This headway is due in large part to regional trade bloc cooperation. The experience of the Pacific Alliance holds important value for other regional climate collaborations; such as the West Africa MRV Initiative and others.
- Consider the **conformation of an ad-hoc SGT-MRV-MA Technical Support Group**; comprised of a core internal group consisting of country delegated technical professionals who report to and communicate directly with their respective SGT-MRV country focal points;

as well as a more broad, open community of practice on MRV-M's A in the PA. Some of the deliverables of the core expert internal group of country delegates could include; develop a more homogenous MRV-MA reporting template to be used by each PA country in their BURs; propose functional institutional arrangements for more effective inter-ministerial MRV-MA; develop a joint reporting process for the BURs, as well to report mitigation actions as a bloc; deliver a summary report on the regional collaboration to the UNFCCC.

- Now with the relevance to national development writ-large steadily more appreciated; **the maturation of MRV-MA systems towards greater effectiveness will be contingent on the strength of trans-institutional collaborations.** Success in the next phases of climate action will **depend on complementary inputs, and the quality and functionality of national institutional arrangements.** Clear mapping of these arrangements in all four countries may stimulate learning and alignment opportunities. This mapping template could include the clear identification of key actors and stakeholders, typology of reporting norms, nodal points, linkages, processes, registry architecture and more.
- Prepare **spotlight good practice examples** from BURs that include MRV-MA (beyond the PA); e.g. summary tables to characterize mitigation actions, a comparison of progress on GHG MA vs National ER targets, aggregated by sector. Enable south-south cooperation (SSC) for countries that are unfamiliar with such a process.
- Once SGT-MRV focal points are familiar with their counterparts' MRV-MA programmes and details, they should be given the opportunity to **define specific, targeted short term SSC opportunities.** For example, Peru's capacity gap to design and operate a sovereign RNIM could be supported by technical exchanges with other countries who are operating MA registries. Or, Colombia's NAMA TanDem (NAMA for Active Transport and Demand Management) MRV system could be shared with interested counterparts.
- Create a concept note for a programme to support to countries to **develop improved emission factors and disaggregate activity data.**
- While it is understood that strengthening the MRV of Mitigation Actions and augmented level of detail and reporting in PA countries requires time and resources; **there is a disconnect with current carbon pricing schemes**– with revenues flowing straight to national general budgets. A conversation on how to more clearly link/ re-invest and track revenues from carbon pricing schemes to support climate MRV and invest in mitigation activities. (e.g. despite Chile's \$181 million in revenue from the green tax... the design and coordination of the SMM platform by UCCSA unit of CONAF is dependent on international donors.)
- In each PA country, consider creating a clear inventory of registries to identify overlaps, opportunities for consolidation. e.g. PRTRs
- The positive experience of the SGT-MRV South-South Collaboration of the "Chile and Colombia Technical Exchange on Offsets"¹⁷ should be expanded to include other PA countries; and explore the idea of how to potentially align their offset programmes.
- Explore and **study the relevance of PRTR for MRV-MA.** This could assist aligning national MRV-MA with regional/ international reporting processes, and subsequently help shift the private sectors' GHG reporting from voluntary to mandatory.
- Prepare spotlight paper examples of **MRV-MA systems tracking impacts on the SDGs.**
- Some initiatives in PA countries have been stalled at a concept phase for inordinate periods of time. Internal, discreet conversations between PA countries to may help propel intentions to pilot implementations to test and strengthen the associated MRV-MA methodologies and reporting practices.

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¹⁷ Pinto, F. (2020) "[Experience Spotlight: South-South Collaboration Chile and Colombia Technical Exchange on Offsets](#)" Subgrupo Técnico de MRV y Cambio Climático de la Alianza del Pacífico.

APPENDIX 1: PA COMPARISON OF KEY MRV-MA ELEMENTS IN BURS

	Colombia	Chile	México	Perú
1. General description of MA	Chapter: 3-Mitigation Actions. Scope: general data for sectorial mitigation plans and Namas.	Chapters: 4-6 Mitigation actions and Namas. Scope: general description of sectorial mitigation plans.	Chapter: 3 (3.1-Policies and sectoral mitigation actions). Scope: in the main document specific information is provided by sector, but not by MA. Specific data for MA is presented in the annex.	Chapter: 4-National mitigation actions. Scope: general data for sectorial mitigation policies and more descriptive information for Namas.
Name and description of MA	✓	✓	✓	✓
Objectives of the MA	✓	✓	✓	✓
Quantitative goals per MA and progress indicators	✗ Only presented for some Namas.	✓	✓ Presented aggregated for sectoral goals.	✗ Not included but contemplated in the next steps.
Expected GHG emissions mitigated	✗ Only presented for some Namas.	✓	✓ Presented aggregated for sectoral goals.	✗ Not included but contemplated in the next steps.
2. Methodologies & assumptions	No specific information for the MA.	Chapters: Annexes 5- 6 Information on sectoral MA and Namas. Scope: general description of the methodology and mentioning the source of data, but not the specific values employed.	Chapter: 3 (3.1-Policies and sectoral mitigation actions). Scope: general information is provided by sector in the main document. Specific information by MA is presented in the annex.	No specific information for the MA.
Methodologies by MA	✗ Only presented for some Namas.	✓	✓	✓
Assumptions by MA	✗ Only presented for some Namas.	✓	✓	✓
3. Steps to achieve the MA	Chapter: 3-Mitigation Actions. Scope: only for Namas.	Chapters: 4 6-Mitigation actions and Namas. And Annex 5-6-Information on sectoral MA and Namas. Scope: general description of sectorial mitigation plans.	Chapter: 3 (3.1-Policies and sectoral mitigation actions). Scope: general information is provided by sector in the main document. Specific data by MA is presented in the annex.	Chapter: 4-National mitigation actions. Scope: only for Namas.
Steps taken to achieve MA	✓	✓	✓	✓
Steps envisaged to achieve MA	✓	✓	✓	✓
4 Progress of implementation	Chapter: 3-Mitigation Actions. Scope: only general information for Namas. No data on GHG emission abated.	Chapters: 4-6-Mitigation actions and Namas. And Annexes 5-6 Information on sectoral MA and Namas. Scope: specific and uniform information is provided by MA and Nama.	Chapter: 3 (3.1-Policies and sectoral mitigation actions). Scope: specific information is provided by sector. Data regarding GHG abated is presented by sector.	Chapter: 4-National mitigation actions. Scope: specific indicators are proposed for Namas. The current stage of each Nama is mentioned. No data on GHG emission abated.
State of the MA	✓	✓	✓	✓
Results achieved	✓	✓	✓	✓
GHG emission abated	✗ Only presented for some Namas	✓	✓	✓
5. International market mechanisms	Chapter: 4 (4.5-MRV climatic finance). Scope: specific data of the financial resources for mitigation and adaptation, by sectors. No specific data for each of the mitigation actions.	Chapter: 6-Carbon pricing mechanisms. Annex 6-Namas. Scope: general information by type of mechanism. No specific data for each of the mitigation actions.	Chapter: 3 (3.1-Policies and sectoral mitigation actions). Scope: general information by MA. Chapter: 6 (6.1-Climate finance). Scope: specific results are provided by type of funding source.	Chapter: 4-National mitigation actions. Scope: general information is provided by type of mechanism. Chapter: 5-Needs and support received. specific results are provided by type of funding source.

	Colombia	Chile	México	Perú
What information is presented	<ul style="list-style-type: none"> - Chapter 4: General information is presented for each Nama (funding source). - Chapter 5.3.1: A detailed list by project is presented including the amount of resources received, and the source of those resources. 	<ul style="list-style-type: none"> - Detailed data is provided for each of the Namas. - General information is presented for MA. The information is presented by type of financial resources, not by MA. 	<ul style="list-style-type: none"> - General information on financial resources is presented by MA. 	<ul style="list-style-type: none"> - Chapter 4: General information is presented for the different types of financial mechanisms (number of MA). - Chapter 5: A detailed list by project is presented including the amount of resources received, and the source of those resources.
6 Domestic MRV arrangements	Chapter: 4-MRV. Scope: general and descriptive information.	Chapter: 7-MRV mechanisms. Scope: general and descriptive information.	Chapter: 3 (3.1-MRV mechanisms). Scope: general and descriptive information.	Chapter: 2 (2.3-National MRV framework). Scope: general and descriptive information.
Description of the institutional arrangements and systems	✓	✓	✓	✓
Are methodologies and/or approaches and tools reported	✓	✓	✓	✓
Envisaged steps to implement MRV systems	✓	✓	✓	✓

Appendix 2: Comparison of subsequent BURs

	Versions compared	Factor of comparison	Findings
Chile	BUR2 - 2016 BUR3 - 2018	MA chapter and its structure	<ul style="list-style-type: none"> - Same structure: same chapter and sub-chapters.
		Content on sectoral mitigation actions	<ul style="list-style-type: none"> - The information in both documents is complete. There are new actions incorporated in the BUR3, and they report progress in BUR3 with respect to BUR2. - Both versions are not easy to compare. The information is presented in a different order and different ways in both versions of BURS. - It is less clear to identify the progress regarding GHG emissions reduced by the periods corresponding to each BUR.
		Content on Namas	<ul style="list-style-type: none"> - It is clear they are presenting the progress of each Nama in the BUR3 with respect to BUR2. - They present updated information regarding the progress of each Nama in BUR3. - In both versions, the information is presented in tables, in the same order and the comparison is direct.
Colombia	BUR1 - 2015 BUR2 - 2018	MA chapter and its structure	<ul style="list-style-type: none"> - Changes in the structure: while the chapter has the same name, sub-chapters and their content differ among versions.
		Content on sectoral mitigation actions	<ul style="list-style-type: none"> - Both versions are not easy to compare. The information is presented in a different order and different ways in both versions of BURS. - Progress of certain programs can be identified by comparing both documents. - It is not easy to identify cumulative GHG emissions avoided at the national level and the progress in the national goal between both versions of BURs.
		Content on Namas	<ul style="list-style-type: none"> - In BUR2 they present updated information regarding the progress of each Nama with respect to BUR1.
México	BUR1 - 2015 BUR2 - 2018	MA chapter and its structure	<ul style="list-style-type: none"> - Changes in the structure: different names for the chapter, different sub-chapters, and content among versions of the BUR.
		Content on sectoral mitigation actions	<ul style="list-style-type: none"> - They report progress in MA in BUR2 with respect to BUR1. - The information on MA is presented in a different order, but there are tables summarizing information, this makes the comparison easier. - The comparison of net GHG abatement between both BURs can be done utilizing the information presented.
		Content on Namas	<ul style="list-style-type: none"> - In BUR2 the information regarding Namas is detailed, but in BUR1 is general. - Comparisons are difficult. The level of detail in progress in BUR 2 allows to see the results obtained year by year. The progress in GHG mitigation is clear.
Perú	BUR1 - 2019 BUR2 - 2019	MA chapter and its structure	<ul style="list-style-type: none"> - Changes in the structure: different names for the chapter, different sub-chapters, and content among versions of the BUR.
		Content on sectoral mitigation actions	<ul style="list-style-type: none"> - Comparisons are difficult. It is not easy to identify the progress made in the mitigation actions by comparing both BURs. - The information provided for the CDM projects does not allow to track progress between both BURs.
		Content on Namas	<ul style="list-style-type: none"> - In BUR2 the information regarding Namas is more detailed than in BUR1. - While the quantity of Namas per sector can be compared among both versions of the BUR, it is not easy to identify the progress made in these mitigation actions with the data provided in both BURs.

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