SPECIAL TECHNICAL COMMISSION ON ENVIRONMENT
Latin American and Caribbean Organization
of Supreme Audit Institutions – OLACEFS

COORDINATED PERFORMANCE AUDIT ON THE IMPLEMENTATION OF THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

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PRESENTATION

Climate change is the most widespread global environmental problem. According to the scientific evidence available, it is out of discussion that the materiality of its effects will be significant. In order to address climate change in an integral way, the international community developed the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol, instruments that compromise signatory parties to mitigate the effects of climate change and to adapt to its impacts.

In this context, supreme audit institutions have a prominent role, since they have the mandate to examine the response of governments in this subject matter. In this regard, the Special Technical Commission on Environment of the Latin American and Caribbean Organization of Supreme Audit Institutions (OLACEFS) decided to perform a cooperative audit on climate change.

The coordinated audit, undertaken by the SAIs of Argentina, Brazil, Colombia, Costa Rica, El Salvador, Honduras, Panama, Paraguay and Peru, has an intrinsic value for the entire region, since it informs on the performance of governments in climate change management and its effects.

The work presented many challenges but also brought the opportunity to strengthen the environmental control network, reinforce bonds among OLACEFS members and allowed the interchange of experiences on national realities in the region.

The findings of the coordinated audit indicate progress in the implementation of UNFCCC commitments and point out aspects to improve, especially in relation to the efforts and measures towards the reduction of vulnerability in natural and anthropogenic systems facing current and potential effects of climate change.

We look forward to this report to contribute to improve government management of climate change issues in the region.

EXECUTIVE SUMMARY

Climate change is one of the most challenging environmental problems in the present century. Its consequences include a wide variety of impacts on natural ecosystems and socio-economic systems, such as changes in crop yield, habitat loss and species decline. Fundamental actions consist in the reduction of greenhouse gas emissions and in the reduction of the vulnerability of natural and anthropic systems to actual or potential effects of global warming.

This report informs on the cooperative audit undertaken by the Supreme Audit Institutions of Argentina, Brazil, Colombia, Costa Rica, El Salvador, Honduras, Panama, Paraguay and Peru. It depicts the state of climate change management by national governments and the key challenges in the topic, with the aim of helping in the definition of public policies and improving governance.

Findings of the coordinated audit point out that the region is still poorly prepared to face challenges imposed by climate change, since government action is still incipient and, in general, no effective measures to promote mitigation of climate change effects or adaptation to its consequences have been implemented.

Some countries in the region have set specific public policy instruments, but advances in their implementation are minor. Major deficiencies refer to the absence of specific actions, implementation strategies or the identification of responsible sectors.

There are organizational gaps and weak definition of roles and responsibilities, along with lack of quantitative targets in policies, strategies and plans. The weak institutionalization of climate change in public policy instruments precludes its articulation with sectorial policies.

No specific monitoring and evaluation mechanisms for mitigation or adaptation measures exist, and controls established are weak. Consequently, it is not possible to measure efficacy and efficiency of policy instruments developed.

On the other hand, there is a tendency to develop mitigation instruments, with government action mainly concentrated on the development and promotion of projects within the Clean Development Mechanism established in the Kyoto Protocol, in detriment of carbon sink conservation, in spite of deforestation being one of the main sources of emission of greenhouse gases in the region (see chapter 4).

Public policy instruments on adaptation are less developed and, in spite of the high vulnerability of the region, concrete measures have not been set; some advances relate to the identification of risks in diverse geographic areas and socioeconomic sectors (see chapter 5).

There is little support and diffusion of research on climate change issues, evidenced in the insufficiency of resources available, in difficulties in data collection and in the formulation of methodologies to estimate emissions of GHG and reduce uncertainty of climate change effects, situation that is reflected in the quality of national communications and measures developed. Efforts in education, training and awareness to climate change are also scarce.

This scenario reveals the urgency to strengthen the role of governments in undertaking tasks pending regarding commitments to the United Nations Framework Convention on Climate Change: national communications, improvement of climate governance and enforcement of adaptation and mitigation action.

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ACRONYMS

Art.	Article
CCAD	Central American Commission on Environment and Development
CDM	Clean Development Mechanism
CER	Certified Emissions Reduction
COMTEMA	Special Technical Commission on Environment of OLACEFS
COP	Conference of the Parties of the UNFCCC
DNA	Designated national authority for Clean Development Mechanism
ERCC	Regional Strategy of Climate Change
GEO	Global Environmental Outlook
Gg	Gigagrams (109 gr)
GHG	Greenhouse gases
INTOSAI	International Organization of Supreme Audit Institutions
IPCC	Intergovernmental Panel on Climate Change
KP	Kyoto Protocol
LUCF	Land use change and forestry
NC	National Communication to the COP
NIGHG	National Inventory of Greenhouse Gases
NPCC	National Plan on Climate Change
OLACEFS	Latin American and Caribbean Organization of Supreme Audit Institutions
REDD	Reduction emissions from deforestations and degradation
Res.	Resolution
RIOCC	Iberoamerican Network of Climate Changes Offices
SAI	Supreme Audit Institutions
SICA	Central America Integration System
Subs.	Subsection
UNDP	United Nations Development Program
UNEP	United Nations Environmental Program
UNFCCC	United Nations Framework Convention on Climate Change
WB	World Bank
WGEA	Working Group on Environmental Auditing of INTOSAI

INTRODUCTION

Current Situation on Climate Change

World Context

The report of the Intergovernmental Panel on Climate Change (IPCC, 2007) provided a comprehensive picture on climate change at the global level. Available scientific evidence points out that:
Global warming is unequivocal, as evidenced by observed rises in air and ocean temperature, generalized ice melting and the rise of world average sea level.
Observations from most continents and oceans indicate that several natural systems are being affected by changes in the global climate, particularly due to temperature rise.
With an intermediate confidence level, other effects of climate change are starting to become apparent on natural and anthropic environment at regional scales, although in many situations, causes are difficult to identify.
On the other hand, the Global Environmental Outlook –GEO- report, released by the United Nations Environmental Program (UNEP), stressed that global warming is out of discussion and global hydrological cycle is being affected by long term changes in climate, with negative consequences on human well being and on ecosystem health, which support life on earth. It also mentions that warming of oceans and changes in oceanic surface streams are transforming rainfall patterns, altering freshwater, marine flora and animal communities.
The GEO report also indicates that the reduction in rainfall and the extension of droughts have already affected wide areas around the world, while, at the same time, a rise in rainfall has occurred in eastern regions of North and South America, northern Europe and central Asia. Storm increase is exacerbating the threat to human populations located in coastal zones and lowland islands affected by sea level rise. Continental ice cover and mountain glaciers have continued to diminish and retreat during the last two decades. Ice cover thickness in polar regions has markedly reduced, as well.
With reference to freshwater resources and sustainable development, the report points out that changes in hydrosphere may hinder the attainment of the Millennium Development Goals related to clean water, health and food security. Freshwater availability continues to reduce due to excessive extraction of surface water and groundwater, and to the reduction in rainfall caused by climate change.
Several coastal and marine ecosystems and most of freshwater ecosystems, along with ecological services provided by them, are still highly degraded or even lost. Marine and freshwater biodiversity is declining at a faster rate than in the remaining biomes.

Regional Context

For the American continent, possible impacts of climate change identified are[1]:
Up to 2050, temperature rise and corresponding reductions in soil humidity would cause a gradual replacement of tropical forests for savannas in eastern Amazonia. Semiarid vegetation would be replaced by arid-land vegetation;
In wide areas of Latin-American, significant biodiversity loss could occur, with many species extinction events;
Crop productivity would diminish, and hence livestock production, with negative consequences for food security. As a whole, the number of people threatened by food scarcity would increase;
Changes in rainfall patterns and glacier retreat would highly affect drinking water availability, crop production and hydroelectric power generation.

1 Extracted from the IPCC report 2007.

Other relevant socio-environmental effects are:
Reduction in water supply caused by the loss of ecosystems regulating the hydrological cycle, increased evaporation and changes in rainfall patterns;
Reduction in freshwater quality due to pollution from sewage, agrochemicals and other toxic residues;
Soil and fertility loss;
Increased plague number and mobility;
Increased morbidity and mortality related to climate change;
Negative effects on population inhabiting areas subjected to extreme weather conditions.
Increased public expenditure in:
Subsidies to productive sectors affected by climate change,
Sanitation, infrastructure, public service and related social problems,
Disaster management and resettlement of people affected.

International Accords on Climate Change

United Nations Framework Convention on Climate Change

United Nations Framework Convention on Climate Change (UNFCCC) is a global multilateral accord oriented to the implementation of international efforts for facing climate change challenges. The Convention was adopted in New York on May, 9 1992, and entered into force on March, 21, 1994.
The ultimate objective of the Convention is the stabilization of atmospheric concentrations of greenhouse gases[2] (GHG) at a level that would prevent dangerous anthropogenic interference with the climate system. That goal should be achieved in a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to continue in a sustainable way.[3]
Due to their condition of developing countries, countries taking part in the coordinated audit are Non-Annex I Parties to the Convention, and hence they do not have international obligations regarding GHG emission reduction. However, being parties to the Convention, they have to comply with commitments established in article 4.

Kyoto Protocol

In 1997, Parties to the Convention adopted an addendum known as the Kyoto Protocol (KP), which introduces legally binding measures for signatory countries.
KP, which entered into force on February, 16, 2005, had the objective to promote 5% GHG emission reduction in Annex I Parties in the period 2008-2012, compared with the 1990 emission levels. This does not imply that each Annex I Party has to reduce its emissions by 5%, rather, this is a global percentage and each country has its specific emission reduction target.
Among the flexible mechanisms established in the KP, the Clean Development Mechanism (CDM) (art. 12) is the single one in which developing countries[4] may participate. The purpose of CDM is to help Non-Annex I Parties to reach sustainable development and contribute to the ultimate objective of the Convention, and also to help Annex I Parties to comply with their quantitative commitments of emission reduction and limitation.
CDM allows Annex I parties to obtain *certified emission reduction* (CER) credits through the implementation of projects oriented either to reduce GHG emissions or to sequestrate carbon in Non-Annex I countries.

2 Carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hidrofluorocarbons (HFC), perfluorocarbons (PFC) and sulfur hexafluoride (SF6).
3 UNFCCC, article 2.
4 Countries participating in this audit are not included in Annex I of UNFCCC; hence, they belong to the set of Non-Annex I parties.

Coordinated Audit on Climate Change within the special technical commission on ENVIRONMENT - COMTEMA

The Organization of Latin American and Caribbean Supreme Audit Institutions –OLACEFS– is an international autonomous, independent and apolitical organization, integrated by the Supreme Audit Institutions (SAIs) of countries in the region. Its objectives are to: (a) conduct scientific research; (b) develop study and training; (c) provide technical advice, assistance and coordination in government audit for the SAIs of Latin America and the Caribbean.
The Special Technical Commission on Environment –COMTEMA– of OLACEFS has the mission of contributing to the development of environmental audits in the SAIs of OLACEFS.
Due to the serious environmental situation and high vulnerability of countries in the region, COMTEMA members agreed in 2009 to perform a coordinated audit on climate change.
The audit was coordinated by the SAI of Brazil and included the SAIs of Argentina, Brazil, Colombia, Costa Rica, El Salvador, Honduras, Panama, Paraguay and Peru.

Relevance of the audit

The audit shows the restrictions and difficulties in the attainment of objectives and goals established in public policies, together with the associated risks in the governmental agencies dealing with climate change.
We expect that the results of the audit help to:
Assist governments in the improvement of decision making and coordination processes, favoring transparency and effectiveness in climate change management;
Inform the public on government performance and promote citizen control and participation;
Make the role of SAIs in environmental accountability by government known.

Audit Objectives

- General Objective

- Assess the performance of governmental bodies responsible for implementing the United Nations Framework Convention on Climate Change in the countries of the region.

- Specific Objectives

- Examine the compliance with the commitments established in the United Nations Framework Convention on Climate Change regarding the implementation of governmental policies, plans, programs and actions.
- Determine whether governments have developed appropriate mitigation strategies and plans for complying with the commitments of the Convention and evaluate the progress attained.
- Determine whether governments have developed adaptation strategies and plans related to vulnerability assessment to the impacts of climate change and whether policy instruments have been implemented in response to risks identified.

Audit Scope

A selective exam of diverse government agencies (see Table 1) has been done, in relation to mitigation and adaptation actions considered in the United Nations Framework Convention on Climate Change and in the Kyoto Protocol.
The audit period considered was the period from the entrance into force of the UNFCCC and KP in each country to December, 31, 2009. Whenever it was pertinent, previous or subsequent actions have also been evaluated.

Table 1. Agencies audited by SAIs participating in the coordinated audit.

Country	GHG emission reduction		Carbon sink conservation	
	Agencies	Jurisdictional level	Agencies	Jurisdictional level
Argentina	Secretariat of Environment and Sustainable Development (SAyDS)	National federal	Secretariat of Environment and Sustainable Development (SAyDS)	National federal
Brazil	Ministry of Environment (MMA)	Federal	Ministry of Environment (MMA)	Federal
			Ministry of Agricultural Development (MDA)	Federal
			National Institute of Colonization and Agricultural Reform (INCRA)	Federal
			Ministry of Transport (MT)	Federal
			Ministry of Foreign Affairs (MRE)	Federal
			Ministry of Agriculture, and Provisioning (MAPA)	Federal
			Superintendency of Amazonia Development(SUDAM)	Estadual
Colombia	Ministry of Environment, Housing an Territorial Development (MAVDT)	National	Ministry of Environment, Housing an Territorial Development (MAVDT)	National
Costa Rica	Ministry of Environment, Energy and Communications	National	Ministry of Environment, Energy and Communications	National
El Salvador	Ministry of Environment and Natural Resources (MARN)	National	Ministry of Environment and Natural Resources (MARN)	National
Honduras	Secretariat of Natural Resources and Environment	National	Secretariat of Natural Resources and Environment	National
Panama	National Authority of Environment (ANAM)	National	National Authority of Environment (ANAM)	National
Paraguay	Secretariat of Environment (SEAM) National Commission on Climate Change (CNCC)	National	Secretariat of Environment (SEAM) National Commission on Climate Change (CNCC)	National
Peru	Ministry of Environment (MINAM)	National	Ministry of Environment (MINAM)	National
	Ministry of Agriculture (MINAG)	National	Ministry of Agriculture (MINAG)	National
	Ministry of Foreign Affairs	National	Ministry of Foreign Affairs	National
	Regional Government of Piura	Regional	Regional Government of Piura	Regional

Methodology

The audit followed the guidelines for cooperative audits of the Working Group on Environmental Auditing of the International Organization of Supreme Audit Institutions (WGEA-INTOSAI). Hence, there were individual audit teams and individual reports in each SAI, but a common research framework.

Main sources of audit criteria come from articles 4 and 12 of UNFCCC and article 12 of KP.

Government performance in implementing the commitments of the Convention are closely linked to institutional capacity, requiring management structures with clear and measurable objectives and goals, together with suitable procedures that ensure transparency and effectiveness in decision making and proper accountability.
Accordingly, the assessment of climate change governance was focused on the existence of processes and systems promoting management by objectives and results[5], the adequate definition of roles and responsibilities and the existence of coordination and monitoring mechanisms[6].

Management by Objectives and Results

According to article 4 of the Convention, countries should consider, to the extent feasible, climate change issues in their social, economic and environmental policies and measures.
A common finding of the coordinated audit was the existence of weaknesses in planning, which hinder the inclusion of climate change issues in sectorial activities.
Some countries have developed national climate change plans or strategies that provide a general framework for both mitigation and adaptation action. However, in most cases those instruments have not become operational, i.e., neither concrete action has been undertaken, nor implementation strategies have been formulated, nor scope of implementation has been defined.
Although general objectives have been set, the absence of clear and measurable goals and indicators hinders the monitoring of progress and reduces the chance to effective feedback and adequate accountability.

Roles and Responsibilities

Some countries count with specific agencies for implementing the UNFCCC; in others, the mandate for implementing the Convention relies on already existing institutions (see Table 2). In many cases, ad hoc consultant bodies have been established in order to coordinate action among the diverse government agencies involved.
A common finding of the coordinated audit was the unclear definition of responsibilities for monitoring and evaluating public policy instruments implemented by different agencies.
Among the limitations that affect operational capacity, insufficient human and material resources are the most remarkable.

5 Key elements of the management by objectives and results model are: (a) the definition of objectives and expected results; (b) the development of implementation strategies for the formulated policies; (c) the availability of information for performance evaluation.
6 WGEA-INTOSAI. 2010. WGEA-INTOSAI 2010. Auditing Government Response to Climate Change. ISBN 978-9949-9061-0-9.

Table 2. Government authorities on climate change in the countries participating of the coordinated audit.

Country	Implementation authority	Coordinating or consulting body
Argentina	Secretariat of Environment and Sustainable Development	Governmental Committee on Climate Change Scientific-Technical National Commission on Climate Change
Brazil	Ministries of Science and technology, Defense, Agricultural Development, Industry and External Commerce, National Integration, Justice, Environment, Agriculture, Mining and Energy, Transport, Labor and Employment, Planning, Organization and Foreign Affairs.	Civil House of the Presidency of the Republic
Colombia	--	Intersectorial Commission on Climate Change
Costa Rica	Ministries of Environment, Energy and Communications, Directorate of Climate Change, National Meteorological Institute, Costa Rican Office of Joint Implementation	Advisory Commission on Climate Change Interministerial Council on Climate Change
El Salvador	--	Advisory Group on Climate Change
Honduras	Climate Change Unit Directorate of Climate Change	National Program on Climate Change Interinstitutional Committee on Climate Change
Panama	Climate Change and Desertification Unit	National Committee on Climate Change
Paraguay	National office of Climate Change	National Commission on Climate Change
Peru	Agencies in all government levels (national, regional and local), especially those taking part in the National Convention on Climate Change	Ministry of Environment

Coordination

Weak coordination among government agencies and sectorial stakeholders is a common obstacle to attain effective results in climate change management. This circumstance sometimes comes from an inadequate definition of responsibilities or from poor leadership by authorities, resulting in isolated and unarticulated efforts by agencies involved in climate change mitigation and adaptation.
Moreover, some government agencies responsible for implementing specific climate change policy instruments have paid little attention to the issue, affecting thus articulation with the private sector.

Accountability

Institutional supervision by executive agencies has been found to be weak. Performance control mechanisms have not been developed. In general, governments do not have either specific procedures or tools to monitor progress towards the achievement of objectives and goals set in policies, plans or programs.

These flaws, together with the absence of clearly stated and measurable targets, deter the evaluation of public policy instruments applied and the estimation of efficacy.

Conclusion

Despite the diverse initiatives of governments in the region, policies and strategies on climate change are not yet consolidated and prioritized, and, therefore, their enforcement is not warranted. Often, efforts are unconnected and duplicity of functions among government agencies has been detected.
Poor coordination and monitoring by the government has produced isolated and unarticulated results, which are insufficient for facing the challenges posed by climate change and hence are key areas to improve in order to provide a pertinent and timely response to climate change.

Key Challenges

Good climate change governance requires a solvent institutional system, rooted in consolidated organizational structures that warrant transparency in decision making, adequate coordination among agents involved and an efficient monitoring and evaluation model.
Governments should strengthen the capacity of public agencies dealing with climate change by providing adequate resources. Also, taking into account that climate change is a cross-cutting issue concerning diverse sectors, coordination should be reinforced in order to optimize work and resource use and to avoid functional duplicity.
Governments should define and/or adjust policies and strategies on climate change so as to promote the effective inclusion of the issue in national and regional agendas. It is also required that planning considers quantitative targets, time schedules, implementation strategies and monitoring and evaluation mechanisms.

GHG INVENTORIES AND COMMUNICATION OF INFORMATION

Suitable response to climate change requires thorough knowledge on GHG emission scenarios at the national scale. In this regard, national inventories on greenhouse gas emissions (NIGHGE) are a basic element for establishing appropriate mitigation measures.

In this sense, article 4 of the Convention establishes that all parties shall develop and regularly update national inventories of anthropogenic emissions by sources and removals by sinks of greenhouse gases, using comparable methodologies.

Moreover, each party shall inform the Conference of the Parties (COP): (a) a national inventory, to the extent its capacities permit, of anthropogenic emissions by sources and removals by sinks of all greenhouse gases; (b) a general description of measures adopted o to be adopted; (c) any other information relevant to the achievement of the objective of the Convention (article 12 of the Convention).

Developing countries may include voluntary proposals of projects for funding, detailing technologies, materials, equipment, techniques or practices necessary for executing these projects, along with an estimate of incremental costs of emission reductions and increments of removals of GHG, as well as an estimate of the consequent benefits (item 4, article 12 of the Convention).

Non-Annex I parties had to present their first national communication within three years of the entry into force of the Convention for that party, or according to the availability of financial resources (item 5, article 12 of the Convention).

NATIONAL INVENTORIES OF ANTHROPOGENIC EMISSIONS OF GHG AND NATIONAL COMMUNICATIONS TO THE CONFERENCE OF THE PARTIES (COP)

Based on information compiled by SAIs, the elaboration, updating and publishing of NIGHG is still a task that needs to be adjusted and improved from a methodological perspective (see the example of Peru in Box 1).

Box 1. Methodology of the national inventory of GHG in Peru for agriculture

The national initiative "Program on National Capacity Building for Managing the Impacts of Climate Change and Air Pollution –PROCLIM– highlighted the lack of procedures for generating and recording information, proposing priority research issues, such as the elaboration of inventories for the agricultural sector. In that sense, the project "Needs and proposal for implementing a sustainable inventory system in agriculture and land use change and forestry" included specific methodological considerations.

However, the NIGHG in the first and second National Communications used the "default methodology" recommended by IPCC; this has hampered the reduction of uncertainties in the estimates of emission balance, a situation that may compromise the effectiveness of policies and measures derived from inventories.

For developing their NIGHG, most of the countries took 1990 as the baseline year. According to what was established in the Convention and in the KP, subsequent inventories were elaborated in accordance with their specific domestic and regional development priorities and national circumstances, with no specific deadline established (but see the case of Honduras in Box 2).

Box 2. Periodicity of NIGHG reporting in Honduras

The government of Honduras established an internal requirement to present nation inventories on GHG every five years. However, the first inventory elaborated in 1995 was presented in the first National Communication in 2000; the second has not been delivered yet.

In the countries participating in the coordinated audit, NIGHG have been elaborated only in the context of national communications and no mechanisms have been set for their regular update. Table 3 indicates the situation of NIGHG as part of national communications.

Table 3. National inventories of GHG in countries participating in the coordinated audit.

Party	Funding organization	Years considered in GHG inventories	Date of submission to COP
Argentina	WB	1990 to 1994 1997 to 2000	July 1997 (FNC) March 2008 (SNC)
Brazil	UNDP	1990 to 1994 2000 to 2005	December 2004 (FNC) December 2010 (SNC)
Colombia	UNDP	1990 to 1994 2000 to 2004	December 2001 (FNC) December 2010 (SNC)
Costa Rica	UNDP	1990 to 1996 2000 to 2005	November 2000 (FNC) October 2009 (SNC)
El Salvador	UNDP	1994 to 1998	April 2000 (FNC) October 2011 (SNC)
Honduras	UNDP	1994 to 2000	November 2000 (FNC) December 2011 (SNC)
Panama	UNDP	1994 to 2000	July 2001 (FNC) January 2011 (SNC)
Paraguay	UNDP	1990 to 1994 2000 to 2004	April 2002 (FNC) December 2010 (SNC)
Peru	UNDP	1990 to 1994 1997 to 2000	August 2001 (FNC) September 2010 (SNC)

Source: GEF report of the 16th session of the Conference of the Parties of the United Nations Framework Convention on Climate Change (October 20 2010), published by UNFCCC as addenda to the report FCCC/CP/2010/5 (November 2 2010).

Countries participating in this audit have prepared and presented their national communications to the COP according to dates of entry into force of the Convention in each country and to financial resource availability for that purpose. Some countries are preparing their third national communication.

The major limiting factor for preparing national communications is the lack of financial resources for hiring expert personnel and for undertaking the research necessary to provide updated information. Some countries have appealed to the cooperative funds of United Nations channeled through environmental authorities at the national level or through agencies specially established for that purpose.
Some countries have had difficulties for obtaining or generating the information necessary to prepare inventories; others simply lack the information required by IPCC methodology. Nevertheless, all countries managed to provide data on GHG emissions from main sectors.
On the other hand, countries that presented several communications gained experience in this subject with consequent improvements in scientific data availability and quality on domestic GHG emissions.

COMMUNICATION OF INFORMATION AT THE DOMESTIC LEVEL

In general, presenting communications has helped in the divulgation of plans, programs or strategies on climate change (see for example the case of Costa Rica in Table 4). However, in many cases, plans and other proposals formulated in national communications have not been implemented.
Several SAIs have identified the lack of integration among technical proposals included in national communications and what has been established in sectorial development policies, plans and programs.
No evidence has been found on the appliance of national communications for designing, correcting, reorienting or conducting general or sectorial policies on mitigation or adaptation.
Audit findings indicate that several countries lack facilitating instruments for including climate change issues in education and, in general, have failed so far to promote capacity development in this subject.
On the other hand, a slight progress has been recorded in the design and implementation of instruments to promote scientific research, although the new information generated is still not enough for supporting sound rigorous decision making and for providing adequate feedback in climate change management.

Table 4. Situation of sectors regarding climate change mitigation in Costa Rica, according to the second national communication to the UNFCCC.

Sector	State of affairs	Major weaknesses
Transport	No progress made in GHG emission reduction. Balance is negative.	Vehicle revision program has not progressed. Regulation is not congruent with carbon neutrality objectives. Projects on emission reduction for the public transport are not approved. Road restructuring needed to reduce traffic jams has not been implemented.
Electricity / Energy	Advances in energy saving campaigns and raised awareness in industrial sector (biomass as energy source, bioethanol production).	Lack of funds for financing new projects. Lack of investment on hydroelectrical generation.
Agriculture	Slight progress in farmer training in agrochemicals and organic manure production.	Weak fertilizer management. Weak support to research on environmental management.
Industry	Highest progress since the first national communication.	Lack of policies focused on the control of agricultural and industrial wastes at the municipal level.
Land use change	Difficulties to progress.	Difficulties in land use planning related to regulatory plans and control procedures. Lack of information on the effectiveness of the system of payment for environmental services.

Source: elaborated by the SAI of Costa Rica from information provided in the second national communication.

CONCLUSION

Partners in the coordinated audit have complied with the commitment of communication on the implementation of the Convention to the COP, according to article 12 of the Convention.
This process has been recurrently limited by the insufficiency of financial resources and by weaknesses in domestic operational capacity regarding research and data collection required for preparing communications. In some cases, data used to prepare national communications lack the required accuracy and update, especially regarding GHG inventories and hence information provided in national communications does often not truthfully reflect the domestic emissions scenario.
It should be noted that national communications have generally not been considered by governments in the design and implementation of policy instruments (norms, laws, etc.) for dealing with climate change mitigation and adaptation.

KEY CHALLENGES

A central challenge for countries in the region is to establish provisions to periodically update GHG national inventories, given that they are key tools in providing a sound knowledge base to define public policies on mitigation. Information should be systematized to facilitate updating and statistical treatment and to improve the elaboration of GHG inventories. Data management systems should be put in place to ensure adequate coordination in data gathering and transparency of results.
To improve the preparation of national communications, governments must have expert human resources and the necessary financial resources. This will enable the preparation of integral and solid proposals to the COP for obtaining resources to complement national capacities.
Proposals stated in national communications need to be applied for formulating and adjusting national policies on climate change, identifying incremental costs.
Governments should make specific, clear and sustained efforts to encourage and support education, training and public participation in the process. Instances in charge of this task have to value the importance of divulgation and diffusion of the relevant information, in order to raise awareness on the public, promoting a responsible attitude towards climate change, which, in turn will strengthen accountability and control of progress made.

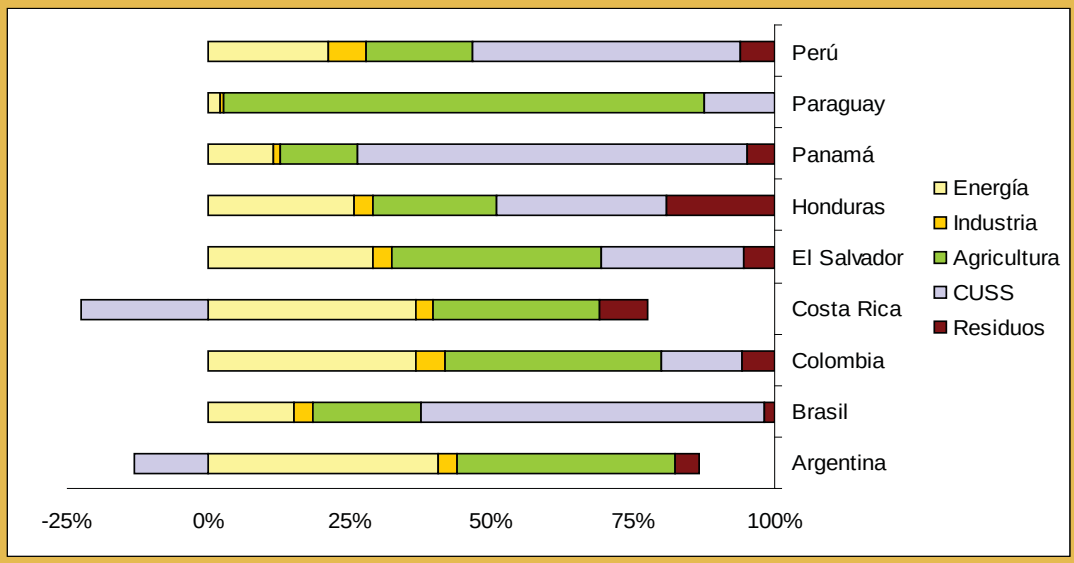
Partners in the coordinated audit have dissimilar situations regarding GHG emissions, with highest values corresponding to Brazil, followed by Argentina, Colombia and Paraguay (Table 5).
When emissions are considered by sector (Figure 1), it is apparent that most of the emissions in Brazil, Honduras, Panama and Peru come from land use change and forestry. Costa Rica stands with negative emission values for this sector, indicating that changes in land use patterns contribute to carbon sequestration.
On the other hand, the agricultural sector is the main source of emissions in Colombia, El Salvador and Paraguay, while the energy sector is the major emission source in Argentina and Costa Rica. In all countries, the industrial and waste sectors are the least important sources of emissions.

Table 5. Emissions of greenhouse gases (GHG) in countries participating of the coordinated audit. LUCF: emissions from the land use change and forestry sector. Values are Gg CO2 eq.

Country	Most recent data	Total GHG without LUCF	Total GHG with LUCF	Population (Millions) (2)	GHG without LUCF per capita (3)	GHG with LUCF per capita (3)
Argentina	2000	282,000.80	238,702.90	36.939	7.63	6.46
Brazil	2005	862,828.88	2,191,878.88	186.075	4.64	11.78
Colombia	2004	153,884.77	179,899.30	42.395	3.63	4.24
Costa Rica	2005	12,114.03	8,606.73	4.328	2.80	1.99
El Salvador	1994	11,716.71	15,659.51	5.658	2.07	2.77
Honduras	1995	10,825.9	15,455.2	5.588	1.94	2.77
Panama	1994	10,692.1	34,403.8	2.619	4.08	13.14
Paraguay	1994	140,456.1	159,960.4	4.692	29.94	34.09
Peru	2000	63,197.0	120,024.0	26.004	2.43	4.62

Source:
(1) GHG emission data from latest National Communications.
(2) Total country population corresponding to the year of GHG data, from IEA Statistics 2011 (International Energy Agency).
(3) GHG per capita: GHG data (1) divided by population (2), without and with LUCF.

Figure 1. Emissions of greenhouse gases (GHG) by sector in countries participating in the coordinated audit. LUCF: emissions from the land use change and forestry sector. Values are Gg CO2 eq.



Source: *Latest National Communications.*

STRATEGIES AND PLANS

Reduction of GHG emissions

Audits showed that all countries have developed diverse planning tools on GHG emission reductions. In some cases[7] government actions are included in a national plan o strategy on climate change (see chapter 2) that provides the general framework for mitigation and adaptation response.
In other countries, plans or strategies on emission reduction have been elaborated as part of national communications to the COP (see chapter 3). Often, these national communications constitute the most integral proposal regarding mitigation, since they cover all relevant sectors –energy, industry, transport, agriculture and land use change- and include sectorial diagnosis on the situation of emission reductions.
If sectorial planning is examined, it could be noted that the development of planning tools reflects the importance of the diverse economic sectors as sources of GHG. Thus, in several countries, the major source of GHG emissions is represented by changes in land use patterns as a result of agricultural expansion and associated deforestation and, consequently, mitigation action is mainly directed to the conservation and sustainable management of GHG sinks.

SAIs found that, in spite of having planning tools, governments in general have not developed adequate implementation mechanisms, with insufficient human and financial resources, and/or inadequate organizational structures (see chapter 2).
A common finding is the poor articulation among sectorial plans and programs that influence emission reduction. Even in cases where an intersectorial body especially dedicated to integrate climate change management exists, it lacks information on the instruments implemented by the intervening agencies. Moreover, even when a national policy on climate change is in place, it is usually poorly integrated with other related policies, such as the clean development policy, the carbon neutral policy, the agricultural development policy, among others. An exception

7 Brasil, Costa Rica, Panamá, Paraguay, Perú.

to this state of affairs is represented by Costa Rica, where the carbon neutral strategy 2021 is integrated into the national strategy on climate change (see Box 3).
On the other hand, some sectorial plans (on transport, energy, agriculture) may have objectives that are conflicting to climate change mitigation, as they promote increase in GHG emissions.

Some of the deficiencies mentioned above derive from the fact that climate change plans and strategies have been formulated in recent years, much later than sectorial plans.
With regard to the existence of regional strategies on emission reduction, Central American countries have formulated a regional strategy on climate change (RSCC)[8], in the context of the Commission for Environment and Development of the Central America Integration System (CAIS) . RSCC has the purpose to prevent and reduce negative impacts of climate change, through increasing resilience and adaptive capacity and thus reducing social, ecological and economic vulnerability, creating capacity for contributing to the reduction of climate threats and contribute to emission reduction according to national circumstances. RSCC covers the issues of vulnerability and adaptation, mitigation, institutional and capacity development, education and international participation.
Some countries actively participate in international negotiation forums, with the aim of achieving a common regional position in mitigation issues. Examples of these initiatives are the declaration of San Pedro Sula (2008) within CAIS and of the G77+China group within United Nations.

Box 3. Carbon-Neutral Strategy of Costa Rica

It comprises two main axes: Carbon Neutral Strategy and Strategic Competitiveness.

Carbon Neutral Strategy consists in the voluntary commitment of Costa Rica to reduce GHG emission and increase carbon capture in terrestrial ecosystems by 2021, in a way that the net balance equal zero. This could be stated as follows:

Balance = CO2e anthropogenic emissions – CO2 absorption and avoided CO2

Balance 2021= 0

It involves an axis related to the carbon footprint by which standards and specific procedures establish the way in which regions and enterprises should build their GHG inventories.

The Strategic Competitiveness axis considers that the changing enterprise environment will create conditions according to which companies and their value and growth potential is related to risks and opportunities associated with climate change and, hence, adequate conditions to promote responsible behavior in companies should be enhanced. Main tools for this purpose are; C-neutral brand, which is a certification of products labeled with neutral carbon footprint and the design of a national carbon market.

Conservation of carbon sinks

In those countries where changes in land use patterns are the main cause of GHG emissions, mitigation efforts concentrate on the forestry and agricultural sectors.
Given the magnitude of deforestation in the region, all countries have either plans or strategies oriented towards the conservation and sustainable management of native forests. Numerous studies and surveys have supported the development of specific policy instruments for these sectors (see Table 6).

8 Two kinds of regional srategies should be distinguished; those that are transnational and those occurring within a country. RSCC is a transnational strategy, oriented to unify criteria among countries and develop synergies. Conversely, domestic regional strategies are aimed at facilitating coordinated action among the diverse regions in a country.

However, these panning tools are not enough for securing carbon capture in the amounts required to mitigate climate change. Audit findings reveal that most of the countries lack plans or strategies for forest conservation from that perspective[9]. Like in the case of emission reduction, national plans on climate change, whenever exist, give general criteria for the conservation of GHG sinks.
Only Brazil has prepared regional plans on forest conservation with direct incidence on climate change mitigation, especially in Amazonia (see Table 7).

As the regional situation on emission reduction, audit findings determined a low articulation among forest planning instruments and other productive and development policies. A common scenario found is the existence of conflicting objectives among forestry and agricultural sectors, with agricultural incentives having a negative effect on the conservation of native ecosystems. In particular, in Brazil, the SAI has identified conflicts among environmental legislation and agricultural policies regarding the expropriation of public lands, regularization of land tenure and agricultural reform. Moreover, road and other development plans cause severe impacts on land occupation and natural resource use.
Some countries10 have started to elaborate REDD strategies according to the Bali Action Plan and specifically directed to developing countries. While these initiatives are incipient, they constitute a significant progress towards the conservation and sustainable management of carbon sinks.

Table 6. Plans and studies on carbon sink conservation in El Salvador.

Plan	Year	**Description**
Mitigation potential for climate change in the forest sector of El Salvador	2003	It establishes a database to determine the mitigation potential of the national forestry sector, identify forest species more adequate for reforestation, estimate the carbon capture potential in the sector through CDM and contribute to define strategic guidelines for designing of a national strategy for forests and climate change.
Forest Strategy	2004	It aims are to strengthen the forest sector capable of incorporating relevant sectors and groups in the development of sustainable forestry, and to define a Plan on Conservation of Carbon Sinks.
Forest definition for CDM	2006	The definition of forest for CDM in El Salvador is based on canopy cover, total cover and minimum height, according to the guidelines of UNFCCC.
Reforestation and Restoration Plan	2008	It establishes a tool for decision making on environmental management and conservation, based on previously defined and agreed technical criteria. It includes the prioritization of areas to reforest and/or restore, providing guidelines for that purpose, for future forestry projects.
Estimate of the potential for CDM projects in the Mesoamerican biological corridor		It defines the potential land area available for the Mesoamerican biological corridor and protected areas for the development of forestry and reforestry projects within CDM.

9 Argentina, Brasil, Colombia, El Salvador, Honduras, Panamá, Paraguay
10 Argentina, Brasil, Costa Rica, Panamá, Paraguay.

Tabla 7. Planes e instrumentos vinculados a la conservación de sumideros de GEI desarrollados por Brasil.

Coordination/ Execution	Plan	Objectives
General Plans		
Civil House of the Presidency of the Republic Implemented by 13 ministries	Action Plan for the prevention and control of deforestation in Legal Amazonia– PPCDAm	To promote the reduction of deforestation rates in Brazilian Amazonia, through the implementation of land use planning, monitoring and control, promotion of sustainable production and infrastructure, embracing associations among federal, state and local bodies, NGO and the private sector.
Presently coordinated by Secretariat of Strategic Issues of the Presidency of the Republic.	Plan Sustainable Amazonia– PSA	To promote sustainable development in Brazilian Amazonia, through the formulation of strategic guidelines, according to 4 axes: land use planning and environmental management, innovative and competitive sustainable production, infrastructure for development and social and citizen inclusion.
Executive Group of the Interministerial Committee on Climate Change (CIM) coordinated by the Civil House (Decree 6263/07)	National Plan on Climate Change – NPCC	To identify, plan and coordinate actions and measures on mitigation, and adaptation to climate change. It includes the design and development of measures in energy, agriculture, forests and other biomes, industry and transport. It establishes the following targets: (a) 40% reduction of deforestation in all Brazilian biomes in the period 2006-2009, and 30% additional reduction in each of the subsequent 4-year period, compared to the previous 4-yaer period; (b) stop net forest cover by 2015.
Sectorial Plans		
Ministry of Agriculture and Provisioning (MAPA)	Executive Plan on Sustainable Development of Agribusiness in Legal Amazonia– PDSA	Main expected results are: 1. Professionalize producers though participatory training. 2. Improve professional information in key areas for sustainable development to increase operational efficiency and productivity. 3. Produce competitive regional products and services. 4. Promote technological innovation in productive systems. 5. Create and adapt public policy to the characteristics and demands of the region. 6. Strengthen the organization of producers and productive chains 7. Offer high quality products that include an origin and best practice labels. 8. Articulate plans and institutions. 9. Organize and make available essential information to help sustainable production. 10. Value the public image of sustainable agribusiness.
	Agricultural Plan 2008/2009- AP	To provide guidelines on agricultural policy, providing lines of action, priorities and agenda. It includes the public policy on incentives for harvest at the national level, establishing credit lines, available resources, support to commercialization of agricultural products, land insurance, investments and structural and sectorial measures.
	Program for Sustainable Production of Agribusiness – PRODUSA	To stimulate the restoration of degraded areas, reinserting them in the productive process, to promote the adoption of sustainable systems in accordance to environmental legislation. The program has 3 axes: (a) stimulus to the establishment of sustainable production systems, prioritizing the recovery of degrades lands and pastures; (b) implementation of measures oriented towards the improvement of land use patterns, the generation of clean energy and the use of plant waste; (c) incentive to adjust to environmental legislation by producers.

	Program for Commercial Plantation and Forest Restoration – Propflora	To assist in the reduction of the existing deficit in tree plantations for raw material. To promote sustainable activities. Funding items: restoration and maintenance of legal forest reserves and preservation areas and implantation of silvopastoral and agroforestry projects. .
	Program for integration of crop production and livestock farming Prolapec	To intensify land use in deforested areas and to promote the adoption of production systems integrating crop production and livestock farming, to diminish deforestation pressure on other areas.
	Agri-extraction Projects – PAE	Projects on differentiated rural settlements with emphasis on environmental aspects. These projects are oriented towards traditional people that already inhabit the area in a special kind of settlement, where activities are directed to natural resource extraction.
Ministry of Agricultural Development (MDA)	Green Credit Lines	To promote sustainable development projects. Three lines of green credits are available: Pronaf Eco provides resources for implanting or restoring renewable energy technology, such as solar or biomass energy, and funds environmental technologies, such as water treatment plants or small hydroelectrical plants. It also funds forestry activities. Pronaf Agroecology funds the establishment of agroecological or organic systems, to attain environmental sustainability in agriculture. Pronaf Floresta funds extractive systems such as sustainable management systems, including the restoration of preservation areas, legal reserves and degraded areas.
National Institute of Colonization and Agrarian Reform (INCRA)	Sustainable development projects PDS	To encourage the sustainable management of natural resources in rural settlements. Oriented to populations which livelihoods are based on low environmental impact activities.
	Forest settlement projects PAF	Oriented to the management of forest resources in areas apt to small scale sustainable forest production, especially in the northern region.
	Environmental Action Plan	Promote effectiveness in environmental management in rural settlements. It fosters land regularization and environmental monitoring through four action axes: environmental licensing, environmental rehabilitation of settlements, environmental monitoring and promotion of environmental management.
Ministry of Transport (MT)	National Plan of Logistics for Transport	It includes a chapter on environmental management in the transport sector. It promotes the enforcement of environmental strategic evaluation in sectorial planning. It aims at modifying the transport matrix in legal Amazonia, promoting the intensification of the use of waterways and the construction on railways in order to increase energy efficiency and reduce GHG emission.

DEFINITION OF MITIGATION TARGETS

Reduction of GHG emissions

Countries participating in the coordinated audit are Non-Annex I parties and hence do not have international quantitative commitments on GHG emission reductions.

With a small number of exceptions, countries in the region have not set specific reduction targets. Brazil has legally adopted a national policy on climate change that considers the reduction of GHG emissions by 2020 in 36.1% and 38.9% (art. 12, Law 12.187/09). On the other hand, Costa Rica has developed a carbon-neutral strategy that seeks to achieve zero net emissions by 2021. Finally, Colombia has specified a set of direct or indirect targets on emission reduction as part of its national or sectorial plans (see Box 4).

In the remaining countries no quantitative targets have been set. In some cases, targets set at the national level planning have not been scaled down to the corresponding level or no implementation mechanisms have been envisaged. The absence of clear and measurable targets hinders accountability, performance monitoring and communication of results.

Box 4. Targets related to GHG emission reduction in Colombia

• National Development Plan: established
a) the development of a national scale project to capture GHG, with a quantitative target of 250.000 ton of CO2;
b) Support to sectorial initiatives under CDM and other mechanisms, with the aim to promote participation in carbon markets. The country could potentially generate around 2.000.000 certified emission reductions (CER), valued at USD $8,000,000 (DNP, 2002).
• Transport: considering that this sector represents over 12% of total CO2 emissions, the policy of fuel reconversion to gas yielded a significant reduction in GHG emissions. The program established the conversion of 64,000 vehicles, target that was exceeded to reach the value of 168,523 vehicles converted by December 2006. The national development plan continued with the program and established a target of 160,000 vehicles; by November 2008, 277,685 had been converted.
• Agricultural sector: programs are in place to reduce emissions in cattle production, such as the Strategic Plan for Colombian cattle raising, that includes different targets related to climate change mitigation. In agroecosystem research, strategic lines for CO2 seek to identify the potential of different agroecosystems for removing carbon in agroforestry systems (annual crops with trees, grasses and cattle).

Conservation of carbon sinks

While reducing deforestation rates is a general goal of all governments in the region, most countries lack quantitative targets on native forest conservation and management.
It should be noted the case of Brazil, which National Plan on Climate Change, launched in December 2008, set two quantitative targets, one related to reducing deforestation rates and the other oriented to stabilize forest cover (see Table 7). However, the SAI identified weaknesses in target definition. Regarding the first target, the SAI found that it proposes a strong reduction in deforestation during the first nine years, but after that, the reduction rate severely decreases. A problematic issue entails the identification of illegal deforestation, a key factor for specifying the target. With regard to stabilizing forest cover, the NPCC does not foresee implementation mechanisms necessary for achieving that target.
The implementation of REDD strategies in several countries of the region will facilitate the specification of quantitative targets from a reference scenario (based on changes in forest cover and emissions) together with the design of a monitoring system of impacts on GHG emissions.

Public Policy Instruments on Mitigation[11]

Reduction of GHG emissions

Audits found that public policy instruments on GHG emission reduction have a variable degree of development among countries. In some cases, national policy on climate change defines instruments to be adopted.
Main instruments identified are regulatory instruments, i.e., laws and other legal norms that promote emission reduction in different productive sectors. However, often those regulatory instruments do not specify scope, targets,

11 Public policy instruments for climate change mitigation comrprise: (a) regulations and standards, (b) subsides and incentives, (c) taxes and other charges, (d) tradable permits, (e) voluntary agreements, (f) information policies, (g) research and development.
WGEA-INTOSAI 2010. Auditing Government Response to Climate Change. ISBN 978-9949-9061-0-9.

responsibilities and timelines. Usually, regulatory instruments are poorly implemented due to lack of resources.
Although the survey of instruments performed during the coordinated audit has been biased to specific sectors, many of the countries have regulatory and economic instruments oriented towards energy generation and consumption (see Table 8) and transport. In some cases, instruments for reducing emissions from the waste and agricultural sectors have also been found.
Audit findings also showed that both national authorities and advisory bodies have insufficient information on the implementation of sectorial instruments (see Box 5).

Table 8. Instruments developed by Panama on GHG emission reduction.

Sector	Actions	Main results
Renewable energy	Projects within the Energy and Environment Alliance in Central America	Projects on solar, wind, and water energy, waste management, among others.
	Other projects	Rehabilitation of Panama creek, developed by Ministry of Health Landfill in Cerro Patacón, developed by Panama Municipality Coastal belt of Panama creek, developed by the Ministry of Public Infrastructure.
Energy efficiency and saving	Strengthening of energy efficiency and saving behavior	Training to public agents and school students at all levels. Educational resources. Guidelines for energy efficiency for industry and household. Energy efficiency program for the commercial and industrial sectors.
	Strategic alliances	Promotion of alliances among the government and academic institutions, to provide equipment for audits on energy in the public sector.
	Energy saving actions	Government sector: energy saving and GHG reduction, through replacement of incandescent bulbs and restrictions in the use of air-conditioners. Household sector: replacement of incandescent bulbs in 730,000 houses.
	Legal framework	Bill on rational use of energy promoting tax reduction for the importation of energy-efficient equipment and appliances.

Box 5. Audit findings of the SAI of Argentina on public policy instruments on emission reductions developed by the Secretariat of Environment and Sustainable Development (SEDS)

Strengths

There is a mechanism of previous consultation to assist project proponents in project formulation for CDM formally established and operational.

There is a Carbon Fund to help promote and develop CDM projects.

Guideline material for assisting project proponents in wastewater management, waste management, energy and forests has been elaborated.

SEDS together with provinces has launched a national strategy for managing solid waste that includes assistance for facility development such as landfills, treatment plants and closure of waste dumps.

Weaknesses

No evidence was found on the definition of objectives, scope, time schedules or responsibilities for the national programs on biofuels and energy, established by the SEDS. Programs were not funded, even when their implementation was recommended by the National Program on Adaptation to climate change, elaborated as part of the Second National Communication.

No evidence was found on the existence of a database with information on GHG emission reduction developed by diverse government agencies.

No evidence was found on the enforcement of the memoranda signed with several Annex I countries.

Conservation of carbon sinks

SAIs identified diverse public policy instruments on the conservation of carbon sinks, among which, regulatory and economic instruments are the most developed.

The most important regulatory instruments are laws oriented to the conservation of native forests and to combat desertification. In general, laws on forest conservation promote land use planning and sustainable management programs of native forests. Another key regulatory instrument in the region is represented by national frameworks on protected areas, promoting the conservation of the ecologically significant forest ecosystems.

Among economic instruments, it should be noticed the existence of systems of payment for environmental services[12], that are in place in several countries of the region[13]. These instruments consider economic compensation of local communities for preserving native forests and associated natural resources (see for example the Program Bolsa Floresta in Box 6).

Additionally, some countries have set forestry promotion regimes through which they provide economic incentives or tax benefits for forest plantations. These instruments are usually directed to the agricultural sector in order to compensate or mitigate native forest loss as a consequence of agricultural activities (see Box 7).

Relevant economic instruments identified by the SAI of Brazil are the green credit lines to promote sustainable development projects in the agricultural sector and the rehabilitation of degraded areas (see Table 7). However, audit findings point out that their degree of implementation in Amazonia is very low, compared to the national average.

Some SAIs inform that many of these instruments are incompletely defined and lack adequate implementation arrangements (budget, responsibilities, and timelines).

Like the situation of emission reduction, some SAIs indicate that the information relative to policy instruments on sink conservation on other government agencies is not centralized, preventing adequate performance control.

12 With some variants, systems of payment for environmental services are flexible mechanisms by which the providers of environmental services are paid by users. These systems, established by governments, aim at establishing sustainable land use practices.

13 Colombia, Costa Rica y Brasil.

Box 6. Good practices on carbon sink conservation in Amazonia identified by the SAI of Brazil

Climate change policy in the state of Amazonas (approved by law in 2007)
Remarkable objectives are to:
Build economic, financial and fiscal instruments to promote actions envisaged in the law;
Promote and establish market instruments to make viable the implementation of projects on GHG emission reduction from deforestation and clean energy either within or outside the CDM context;
Stimulate public and private initiatives and projects oriented towards the acquisition of funds for developing GHG emission reduction technologies;
Promote environmental education on climate change in traditional communities and school children;
Raise public awareness on global warming and its consequences.

State fund for Climate Change, Environmental Conservation and Sustainable Development
Created to assign public funds to the development of: (a) programs and actions to combat poverty and voluntary incentives to reduce deforestation; (b) monitoring, control, inventory, conservation and sustainable management of public forests and other conservation units of the state of Amazonas; (c) forestry promotion and reduction of deforestation and restoration of degraded areas, (d) projects for stabilizing GHG concentrations in the forestry, energy, transport, sanitation, building, mining, agricultural, fisheries and agro-industrial sectors.

Creation of the State Center for Climate Change (CECLIMA)
Agency of the Amazonas Government in charge of implementing the Law on Climate Change, Environmental Conservation and Sustainable Development. It is the first governmental center created to articulate and implement public policies on climate change.

Bolsa Floresta Program
It is the first Brazilian program dedicated to the payment for environmental services, oriented to reduce emissions from deforestation. Beneficiaries are people that live in conservation units within the state. It was formulated with the participation of local communities, and governmental and non-governmental organizations in Manaus.

Project on GHG emission reduction in the Juma Sustainable Reserve
Its main purpose is to stop deforestation and GHG emission in an area subject to heavy pressure from land use change.

Large-scale Program Biosphere-Atmosphere in Amazonia LBA
International research initiative leaded by Brazil. Its purpose is to increase the knowledge on the weather, ecological and hydrological functioning of Amazonia, together with the impact on land use change and interactions between Amazonia and global biogeophysical system.

Implementation of Kyoto Mechanisms

SAIs participating in the coordinated audit examined the implementation of the Clean Development Mechanism (CDM), established in the KP for developing countries.
Of 274 projects registered in the CDM Executive Board for the region, 65% are located in Brazil; implementation is much lower in the remaining countries (see Table 9).
Some countries have undertaken studies on the potential for CDM and existing barriers for its implementation. Among these, lack of funds for investments, scarce interest in small scale projects and uncertainties regarding emission markets and lack of governmental support are the most conspicuous.

Some SAIs examined the evaluation process applied by the designed national authority14 to CDM projects. Findings point to irregular procedures in the evaluation and approval of projects together with inadequate monitoring of projects already approved (see Boxes 7, 8 and 9).
In two countries, CDM Programme of Activities is already regulated; this instrument allows the procurement of CER from programs of activities applied by public or private entities implementing policies or measures to reduce GHG emissions or to increase carbon sinks. This tool, designed for developing countries, favors the inclusion of geographically isolated units into a single project.
As a regional initiative, the Iberoamerican Network of Climate Change Offices (RIOCC)15 has the purposes of identifying barriers to the development of CDM in the region and the creation of a regional portfolio of projects.

Table 9. Implementation of CDM in countries participating in the coordinated audit.

Country	Designated National Authority	Number of CDM projects			Emission reduction (ton CO2 eq) by year	CER emitted
		Total	National approval	Registered in the Executive Board of UNFCCC		
Argentina	Argentine Office for CDM	31	28	17	6,150,655.49	4,343,578
Brazil	Interministerial Commission on Climate Change	460		179		43,235,901
Colombia	Ministry of Environment, Household and Land Development	146	54	24	4,895,923	769,965
Costa Rica	Ministry of Environment, Energy and Telecommunications (MINAET) – Joint Implementation Office (OCIC)		6	3		45,787
El Salvador	Ministry of Environment and Natural Resources- Clean Development Unit	6	6	6	591,444	416,517
Honduras	Secretariat of Natural Resources and Environment		16	16		412,046
Panama	National Authority on Environment		6	6		
Paraguay	Secretariat of Environment – CDM National Office			1		
Peru	Ministry of Environment		39	22	66,000,000[1]	472,867

Source: Clean Development Mechanism website.

14 Argentina, Honduras, Paraguay.
15 RIOCC was established in 2001 and is formed by 20 countries in the region and Spain. Its work plan includes CDM, mitigation, adaptation, training and awareness.

Box 7. Weaknesses in the implementation of CDM in Paraguay

In examining the performance of the Secretariat of Environment (SE) and of the National Office for the Clean Development Mechanism (NOCDM) the SAI of Paraguay found the following weaknesses:

(a) SE has not launched the CER certificates of CDM projects. This results in the lack of quantification of GHG emissions at the national level.

(b) By the time of the end of the audit, NOCDM failed to analyze the potential for GHG emission reduction outside the Kyoto Protocol, as it is established in Resolution SEAM 150/04.of projects for GHG emission reduction at the international level.

(c) The CNCC did not comply with the previous evaluation of Project activities within CDM, as indicated by article 3 of Resolution SEAM 1663/05, which establishes the guidelines and procedure to present CDM projects. This situation determines that Project activities are not supported by CNCC.

Box 8. Strengths and weaknesses in CDM Project management in Argentina

The SAI of Argentina examined the implementation of CDM by the Argentine Office for the Clean Development Mechanism (AOCDM) regarding: (a) legal and institutional framework for implementation; (b) evaluation process of CDM projects according to the procedure established; (c) CDM effectiveness in the accomplishment of emission reduction targets; (d) public availability of information. The audit allowed identifying positive and negative aspects of government performance.

Strengths

The evaluation process of CDM projects established in 2004 is operational. As to July 2010, 28 projects have been approved and 3 are under evaluation.

Assistance guidelines for projects proponents on legal and financial issues have been developed.

Normative instruments for CDM operation have been elaborated: (a) regulation to include CDM programme of activities; (b) draft regulation for monitoring projects approved; (c) draft regulation for creating the national program on carbon neutral municipalities, through which the government will assist municipalities in estimating their carbon footprint and in establishing an emission reduction and neutralization plan.

A bilateral cooperation agreement with the Japanese International Cooperation Agency on forestry and reforestation has been implemented. In this context, several feasibility surveys and training workshops for implementing forest CDM have been undertaken.

Several national and international seminars and workshops for promoting CDM have been carried out.

Weaknesses

The evaluation process is poorly documented.

Technical evaluation of projects is neither exhaustive nor homogeneous. Evaluation by expert institutions has not been implemented, which determined, in practice that additionality analyses and baseline studies of projects (net emission reduction and monitoring plan), economic aspects (use of state promotional regimes, economic and financial revenue, and financial sources) and technical feasibility (methodology proposed in the monitoring plan of the project, frequency and equipment) are partial.

Monitoring of projects already approved has not been implemented.

Box 9. Weaknesses in the implementation of CDM in Honduras

The SAI of Honduras examined the process of CDM projects by the General Directorate of Energy (DGE) of the Secretariat of Natural Resources and Environment. Weaknesses detected are:

Lack of a monitoring plan for certified projects.

No statistical record of emission reduction attained by CDM projects already implemented.

Lack of guidelines on mission and functions of the designated national authority.

Lack of record of CER documents for operational CDM projects.

No documentary evidence of information required for approval letter of CDM projects.

6 CDM projects on hydroelectrical power generation without approval or government support are operating,

2 CDM projects lacking environmental license are operating.

Performance Monitoring and Evaluation of Mitigation

Audits performed found that, in general, national environmental authorities have not developed procedures for measuring and monitoring progress in GHG emission reduction. Even when national plans or strategies envisage such procedures, no evidence of performance monitoring has been found.

The development of performance monitoring and evaluation mechanisms for the conservation of sinks is also poor. In some countries there are provisions for measuring the results of policy instruments applied, such as forest cover monitoring and other ecological parameters.

Whenever specific multisectorial bodies exist, these have not controlled the implementation of mitigation plans and programs in government agencies involved; besides, responsibilities on performance control are generally not well defined (see Box 10; see also chapter 2).

Likewise, countries do not have monitoring mechanisms of incomes and expenses related to mitigation actions. Moreover, in some cases, governments have not complied with their obligations regarding UNFCCC payments.

Audit findings coincide in that this aspect is critically weak in all countries. The lack of reasonable accountability arrangements hampers the measurement of progress made and reduces transparency.

Box 10. Weaknesses in performance control of the National Commission on Climate Change in Paraguay

The SAI of Paraguay examined the implementation of disbursement monitoring mechanisms in GHG emission reduction by agencies that form the National Commission on Climate Change (CNCC). For this purpose, two indicators were defined: existence of monitoring for disbursement in mitigation and accountability of government action.

Considering the 13 agencies part of the CNCC, only the Ministry of Industry and Commerce (MIC) implemented disbursement monitoring regarding climate change mitigation. With reference to accountability, only the ministry of agriculture (MAG) performs accountability arrangements.

Based on the exam, the following situations have been detected:

a) The national government has not undertaken public consultation on the performance of agencies taking part in CNCC with regard to climate change mitigation.

b) The national government has not developed monitoring and evaluation strategies on the Plan 2008 – 2012 "Paraguay ante el Cambio Climático" prepared by the Secretariat of Environment in the context of the National Program on Climate Change, which is based on the Bali Action Plan.

Effectiveness of Mitigation Efforts

Given that there is no information on performance of public policy instruments implemented by governments, in general, the effectiveness of such instruments in emission reduction is unknown. This situation is also related to the absence of proper planning and of clear and measurable targets.

Some SAIs found that performance evaluation exists within specific sectorial plans, but they found no evidence of integral evaluation by the national authority or by the body coordinating climate change policy.

In countries where at least two national communications have been prepared, these documents often represent the single evaluation instance, since they include a comparative analysis of the evolution of GHG emissions among sectors. In such cases, a low level of effectiveness has been found, indicating even some sectorial increases in GHG emissions (see chapters 2 and 3).

In two countries evidence was found that policy instruments on forest conservation and restoration are ineffective. In this sense, the SAI of Brazil found that the agrarian reform policies implemented by the government in Legal Amazonia have been ineffective regarding reducing deforestation, since in the period 2003-2008 deforestation by rural settlements managed by INCRA has risen from 12.7% to 21%. On the other hand, the SAI of Peru found that forestry and reforestation plans controlled by the Ministry of Agriculture did not contribute to reducing deforestation (see Box 11).

Box 11. Audit findings of the SAI of Peru in relation to carbon sink conservation

Reforestation projects in the agricultural sector are not reversing existing deforestation

The SAI of Peru examined the action of the Ministry of Agriculture (MINAG) with regard to the implementation of the National Agricultural Policy in relation to environmental issues. Main findings are:

1. There is no evidence that MINAG has implemented concrete actions for reducing deforestation, according to the National Agricultural Policy. Action of MINAG is insufficient to reverse deforestation, which by 2000 affected an area of 7 172 553,97 ha of Peruvian Amazonia.
2. Main products of MINAG limited to the elaboration of norms and plans, while direct intervention on forest projects did not take place, or covered small areas. Direct intervention of MINAG by 2006 covered 797,788 ha, an area insignificant compared to the area affected by deforestation and are located outside Amazonia, the region most affected by deforestation and largest watershed in the country. Finally, actions implemented are not oriented towards climate change mitigation, rather, they focus on plantation installation and management and restoration of natural pastures.
3. Regarding planning, MINAG has the "National Forest Strategy 2002–2021" and the "Reforestation National Plan 2005–2024", giving guidelines for climate change mitigation at the national level, particularly on watershed reforestation and natural resource management. Likewise, MINAG performed a number of studies on deforestation, land use change, vulnerability, and socioeconomic and cultural factors contributing to deforestation and thus increasing GHG emission in Peruvian Amazonia. Also, there is regulation on conservation in productive projects. Another important instrument is the Forest Management Plan for forest units located in native communities; the forest annual operational plan, Wildlife management plans in state lands.
4. Even, projects implemented by MINAG did not achieve mitigation targets. In particular, the project "vigilance system of deforestation and land use change" (December 2 2008), implemented by MINAG through INRENA "… was only in charge of supervising, receive, analyze, evaluate and give conformity to the consultant projects and contracts undertaken … and did not implement the recommendation given in those studies".
5. Some other forest and reforestation projects by MINAG were focused only on 24 750 ha, and were subject to the evaluation process for CDM projects of FONAM, agency responsible for the implementation of the CDM.
6. Carbon capture has neither been the focus of MINAG action, rather, its action was directed towards improving quality of life of rural families, via the diversification of forest production and sustainable use of natural resources and establishing forest plantation with industrial purposes through the improvement of sustainable management in unexploited land, in order to generate revenue and employment.

For the reason indicated above, MINAG action on mitigation is insufficient and does not contribute to reducing deforestation, lacking intervention in vulnerable geographic areas, according to the objective and goals of the national strategy on climate change and commitments assumed under UNFCCC.

CONCLUSION

The relative importance given in each country to GHG emission reduction compared with sink conservation is correlated with the sectors representing major sources of GHG emission. Thus, in most countries of the region, the focus is mainly on sink conservation, since most part of emissions come from deforestation and associated changes in land use patterns.

Audit findings indicate that, in spite of the existence of numerous sectorial plans for emission reduction, national-scale plans or strategies are lacking. At the regional level, Central America countries have launched a regional strategy on climate change, in the context of the Central America Integration System. Moreover, several countries in the region actively participate in international negotiation forums, within United Nations and UNFCCC and KP meetings.

With the exception of Brazil, Costa Rica and Colombia, countries in the region have not set specific targets for GHG emission reduction, which prevents performance measurement, communication of results and adequate accountability.

Public policy instruments on emission reduction established by governments have a variable degree of development, being the most prominent the regulations for the energy, transport and waste sector.

A recurrent finding in the coordinated audit is the weak articulation among sectorial plans and programs on emission reduction, deriving usually from deficiencies in resources, operational capacity and organizational structure of government agencies involved.

With reference to the implementation of CDM, all countries in the region have established a designed national authority and procedures for the evaluation and approval of projects. SAIs that assessed processes of CDM projects evaluation found common weaknesses, such as the lack of transparent procedures and the lack of monitoring mechanisms for projects already approved.

As to plans and programs for carbon sink conservation, all countries have either plans or strategies for the conservation and sustainable management of native forests. However, existing tools are not sufficient for securing carbon capture in the amounts required to mitigate climate change.

Although reducing deforestation is a general goal of all countries in the region, most of them have not set quantitative targets for conservation and sustainable management of forests. While Brazil has specified two quantitative targets in its National Plan on Climate Change, these targets have not been scaled down to plans and programs. REDD strategies being implemented in various countries constitute an opportunity for improving planning instruments at the domestic level.

Some counties have move forward to the implementation of specific instruments for preserving carbon sinks; among them, the schemes for payment for environmental services and green credits should be highlighted.

In all countries, the weakest aspects of mitigation action refer to the absence of performance monitoring mechanisms.

KEY CHALLENGES

The principal common challenge is to incorporate the "management by objectives and results" paradigm into the planning process, defining specific, measurable, attainable, relevant and timely targets. Planning for climate change mitigation must also include implementation mechanisms, financial sources and guidelines for conducting performance monitoring and evaluation.

It is necessary that those countries that still lack national strategies on climate change, complete the formulation of those instruments in order to count with a general framework for the diverse sectors and jurisdictional levels. Strategies should be formulated through a participatory process, which includes relevant stakeholders, both from the government and the civil society.

Planning for carbon sink conservation should also be improved, promoting the adoption of REDD strategies in all countries of the region.

National environmental authorities and multisectorial coordination bodies should be strengthen, so they are able to integrate sectorial efforts to mitigate climate change.

Governments should reinforce local capacities to broaden the national portfolios on CDM projects, emphasizing training and diffusion. The process of evaluation of CDM projects should be improved to ensure transparency and promote projects contributing to sustainable development, according to national priorities. Besides, performance monitoring and evaluation of projects already approved should be established.

A key issue to address is the need for performance monitoring and evaluation provisions, that encompass the compilation and systematization of information on instruments in place and the measurement of indicators that facilitate bias detection and the enforcement of corrective actions.

Finally, with regard to regional performance, regional cooperation forums should be strengthened to promote institutional development and information exchange, especially in small countries.

ADAPTATION

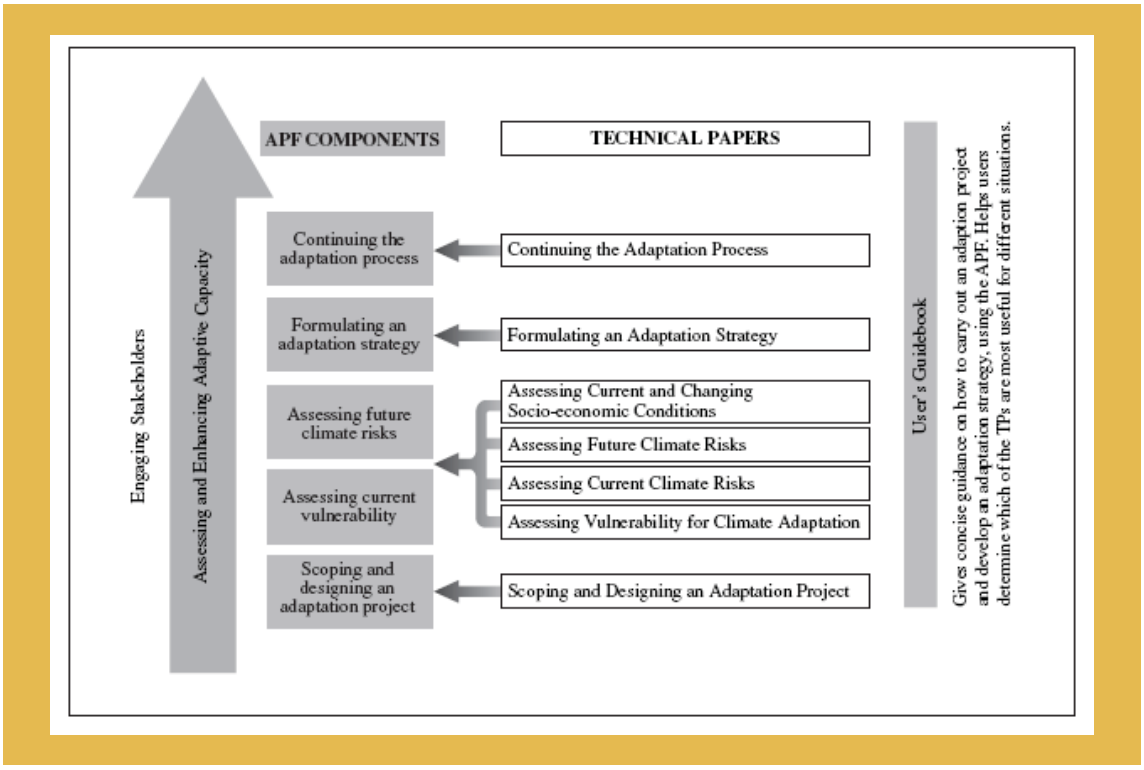
According to IPCC, adaptation refers to the adjustment of natural and human systems in response to actual or expected climate change effects. Several types of adaptation can be distinguished, such anticipatory versus reactive, private versus public, and autonomous versus planned.

Latin America is considered vulnerable to climate change due to the presence of five critical features acknowledged by UNFCCC to qualify in that category: low coastal zones, arid and semiarid regions, areas exposed to floods, drought and desertification and fragile mountain ecosystems. For this reason, vulnerability studies should be conducted in each country to determine appropriate adaptation measures.

It should be noted that adaptation efforts have to be set in a coherent and increasing way until they become a strategy, as shown in Figure 2.

As part of the coordinated audit, SAIs examined actions taken by governments in the implementation of commitments assumed under the UNFCCC regarding adaptation, especially actions oriented to cooperate in the preparation to face the impacts of climate change, the development of appropriate and integral land use planning in coastal zones, water resources and agriculture, and for the protection and rehabilitation of areas affected by drought, desertification and flood.

Figure 2. Components of the Adaptation Policy Framework.



Source: Adaptation Policy Framework. United Nations Development Program, 2005.

Risk Evaluation

Adaptation proposals should be based on a diagnosis of vulnerabilities to present and future climate change scenarios. An adequate characterization of vulnerabilities at the country-level is a milestone to develop strong adaptation strategies; otherwise, the risk exists to invest resources in areas or issues that are not priority.
Audits found that governments in the region have not done exhaustive studies to evaluate risks to climate change. Other persistent deficiencies are the prioritization of areas/regions where to take action and the formal definition of adaptation measures.
Besides, none of the countries has performed a comprehensive analysis on the economic impacts of climate change, which gives two possible scenarios, either governments have disperse information on some economic sectors, or adaptation efforts are still incipient in spite of the fragility symptoms and other phenomena associated with climate change.
Most of the countries have developed some risk evaluation surveys in specific locations, corresponding to autonomous adaptation. These studies were mainly oriented towards presenting proposals for adaptation measures that may be used as model and guidance for implementing adaptation measures in other zones. However, replication did not take place and in general, adaptation measures have not been implemented, which indicates the low value given to the issue.

commitments RELATED TO adaptation to climate change

Although countries in the region are preparing for the development of adaptation strategies, up to date there are no national adaptation programs of action, according to the guidelines provided by the Convention.
In general, despite the urgent need to take action in this subject matter, governments have not stated national commitments in relation to adaptation policy. Most of the countries have not clearly defined which areas should receive prior risk and vulnerability assessments regarding climate change. Adaptation proposals and measures have not been either integrated or formally adopted.
While the existence of isolated adaptation efforts is recognized, audits results show there is still a long path to walk for the adaptation issue to be properly treated in the government agenda.
Climate change effects will certainly impact on objectives and targets of current policies on biodiversity, clean production, solid and hazardous waste management, food security, water provision, forest conservation and management, sustainable development of marine, coastal and insular ecosystems, among others. In this regard, SAIs found no evidence on the ways in which competent institutions will develop efforts to harmonize objectives and strategies of those policy instruments[16] with climate change effects, based on vulnerabilities identified. It should be stressed that no policy instruments on adaptation have been developed, nor specific targets have been set.
In cases where integral evaluations have been performed, it is apparent that the phase referring to the design of supervision and monitoring mechanisms has not been developed. This situation is exacerbated by the lack of a system that actively promotes vulnerability research and articulates available scientific information with needs identified.

16 Se consideran Instrumentos de Política Pública en materia de Adaptación al Cambio Climático, los siguientes: a) Instrumentos Legales, b) Instrumentos Económicos y c) Instrumentos relativos a la Información.

Conclusion

Despite the high significance of adaptation for the region, governments have not institutionalized appropriate measures and instruments to face the adverse effects of climate change in a systematic, planned and regulated way, which derives from the absence of a general adaptation strategy, and from the lack implementation mechanisms and necessary resources, which hamper performance monitoring and evaluation.

Key Challenges

Governments in the region should incorporate adaptation in national policies and plans, especially considering future scenarios on extreme weather events and other consequences of climate change. It is necessary to develop effective response instruments along with short and medium term policies at the domestic level.
Risk management should be explicitly incorporated in national strategies on climate change and in other related public policies, especially with regard to land-use planning and sustainable socio-economic development.
Governments should increase public investment and promote the participation of the private sector in information generation, including the refinement of climate simulation models at the regional scale that could be use as inputs for plans and programs oriented to adaptation to climate change and to include the issue in the public agenda of federal, regional and local authorities.
Whenever corresponds, countries should build or strengthen the institutional framework for planning to coordinate action among agencies involved.
Additionally, instruments should be adopted to measure effectiveness of the adaptation instruments implemented, that include quantitative indicators and to update available information with reference to adaptation mechanisms.
It should be stressed the need to apply procedures recommended in the adaptation policy framework given by the Convention, considering the five stages: scoping and designing the adaptation project, assessing current vulnerabilities, assessing future climate change risks, formulation of an adaptation strategy, and implementation of a monitoring and evaluation mechanism.
Governments should make efforts to improve institutional capacity to achieve a proper and coordinated action in adaptation, taking into account the particular characteristics of each country.
Finally, land use planning should be highlighted as a key tool to address adaptation challenges in vulnerable zones in order to protect livelihoods and life quality of the population.

FINAL THOUGHTS

Climate change, one of the major environmental issues in contemporary times, has led to the establishment of a global accord to face challenges posed by global warming and associated environmental changes.

Results of the coordinated audit give a picture of government performance on climate change in Latin America. Progress made by countries participating in the coordinated audit is still insufficient and the region is poorly prepared to address challenges posed by this problem.

This situation becomes apparent from the analysis of climate change governance and actions enforced in mitigation and adaptation, which are still far from becoming effective measures that benefit human and natural environment.

In this state of affairs, some issues shared by countries in the region are relevant in view of their geographic features or because of their influence on other issues. Like this, one of the central aspects of government response to be improved is adaptation. Latin America contains some of the world most vulnerable countries to climate change. However, most of them have not developed adequate adaptation measures. Without a strong adaptation strategy, human populations and natural environments will continue to be highly vulnerable.

Government response has emphasized mitigation action. This response is more similar to that of developed countries, which do have quantitative obligations to reduce GHG emissions (Annex I parties to the convention). Latin America does not have that urgency regarding mitigation; contrarily, it has an urgent need to develop and reinforce adaptation action. Moreover, mitigation measures implemented focus mainly on reducing GHG emission from diverse sources, primarily through the implementation of CDM projects, while the increase of carbon capture in sinks has received much less attention. This is reflected in the failure to reduce deforestation, a problem that constitutes one of the major sources of GHG emission in the region. In other words, emission reductions (obligation of developed countries) has bee prioritized in detriment of the conservation of carbon sinks (need of developing countries).

With regard to organizational aspects, findings of the coordinated audit indicate some progress in the development of policies and plans and in the establishment of intersectorial committees to coordinate action. However, good governance requires clearly defined roles and responsibilities, quantitative measurable targets and suitable accountability arrangements. At present, most of the countries in the region have deficiencies in these aspects, which indicate weak institutionalization of climate change issues.

Currently, most of the governments in the region face weaknesses in these issues, indicating that climate change is not fully institutionalized. Coordination need to be reinforced to adequately include climate issues in public policy instruments and thus facilitate articulation with sectorial policies.

Lack of clear role definition also affects technical aspects such as data compilation and GHG inventory elaboration, which affects the quality of national communications. In countries taking part in the coordinated audit, research has not received enough government support. This, in turn, causes that national communications are not elaborated on a regular basis.

A common weakness is the lack of control mechanisms. None of the government agencies examined in this audit has put in place measures for evaluating the performance of adaptation measures and instruments, and mitigation control is weak. These flaws preclude performance monitoring and evaluation of actions implemented.

In view of the pervasive and persistent nature of climate change, governments should reinforce control mechanisms to attain good governance and effective action.

GLOSSARY

Adaptation: Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects. Various types of adaptation exist, e.g. anticipatory and reactive, private and public, and autonomous and planned. Examples are raising river or coastal dikes, the substitution of more temperature-shock resistant plants for sensitive ones, etc.

Annex I countries: The group of countries included in Annex I (as amended in 1998) to the United Nations Framework Convention on Climate Change (UNFCCC), including all the OECD countries in the year 1990 and countries with economies in transition. Under Articles 4.2 (a) and 4.2 (b) of the Convention, Annex I countries committed themselves specifically to the aim of returning individually or jointly to their 1990 levels of greenhouse gas emissions by the year 2000. By default, the other countries are referred to as Non-Annex I countries. For a list of Annex I countries, see http://unfccc.int.

Anthropogenic: Resulting from or produced by human beings.

Anthropogenic emissions: Emissions of greenhouse gases, greenhouse gas precursors, and aerosols associated with human activities, including the burning of fossil fuels, deforestation, land-use changes, livestock, fertilization, etc.

Certified emission reduction (CER): CERs are certificates issued by bodies of the UNFCCC and the KP that represent the amount of GHG emissions avoided through the implementation of the Clean Development Mechanism. Each CER is equivalent to one tonne of CO2.

Clean Development Mechanism (CDM): Defined in Article 12 of the Kyoto Protocol, the CDM is intended to meet two objectives: (1) to assist parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the convention; and (2) to assist parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments. Certified Emission Reduction Units from CDM projects undertaken in Non-Annex I countries that limit or reduce greenhouse gas emissions, when certified by operational entities designated by Conference of the Parties/Meeting of the Parties, can be accrued to the investor (government or industry) from parties in Annex B. A share of the proceeds from the certified project activities is used to cover administrative expenses as well as to assist developing country parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation.

CDM Executive Board: supervises the Kyoto Protocol's Clean Development Mechanism under the authority and guidance of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (COP/MOP). The CDM EB is fully accountable to the COP/MOP.

Climate variability: Climate variability refers to variations in the mean state and other statistics (such as standard deviations, the occurrence of extremes, etc.) of the climate on all spatial and temporal scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability).

Deforestation: Conversion of forest to non-forest. For a discussion of the term forest and related terms such as afforestation, reforestation, and deforestation see the IPCC Report on Land Use, Land-Use Change and Forestry

(IPCC, 2000). See also the Report on Definitions and Methodological Options to Inventory Emissions from Direct Human-induced Degradation of Forests and Devegetation of Other Vegetation Types (IPCC, 2003).

Greenhouse gas (GHG): Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself, and by clouds. This property causes the greenhouse effect. Water vapor (H2O), carbon dioxide (CO2), nitrous oxide (N2O), methane (CH4) and ozone (O3) are the primary greenhouse gases in the Earth's atmosphere. Moreover, there are a number of entirely human-made greenhouse gases in the atmosphere, such as the halocarbons and other chlorine and bromine containing substances, dealt with under the Montreal Protocol. Beside CO2, N2O and CH4, the Kyoto Protocol deals with the greenhouse gases sulphur hexafluoride (SF6), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs).

Mitigation: Technological change and substitution that reduce resource inputs and emissions per unit of output. Although several social, economic and technological policies would produce an emission reduction, with respect to Climate Change, mitigation means implementing policies to reduce greenhouse gas emissions and enhance sinks.

Non-Annex I Parties: are mostly developing countries. Certain groups of developing countries are recognized by the Convention as being especially vulnerable to the adverse impacts of climate change, including countries with low-lying coastal areas and those prone to desertification and drought. Others (such as countries that rely heavily on income from fossil fuel production and commerce) feel more vulnerable to the potential economic impacts of climate change response measures. The Convention emphasizes activities that promise to answer the special needs and concerns of these vulnerable countries, such as investment, insurance and technology transfer.
Reducing Emissions from Deforestation and Forest Degradation (REDD): is a mechanism to create an incentive for developing countries to protect, better manage and wisely use their forest resources, contributing to the global fight against climate change. REDD strategies aim to make forests more valuable standing than they would be cut down, by creating a financial value for the carbon stored in trees. Once this carbon is assessed and quantified, the final phase of REDD involves developed countries paying developing countries carbon offsets for their standing forests. REDD+ strategies go beyond deforestation and forest degradation, and include the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in reducing emissions. There are several initiatives for implementing REDD and REDD+ strategies, including the United Nations Programme (UN-REDD), Forest Carbon Partnership Facility (FCPF), and the Forest Investment Program (FIP).
Sink: Any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas or aerosol from the atmosphere.

Sustainable Development (SD): The concept of sustainable development was introduced in the World Conservation Strategy (IUCN 1980) and had its roots in the concept of a sustainable society and in the management of renewable resources. Adopted by the WCED in 1987 and by the Rio Conference in 1992 as a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations. SD integrates the political, social, economic and environmental dimensions.

Vulnerability: Vulnerability is the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity.

ANNEX 2 - PARTICIPANTS

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