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A Comparative Study of Climate Change Institutional Arrangements in Selected Countries

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ABSTRACT

Institutions are at the heart of societal progress and advancement. Climate change institutions are more complex than other types of institutions because climate change is a cross-cutting issue that is not restricted to a single institution. Climate change requires high levels of coordination and access to resources, both human and financial. This study examines the characteristics of climate change institutional arrangements in five countries. In spite of different conditions existing in these countries, there is a high level of similarity in institutional arrangements. All five countries have a Ministerial level or official level coordinating body on climate change that make important policy decisions that affect climate change. In some countries, the body is chaired by the Prime Minister or Deputy Prime Minister and included other relevant Ministers such as Energy, Trade and Industry and Finance. This underscores the cross-cutting nature of climate change and the need for coordination at the highest level. In all five countries, climate change policies or action plans had been launched and were being implemented. To address climate change, all five countries had either climate policies or climate legislation in place. They had also set up either permanent or ad-hoc technical bodies to help in policy-formulation and implementation. They also had permanent or ad hoc arrangements for stakeholder consultations. Finally, they all had Measurement, Reporting and Verification (MRV) systems in place. This high level of institutional similarity could be due to institutional isomorphism.

Keywords: climate change institutional arrangements; institutional isomorphism; climate change policy; climate change legislation; measurement; reporting and verification.

1. Introduction

Since climate change can undermine the development gains made by countries, countries have taken measures to address it. Due to the complexity of climate change, such measures have to be planned and implemented by organizations. As such, organizations are at the heart of much work to address climate change. Organizations influence human actions and behaviour through policies, legislation and programmes. In short, organizations influence outcomes on climate change.

There is indeed a pressing need to design institutions that foster climate resilient development that can bring about change through implementing projects, stakeholder engagement, attract resources and promote public awareness.

It is important to ensure that the proper organization is in place otherwise interventions in the form of legislation and policies may not be effective. Institution building is hard work involving multiple stakeholders. The next section will examine the main features of climate change institutional arrangements in five countries. Due to the different circumstances in these countries, we would expect differences in their institutional arrangements.

However, this study found that the climate change institutional arrangements in the five countries to be very similar. This could be due to the phenomena known as institutional isomorphism (DiMaggio and Powell, 1983).

2. Literature Review

Institutions are at the heart of much work to address climate change. This is because institutions influence human actions and behaviour through policies, legislation and programmes. It cannot be denied that the institutional capacity, embedding of climate aspects of policy making and coordination of activities across departments and sectors will affect the ability to manage climate change (German Federal Environment Agency, 2013).

Climate change is certainly one of the most difficult problems faced by the human race. This raises the possibility that the institutions that have been designed in the past to solve human problems in specific sectors such as education, poverty or agriculture, may not be adequate to the difficult task of managing climate change.

Climate change requires changing the way production and consumption in many sectors like energy and transportation are currently being done (Meadowcroft, 2009). New institutions to transition to low carbon futures need to be formed (Khan, Kronsell and Hildingsson, 2010). Climate institutions also need to innovate especially in the field of technology if solutions to climate change are to be found (Sagar, Bremer and Grubb (2009). Moreover, as a cross-cutting issue affecting many agencies, climate change has to be managed through coordinating the work of many agencies (Zhou and Mori, 2010).

In this article, we examine the institutional arrangements on climate change in five countries. These countries have been chosen because they are good examples of countries that have to cope with the need to develop institutional arrangements that address climate change while coping with developmental challenges.

In spite of very different socio-economic conditions in the five countries in this study, they exhibit very similar features in their institutional mechanisms to manage climate change. This may be due to the phenomena known as institutional isomorphism (DiMaggio and Powell, 1983).

Institutional isomorphism is a common approach in managing problems, such as climate change. There are three ways in which common approaches can emerge, mimetic, coercive and normative. Mimetic isomorphism is copying what other organizations are doing. This is quite a normal occurrence since countries learn about what other countries are doing through reports, meetings and visits to each other. The meetings of the United Nations Framework Convention on Climate Change (UNFCCC) are also very beneficial to countries mainly due to their ability to foster exchange of ideas on climate change. However, it is unlikely that ideas from other countries are adopted wholesale. Modifications are often needed before ideas can be adopted in countries where they did not originate.

Coercive isomorphism happens when external pressures for change force countries to adopt approaches, structures and ideas from other countries to deal with challenges. There is certainly much that countries have to learn from each other in terms of setting up institutions, policies and laws to address climate change.

Finally, normative isomorphism occurs when organizations try to adopt standards and methodologies that are generally accepted by all countries. In the field of climate change for example, standards exist on preparation of greenhouse gas emissions. Without such standards, it would not be possible to have comparisons of greenhouse gas emissions that would be acceptable to all countries.

3. Climate Change Institutional Arrangement in Five Countries

3.1 South Korea

Climate change is viewed as a national security issue in South Korea's Third National Communication. Therefore, addressing climate change is a priority and it has been mainstreamed throughout the country's political framework. The Presidential Committee on Green Growth (PCGG) was established through the Framework Act on Low Carbon, Green Growth in 2009. The PCGG was Korea's main institution for low-carbon, green growth strategies and their alignment with Korea’s national development (Ministry of Environment, Republic of Korea, 2011).

It was a high-level committee chaired by the Prime Minister and a civilian appointee of the President, with appointees of the President with expert knowledge and experience in low carbon, green growth, including climate change, energy and resources, green technology, green industries, or sustainable development as members. Furthermore, the Enforcement Decree to the Framework Act named high officials from all relevant ministries as Commissioners to the PCGG.

Korean ministries have drafted five year plans in line with the government's Five-Year Plans. Similarly, mayors and governors formulated local action plans for their jurisdictions (South Korean Government, 2010).

The Ministry of Environment (MOE) is responsible for the overarching framework of the GHG and Energy Target Management Scheme, and coordination among the relevant Ministries. It is also in charge of emissions in the waste sector. Furthermore, it issues guidelines for Measurement, Reporting and Verification (MRV) measures and methods.

Other ministries involved in climate change include the Ministry of Knowledge Economy (MKE) relating to the energy and industrial sector, the Ministry for Food, Agriculture, Forestry and Fisheries (MFAFF), with responsibility for agriculture and livestock, and the Ministry of Land, Transport and Marine Affairs (MLTM), which is concerned with buildings and transport. The institutional framework is shown in table 1.

3.1.1 MRV Institutions

South Korea is one of the developing countries that has already submitted three national communications under the UNFCCC. The Initial National Communications was developed by the Ministry of Trade, Industry and Energy (MTIOE) and the second National Communications by the Ministry of Knowledge Economy (MKE). The third National Communications has been prepared by the Greenhouse Gas Inventory and Research Center of Korea (GIR) and published by the MOE. The institutions which are involved in the preparation of the GHG inventory and MRV activities are listed in figure 1.

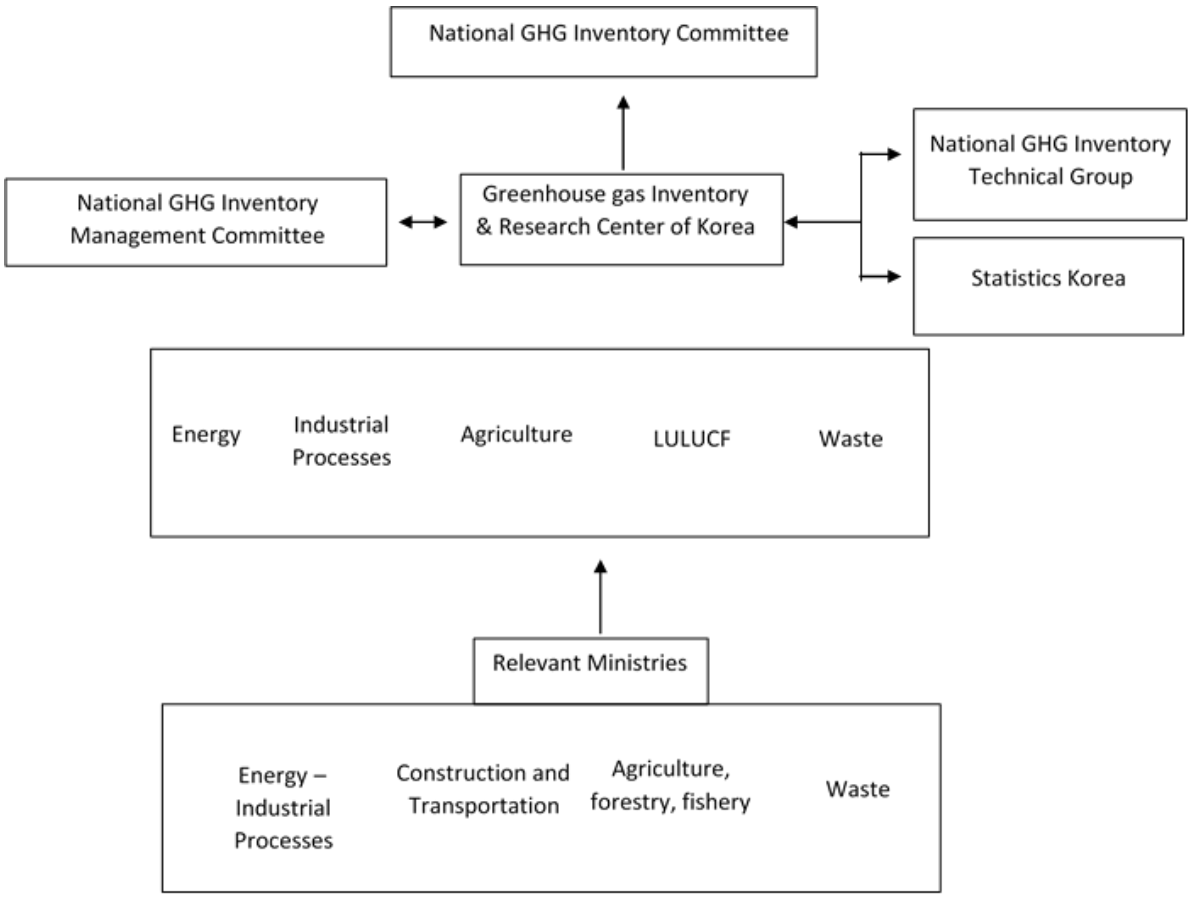
The National GHG inventory committee is the approving authority for the national GHG inventory and manages all matters pertaining to greenhouse gas inventories. The Greenhouse Gas Inventory and Research Center of Korea (GIR) is the key coordinating organisation for the national GHG inventory. It was formed in 2010 under the MOE to act as a GHG inventory hub and mitigation research think tank based on the Framework Act on Low Carbon, Green Growth.

Table1: Institutional Framework for Climate Change in South Korea

Level	**Government Institution**	**Role and Responsibilities**
Legislative and framework level	National Assembly	Enacts Acts
	President (executive, head of state)	Issue Presidential Decrees
Programmatic level	PCGG	Mandated to coordinate work on Low-Carbon, Green Growth
	MOE	Main responsible ministry for climate-and environment-related issues, draft bills Coordinates domestic five-year plan on Low-Carbon, Green Growth

		Responsible for policy coordination in the waste sector
	Relevant ministries: MKE MFAFF MLTM	Respectively: responsible for policy coordination in the following sectors Energy and industrial sector Agriculture and livestock Buildings and transport
Provincial level	City mayors Provincial governors	Overseeing and coordinating provincial mitigation policies and actions Write local five-year plans

(Source: German Federal Environment Agency (2013).



(Source: Ministry of Environment, Republic of Korea (2011).

Figure 1: MRV Institutions in South Korea

3.1.2 Summary

South Korea has put in place a stable mechanism for the institutional implementation of its Low Carbon, Green Growth national strategy. The strategy has been streamlined into public agencies that are related to greenhouse gas reductions. The national framework is coordinated by the Presidential Committee on Low Carbon, Green Growth and implemented through five-year plans by all relevant ministries.

3.2 Mexico

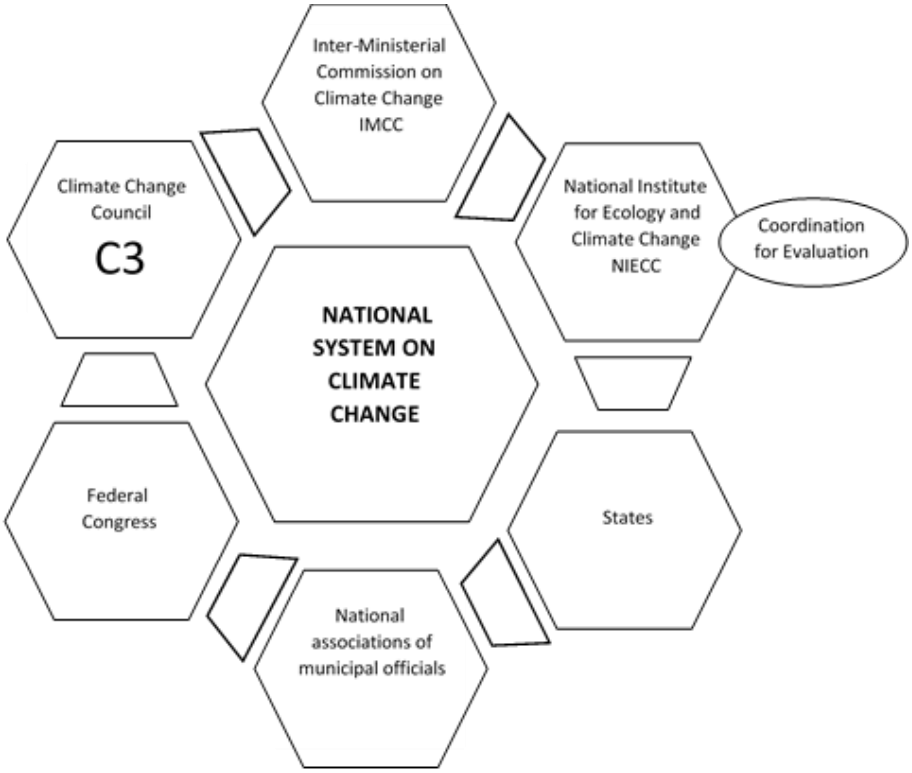
Mexico uses the General Law on Climate Change (GLCC) to address climate change. This law has provisions for a long-term, systematic, decentralized, participatory and integrated approach to adaptation and mitigation actions.

The scope and content of the national climate change policy, and the obligations of various authorities are contained in the GLCC. It also establishes the institutional mechanisms that manage climate change. The Federal Government is in charge of formulating and conducting the national climate change policy based upon clearly defined principles.

To achieve the effective coordination of different government orders, as well as the agreement between public, private, and social sectors, the GCCL sets up the National Climate Change System (NCCS). The NCSS is made up of the Inter-Ministerial Commission on Climate Change (IMCC), the National Institute for Ecology and Climate Change (NIECC), the Climate Change Council (C3), the States, the national associations of municipal officials and the Federal Congress.

The IMCC is the permanent mechanism in charge of coordinating actions between institutions of the Federal Public Administration in the matter of climate change. It is integrated by 13 Ministries: Ministry of the Interior, Ministry of Foreign Affairs, Ministry of the Navy, Ministry of Finance and Public Credit, Ministry of Social Development, Ministry of Environment and Natural Resources, Ministry of Energy, Ministry of Economy, Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food, Ministry of Communications and Transportation, Ministry of Public Education, Ministry of Health, and Ministry of Tourism (Ministry of Natural Resources and Environment, Mexico, 2013).

The functions of the IMCC include: (1) to formulate and implement national policies on climate change mitigation and adaptation, and incorporate them into the corresponding sector programs and actions; (2) to develop criteria for the cross-cutting and comprehensive nature of public climate change policies so that they may be applied by institutions of the centralized and state-owned Federal Public Administration; (3) to approve the National Climate Change Strategy; and (4) to participate in the elaboration and implementation of the Special Climate Change Program (SCCP) (Ministry of Natural Resources and Environment, 2013).



(Source: Ministry of Natural Resources and Environment, Mexico (2013).

Figure 2: Institutional Framework for Climate Change for Mexico

3.2.1 MRV Institutions

The NIECC is responsible for emissions inventories and reporting under the UNFCCC and reports to the Ministry of Environment and Natural Resources. The institute was established with the objective of preparation of the National Communications and GHG inventories of Mexico. Initially dependent on the University of Mexico to prepare Mexico's greenhouse gas inventory, the NIECC has developed more internal capacity over the years.

3.2.2 Summary

Mexico has a well-developed and comprehensive climate policy system and has been active in developing programs and plans on climate action. The General Law on Climate Change is a good framework for effective climate policy that integrates actions at national, provincial and municipal levels.

3.3 Singapore

Singapore's National Climate Change Strategy is built on 5 strategic thrusts (National Climate Change Secretariat, 2012):

- Reducing emissions in all sectors;
- Enhancing resilience and adapting to climate change;

- Harnessing green growth opportunities;
- Promoting public awareness and support; and
- Advancing international efforts through partnerships.

In terms of pre-2020 mitigation measures, Singapore has targeted 6 sectors for action:

- Power generation;
- Waste and water;
- Households;
- Buildings;
- Transport; and
- Industry.

For the power generation sector, the country is moving away from fuel oil to natural gas and solar test-bedding and research. Measures have also been taken to increase recycling and to reduce energy consumption.

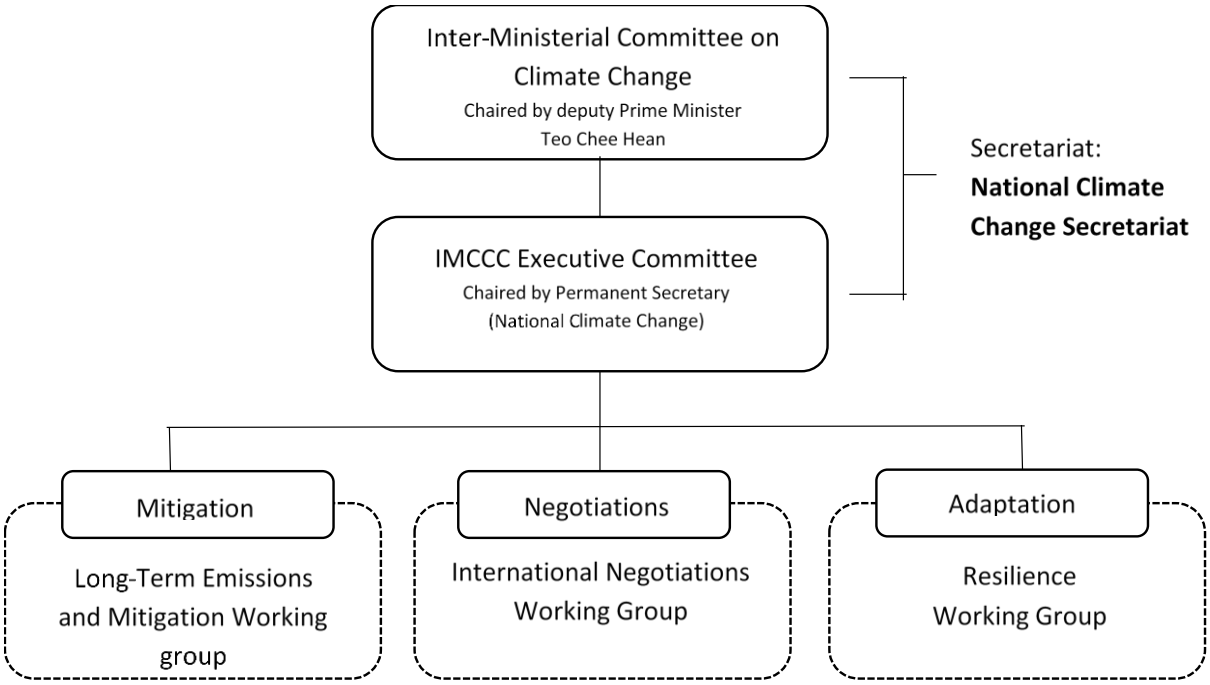
A Mandatory Energy Labelling Scheme (MELS) for home appliances and a Minimum Energy Performance Standards (MEPS) for appliances and lighting has been implemented. Green Mark Certification is required for all new and existing buildings when retrofitted. Building cooling systems are audited every 3 years. Public transport is encouraged.

The Carbon Emissions-based Vehicle Scheme (CEVS) has been implemented with the objective of encouraging purchase of low-emission cars. The Mandatory Fuel Economy Labelling Scheme has also been launched. This scheme provides buyers with information on fuel economy to aid people in making choices on purchase of fuel.

The government encourages new co-generation plants in energy-intensive sectors and the Energy Conservation Act to encourage energy saving for large energy users, has been launched.
the impacts of climatic change on buildings, infrastructure and structures. The Centre for Climate Research Singapore (CCRS) under the Meteorological Service Singapore (MSS) was launched in March 2013 with this objective in mind.

Efforts have also been taken to make Singapore a Global Green Tech Hub as green opportunities exists in the following areas:

- Clean technology;
- Waste and water technology;
- Urban management and solutions;
- Climate risk management;
- Carbon services and climate finance;
- Green information and ICT.



(Source: National Environment Agency (2014).

Figure 3: Institutional Framework for Climate Change in Singapore

Singapore has set up the Inter-Ministerial Committee on Climate Change (IMCCC), chaired by the Deputy Prime Minister of Singapore. The major objective of the IMCCC is to coordinate Singapore's actions on climate change. Its members are:

- Minister for Foreign Affairs;
- Minister for Trade and Industry;
- Minister for the Environment and Water Resources;
- Minister for Transport;
- Minister for Finance; and
- Minister for National Development.

The IMCCC is supported by an Executive Committee (Exco) which is chaired by the Permanent Secretary of the National Climate Change Secretariat (NCCS). The NCCS was set up in 2010 as a dedicated unit under the Prime Minister's Office, to ensure the effective coordination of Singapore's domestic and international policies, plans and actions on climate change.

3.3.1 MRV Institutions

On MRV of Singapore's mitigation actions, lead agencies like the Ministry of the Environment and Water Resources; Ministry of National Development; Ministry of Transport; Ministry of Trade and

Industry; National Climate Change Secretariat; and the Economic Development Board, monitor, measure and document the progress of implementation of the mitigation actions under their purview.

The information they collect is consolidated by the Long-Term Emissions and Mitigation Working Group secretariat annually. The accuracy of the information reported will be verified by the sectoral lead agency through internal checks. The Long-Term Emissions and Mitigation Working Group will then assess and determine whether Singapore is on track to meet its mitigation pledges.

Summary

Singapore has an effective system on climate change mainly because of three major reasons. In the first place, the various organizations that are involved have ownership of their domains and their data analysis and collection system is done well.

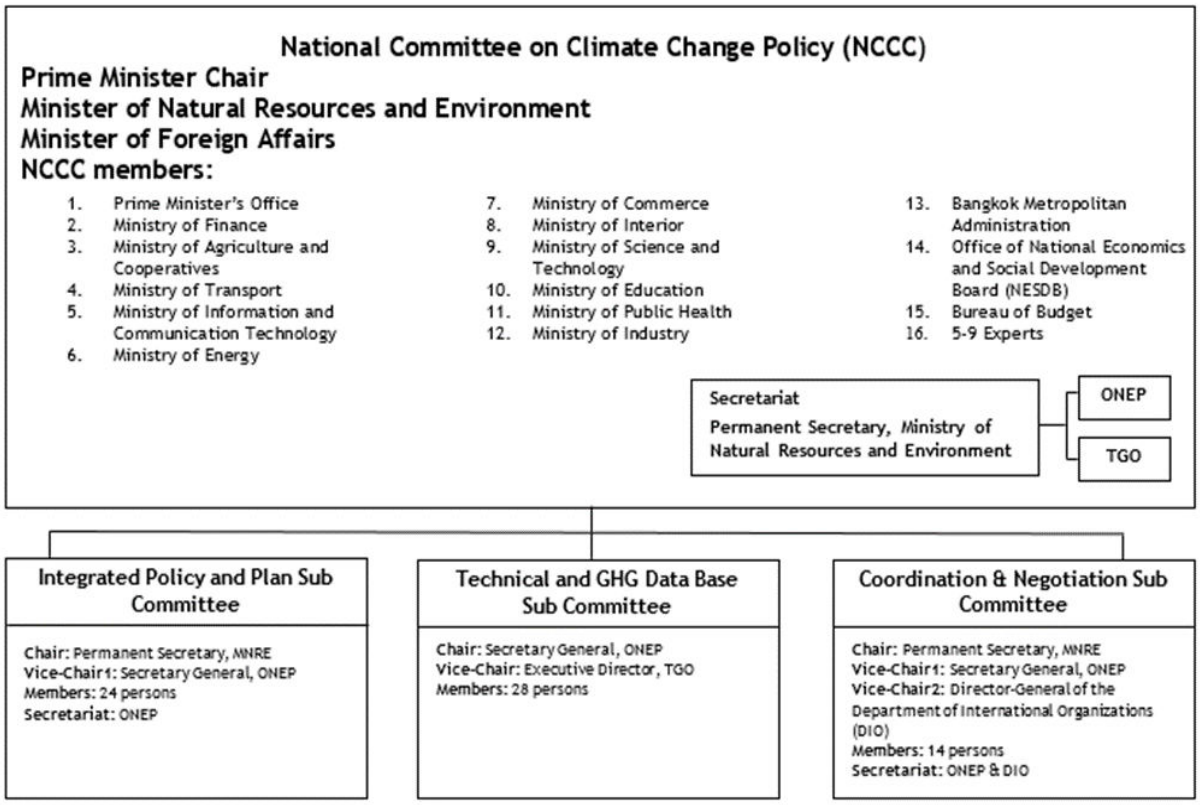
Secondly, the chairmanship of the IMCCC under the Deputy Prime Minister effectively sets the policy direction for Singapore on climate change. Subsequently, the coordination at the official level is done effectively by the NCCS, because it is a unit under the Deputy Prime Minister's Office. Thirdly, many of the actions taken are within the field of energy efficiency and are more straightforward compared to areas like land use change and forestry.

3.4 Thailand

Thailand has established the National Committee on Climate Change Policy (NCCC) in 2007, which is chaired by the Prime Minister. The NCCC is responsible for (Office of Natural Resources and Environmental Policy and Planning, Thailand (2015):

- Formulating overall climate change policy and strategy;
- Determining national positions towards the international negotiations under the UNFCCC and any international agreements; and
- Monitoring and evaluating implementation results of government agencies as stated in the national strategy and policy.

The structure of the NCCC is shown in the figure 4. The National Climate Change Master Plan (2015-2050) will move Thailand towards a low carbon and climate resilient economy by 2050. Apart from implementing the NAMA Roadmap to achieve the short-term target to target emissions reductions in the energy and transportation sectors, the NCCC has also established the Integrated Policy and Plan Sub-Committee, which has the responsibility to prepare and propose mitigation measures and mechanisms covering legal, economic, fiscal and social instruments to achieve mitigation targets.



(Source: Office of Natural Resources and Environmental Policy and Planning, Thailand (2015).

Figure 4: Organization Structure of NCCC in Thailand

The two most important master plans for emissions reductions are the Alternative Energy Development Plan (AEDP) and Energy Efficiency Plan (EEP). Through these two plans, Thailand aims to promote renewable energy and energy efficiency. Other measures taken include reduction of energy subsidy, environmentally sustainable transport, greening of industrial processes, recycling and reuse of rice straw and other agricultural residues and preparing to participate in the REDD+ programme.

3.4.1 MRV Institutions

Thailand has developed a domestic MRV system for monitoring of emissions reductions, which involves the following processes:

- Measurement of activity data is done by the relevant installations such as power plants, according to specific emissions reduction methodology;
- Reporting of the activity data by the relevant installations to the corresponding authorities such as the Energy Regulatory Commission and the Department of Energy Business; and
- Verification is done by the authorized agencies such as the Department of Alternative Energy Development and Efficiency.

3.4.2 Summary

Thailand's Eleventh National Economic and Social Development Plan (2012-2016) emphasized low carbon emissions and a climate resilient economy. This was followed by its National Climate Change Master Plan (2015-2020) which has put in place short, medium and long-term plans for emissions reductions. There is also an MRV mechanism in place.

Barriers such as high technology and infrastructure costs remain formidable and negative public perception of waste-to-energy plants and biomass power plants, have to be overcome. However, Thailand has received considerable support from international partners such as the World Bank, Asian Development Bank (ADB) and United Nations Development Programme (UNDP) for capacity building in both mitigation and adaption.

3.5 Philippines

Philippines passed a series of laws designed to address climate change in different segments of the economy. In 2009, the Climate Change Act was passed to strengthen government initiatives to address climate change. The Act called for the formulation of a National Framework Strategy on Climate Change (NFSCC), under which was developed the National Climate Change Action Plan (NCCAP).

The NCCAP established the Philippines' first long-term climate agenda from 2011 to 2028, divided into three six-year phases. The first phase builds an enabling environment while the remaining phases will scale up climate actions. The NCCAP is formulated around seven key thematic areas, which are:

- Food security;
- Water sufficiency;
- Ecological and Environmental Stability;
- Human Security;
- Climate-Smart Industries;
- Sustainable Energy; and
- Knowledge and Capacity Development

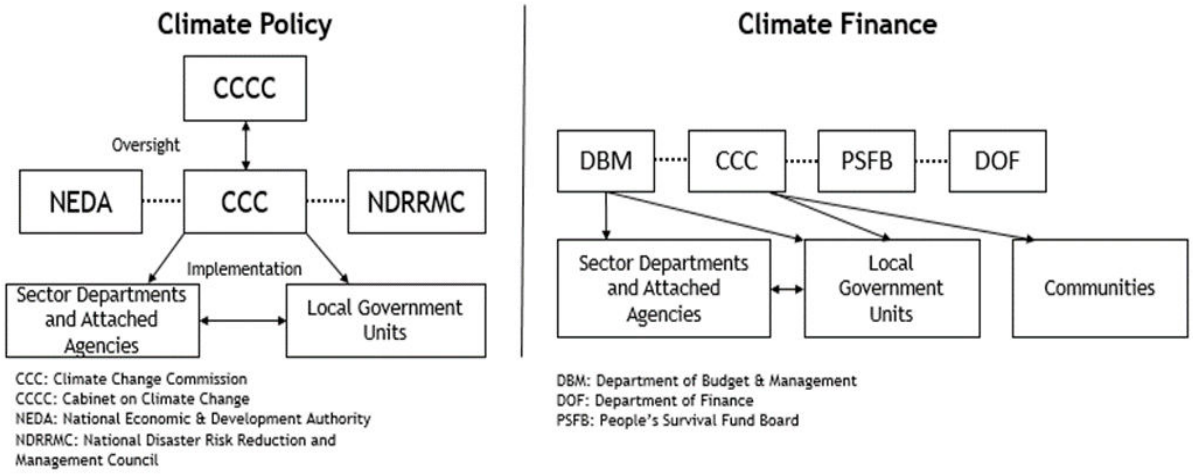
The climate change policy agenda under the Climate Change Act and the NCCAP provides a strong focus and shift to, adaptation, representing a clear evolution from mitigation to adaptation.

The People's Survival Fund (PSF) was established by the Climate Change Act to provide dedicated financing for adaptation at the local levels. This replenishable fund has an annual allocation of 1 million peso a year.

The Philippines has reformed its institutional structure by establishing centralized national institutions aimed at coordination of a climate agenda. The new institutions that have been created are the Climate Change Commission (CCC), the Cabinet Cluster on Climate Change (CCCC) and the People's Survival Fund Board (PSFB).

The CCC is the main body that will coordinate, monitor and evaluate government programmes and actions to ensure the mainstreaming of climate change into national, sectoral and local development plans and programmes. The CCC is also the secretariat to the CCCC, which was created to strengthen delivery of results on environment and climate change adaptation and mitigation.

The PSFB will make policies, provide strategic guidance to the CCC on the management and use of PSF and provide financial approval for projects. The CCC also supports the Department of Budget and Management (DBM) in its efforts to improve effective utilization of climate resources (World Bank, 2013). The organization chart is shown in the figure 5.



(Source: World Bank (2013)

Figure 5: Institutional Structure for Climate Change in the Philippines

3.5.1 MRV Institutions

The Philippines is developing a National Integrated Climate Change Database and Information Exchange System (NICCDIES) which will be used by the domestic Measurement, Reporting and Verification (MRV) system. Government agencies, NGOs, private sector organizations and academia are participating in the setting up of this information system, which is being done under the Low Emission Capacity Building Project of the Philippines.

3.5.2 Summary

The CCC is responsible for many climate change responsibilities that include leading climate policymaking, coordinating, monitoring and evaluating climate change programmes. The CCC is also jointly responsible for many other tasks including coordinating sectoral policy. Better coordination between CCC and other departments will lead to better implementation of climate measures.

4. Conclusion: Climate Change Institutional Arrangements in Five Countries

In all five countries, there is high similarity in terms of their climate change institutional arrangements and these are summarized in table 2. The features are:

- Assessment, goal-setting and policy formulation activities are carried out in all five countries.
- Ministerial or official level coordinating bodies on climate change existed in all five countries to address climate change. Such bodies are necessary in view of the cross-cutting nature of climate change, which requires a high level of coordination among different organizations to achieve goals.
- Climate change policies/action plans had been put into place in all five countries to address climate change.
- Climate change legislation exists in South Korea, Mexico and Philippines but not in Singapore or Thailand. However, actions can be taken based on legislation in other sectors or based on climate policy.
- Permanent technical bodies on climate change exists in three of the five countries and in the fourth, it is an ad-hoc technical body.
- Measurement, reporting and verification structures exist in the five countries.
- Structures for stakeholder consultations exist in the five countries.

The most likely reason for this high similarity in institutional arrangements may be due to institutional isomorphism (DiMaggio and Powell, 1983). Climate change arrangements become similar due to three processes. The first, mimetic isomorphism which is copying or modelling of other organizations.

The second is coercive isomorphism, due to external pressures exerted by changing circumstances. In this respect, the growth in carbon emissions reported on a regular basis by the Intergovernmental Panel on Climate Change (IPCC) exerts continuing pressure on countries to take actions on climate change. Thus, the decisions made at the meetings of the United Nations Framework Convention on Climate Change (UNFCCC) to have structures for measurement, reporting and verification (MRV) have made MRV institutions a common feature in the five countries in this study. Finally, normative isomorphism, to be up-to-date and effective and comply with uniform standards, have also led to similar features in the climate change institutions in many countries.

This study has highlighted the features of climate change institutions in selected developing countries, which may be useful to many developing countries. However, there are still many specific areas that require the need for further research, for example, institutional arrangements relating to climate change finance and structures to encourage innovative technology in climate change.

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