

HANDBOOK FOR
ASEAN MEMBER STATES'
GOVERNMENT OFFICIALS ON

ASIA-EUROPE
ENVIRONMENT FORUM

CLIMATE CHANGE AND THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS

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CLIMATE CHANGE AND THE UN SUSTAINABLE DEVELOPMENT GOALS
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ACCI	ASEAN Climate Change Initiative
ADP	Ad-Hoc Working Group on the Durban Platform for Enhanced Action
AhWG	Ad Hoc Working Group
AMS	Member States of the Association of Southeast Asian Nations
AOSIS	Alliance of Small Island States
ASEAN	Association of Southeast Asian Nations
ASEF	Asia-Europe Foundation
ASEM	Asia-Europe Meeting
AWGCC	ASEAN Working Group on Climate Change
CER	Certified Emissions Reduction
CGE	Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention
COP	Conference of the Parties
CMP	Conference of the Parties serving as the Meeting of the Parties
EIG	Environmental Integrity Group
ERU	Emissions Reduction Units
EU	European Union
GEF	Global Environmental Facility
GHG	Greenhouse Gases
GtC	Gigatons of Carbon
IPCC	Intergovernmental Panel on Climate Change
KP	Kyoto Protocol
LDC	Least Developed Country
LMDC	Like-Minded Developing Countries on Climate Change
LUCF	Land Use Change and Forestry
MRV	Measurement Reporting and Verification
MOP	Meeting of the Parties
NAPA	National Adaptation Programme of Action
NGO	Non-Governmental Organization
REDD+	Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries
SBI	Subsidiary Body for Implementation
SBSTA	Subsidiary Body for Scientific and Technological Advice
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
WMO	World Meteorological Organisation
WRI	World Resource Institute

5 FOREWORD

I would like to congratulate the Hanns Seidel Foundation Viet Nam, and the Asia-Europe Foundation (ASEF) with the support of the French Regional Delegation for Cooperation in South-east Asia in consultation with the ASEAN Member States, for coming up with this timely and informative Handbook to guide ASEAN policy makers in their quest for a fair and equitable global arrangement in the on-going post-2015 SDGs and a new 2015 global climate agreement.

Two decades since the landmark Earth Summit in Rio in 1992, the world has witnessed alarming levels of environmental degradation despite the several global environmental agreements reached then and implemented over the years. 2015 provides another opportunity to address the several shortcomings in global environmental management. This may yet be the last opportunity for humankind to take decisive action based on collective understanding and endeavor, as science has warned that we are fast approaching the critical stage of no-return.

ASEAN, as a group of developing countries, have been actively participating in the processes leading to these global arrangements in 2015. However, it is important that all nations, whether developing or developed, rich or poor, small or big need to put aside short-term interests and work towards a longer-term truly sustainable solution with the primary aim of protecting the earth's environment and its vitality. There cannot be a win-win solution for any party if the ultimate aim is not the preservation of the planet sustaining life and livelihoods for all of us.

It is in this respect, that the Handbook plays an important role in informing and creating better understanding of the context and issues in the on-going international negotiations. Though it is prepared in the context of the ASEAN Member States' participants, the information is relevant to all negotiators. The Handbook is not intended to provide a prescriptive guide or common position as such an attempt could be counter-productive. It lays out the necessary information, the issues, the processes, the various players, interest groups, and leads the reader towards a better understanding of the negotiation dynamics so that each party comes to the negotiation table with better information and flexibility to negotiate a desired outcome. I also welcome the fact that the developed countries parties, namely France, Germany and the EU through their institutions, had a part in supporting this Handbook as this shows their desire to work with developing countries in coming up with an equitable outcome taking into consideration the interests of developing countries. Such pre-negotiation discourses should be encouraged so that all parties can debate and understand each other's position in a conducive and less politically-charged environment.

I do hope the negotiators will find this Handbook useful and will contribute by sharing their ideas towards further enhancing the Handbook. Thank you.

7 PREFACE

Recognizing that current socio-economic development pathways are largely unsustainable, the United Nations (UN) is preparing two important global agreements for 2015. These agreements aim to ensure that socio-economic development will not only stay within the boundaries of the Earth's carrying capacities, but will also not compromise the needs of future generations.

The first of the two processes is the introduction of a set of globally-agreed Sustainable Development Goals (SDGs) within the framework of the UN post-2015 development agenda. This agenda will aim to define a sustainable socio-economic development pathway for both developed and developing countries. The second process is a legally-binding, global climate agreement that guarantees global warming will not exceed 2°C by the end of the 21st century. With climate change being recognized as one of the major threats to human development, this latter agreement will also form an important part of the post-2015 development agenda. At the same time, it is also highly probable that the SDGs will not set quantified and time-bound climate-related goals, but will consider the 2015 climate agreement as a reference point.

In 2014, the negotiation processes for the UN SDGs and for the 2015 climate agreement have accelerated, and will soon enter into their final phases. The ASEAN community, which is heavily impacted by, and highly vulnerable to climate change, has an important role to play in the negotiations to secure a fair but ambitious agreement. As stated by President Aquino during the opening of the 24th ASEAN Summit in Burma (Myanmar) in May 2014: *“Confronted with this competition for resources, leaders like ourselves must be ever conscious that a problem not attended to does not disappear; it will only worsen. As such, there must be an imperative for us to address global climate change as one ASEAN community.”*¹

This training manual aims to contribute to the discussions taking place in preparation for the upcoming United Nations Framework Convention on Climate Change (UNFCCC) negotiations and serves as an information source both for ASEAN governmental officials and UNFCCC negotiators.

Chapters 1 and 2 target government officials interested in the topic, providing a short introduction to the evidence of climate change and the setting of the global climate negotiations. Chapter 3 elaborates on the role of regional groups at the negotiations in more detail, while also discussing the key positions of these groups for the 2015 UNFCCC agreement. Lastly, Chapters 4 and 5 provide information on climate change challenges and policies in ASEAN member states. Chapter 4 focuses on the countries individually, while Chapter 5 compiles a regional overview. These latter chapters providing more specific information primarily target ASEAN climate negotiators and policy-makers involved in climate action.

The manual was developed by the Asia-Europe Environment Forum (ENVforum) with the support of the French Delegation for South-East Asia and the Hanoi office of Hanns-Seidel Foundation, Viet Nam.

1. <http://globalnation.inquirer.net/104158/asean-one-community-urged-on-climate-change>



1

INTRODUCTION TO THE SCIENCE OF CLIMATE CHANGE AND LATEST FINDINGS

In this section, we present an overview of up-to-date climate change evidence as well as its main drivers. We also elaborate on projected, future climatic changes and their expected environmental and socio-economic impacts both globally, and in the Southeast Asian region.

EVIDENCE OF CLIMATE CHANGE

The newest evidence of climate change was revealed by the Intergovernmental Panel on Climate Change (IPCC), within the framework of its recently published Fifth Assessment Report (AR5).

The IPCC, as an intergovernmental body, is the leading scientific body of climate change assessment at the international level. It was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988 with the aim to gather and review up-to-date knowledge on climate change and its socio-economic impacts. On its own, it does not conduct research or collect and assess data, but regularly gathers and reviews contribution from thousands of scientists worldwide. It assesses a variety of research outcomes and ensures the provision of rigorous and policy-neutral scientific information to decision-makers. The work of the IPCC is co-ordinated by a Secretariat and supported by WMO and UNEP. Governments also participate in the development of its work process and endorse the regularly published IPCC reports.

BOX 1
THE INTER-
GOVERNMENTAL
PANEL ON
CLIMATE CHANGE
(IPCC) IN A NUT-
SHELL

Source: IPCC website

Based on different scientific studies and observations, Working Group I (WG1) of the IPCC confirmed that the “*warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia*” (IPCC AR5 WG1, 2013). The report also confirmed that “*human influence has been the dominant cause of the observed warming since the mid-20th century*”, while also impacting other observed changes (IPCC AR5 WGR1, 2013). Observed global changes include increasing concentration of greenhouse gases (GHG) in the atmosphere, the warming of the atmosphere and the oceans, rising sea levels, and diminishing snow and ice cover (IPCC AR5 WG1, 2013):



ATMOSPHERE

Between 1880 and 2012, the average combined land and ocean surface temperature increased by 0.85 Celsius (°C). Moreover, each of the last three decades have been successively warmer. There is a high probability that at the global level, the number of cold days and nights has decreased, while the number of warm days and nights has increased. It is also likely that the frequency of heat waves has increased in large parts of Europe, Asia and Australia. In addition, the frequency or intensity of heavy precipitation has increased in North America and Europe.



OCEANS

The surface level of the oceans (up to 700 m depth) has warmed 0.1 °C in each decade since 1971, and it is also likely that lower levels of the oceans (between 700-2000m depth) have also warmed since 1957. It was observed that the high salinity sea regions will become more saline, while low salinity regions become less saline. The pH level of ocean surface water has decreased by 0.1 unit since the beginning of the industrial age and is causing acidification of the water.



SEA LEVEL

The global average sea level has risen by approx. 0.19m between 1901 and 2010, mainly due to the warming of the oceans and loss in glacier mass.

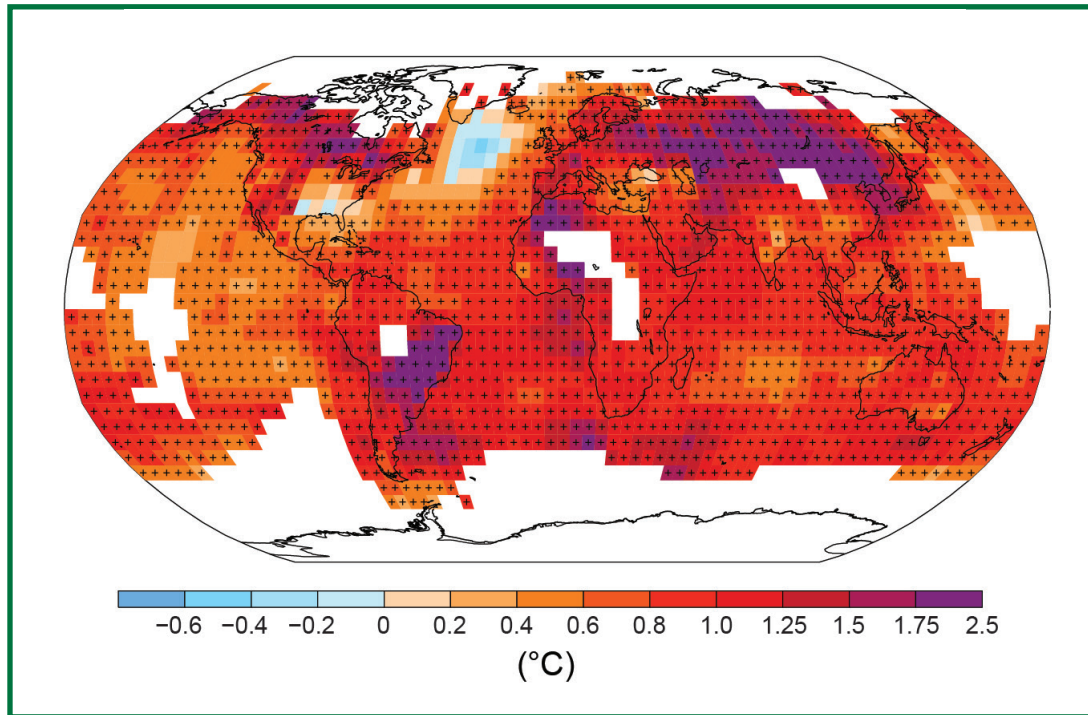


FIGURE 1
OBSERVED
CHANGES
IN SURFACE
TEMPERATURE
1901-2012

Source:
PCC AR5 WG1, 2013

* CRYOSPHERE

The ice cover in Greenland and Antarctic has been diminishing over the last three decades. It was found with high probability that the Arctic sea ice coverage decreased over the period 1979 to 2012 by 3.5 to 4.1% per decade. Over the same period, the annual mean Antarctic sea ice coverage increased between 1.2 to 1.8%, with the extent increasing in some regions and decreasing greatly in others. In the Northern Hemisphere, the snow cover has decreased in the months of March, April and June, while Arctic temperatures have increased since the mid-20th century.

DRIVERS OF CLIMATE CHANGE

The above-described climatic changes are caused by increasing energy uptake in the climate system, which can be measured by the level of radiative forcing (RF). As confirmed by the IPCC, the main reason for the increasing RF is the increase in atmospheric concentration of GHGs (IPCC AR5, 2013).

While GHGs occur naturally in the atmosphere, and are essential for making the Earth liveable, the amount of GHGs started to exceed desirable levels as far back as the start of the industrial revolution in the 1750s. WGR1 of the IPCC's AR5 demonstrated that the increase in GHG emissions has been steady since the 1750s,² and found that the most abundant gas is carbon dioxide (CO₂), as a result of fossil fuel combustion and cement production.

The cumulative anthropogenic CO₂ emissions between 1750 and 2011 were 555 [470 to 640] gigatonnes of carbon (GtC). Out of this, 67.6% can be linked to fossil fuel combustion and cement production while 32.4% to deforestation and other land use change. Although 27.93% was absorbed by the ocean and 28.83% by the natural terrestrial ecosystems, 43.24% GtC accumulated in the atmosphere. Figure 3 below illustrates how these different activities come into play and affect the Earth's carbon cycle.

2. The atmospheric concentration of carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) gases were 391 ppm, 1803 ppb, and 324 ppb in 2011, and exceeded the pre-industrial levels by about 40%, 150%, and 20%, respectively.

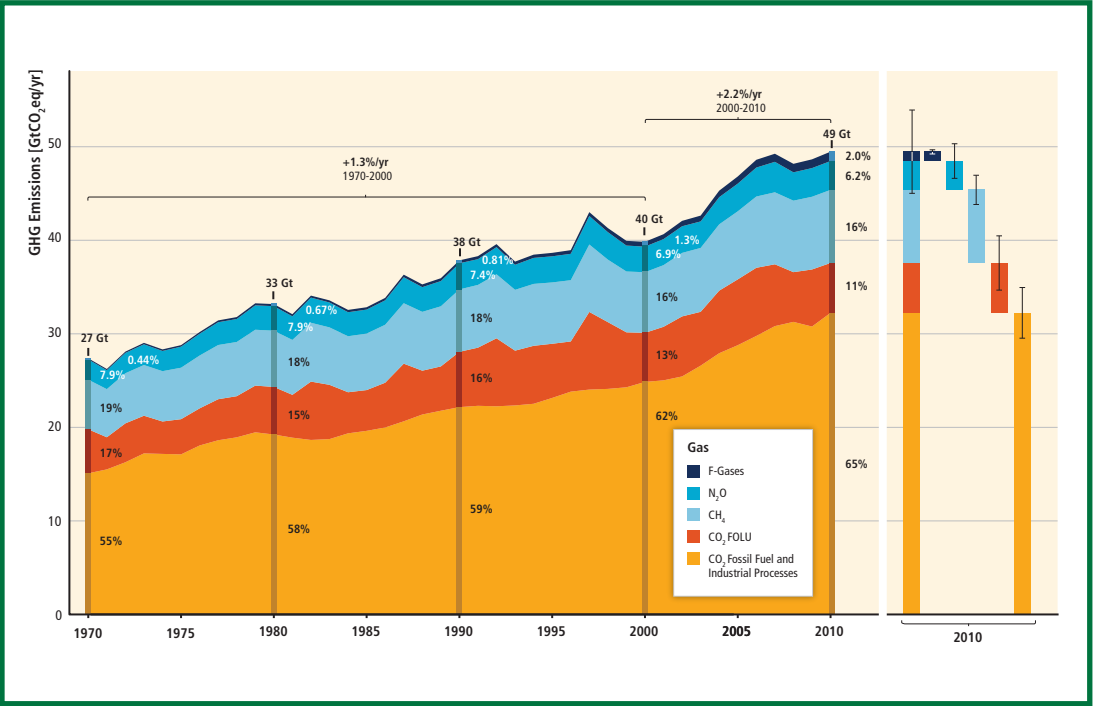


FIGURE 2
TOTAL ANNUAL
ANTHROPOGENIC
GHG EMISSIONS
(GTCO₂ EQ/YR)
BY GROUPS OF
GASES 1970–2010
Source:
IPCC AR5 WGR3, 2014

In the future, it is expected that more of the emitted anthropogenic CO₂ will remain in the atmosphere as the absorption capacity of the oceans and terrestrial areas will be partially offset by climate change. Since the surface warming of the planet is caused by cumulative emissions of CO₂, the observed changes will persist for many centuries even if emissions of CO₂ are considerably lowered or stopped in the near future.

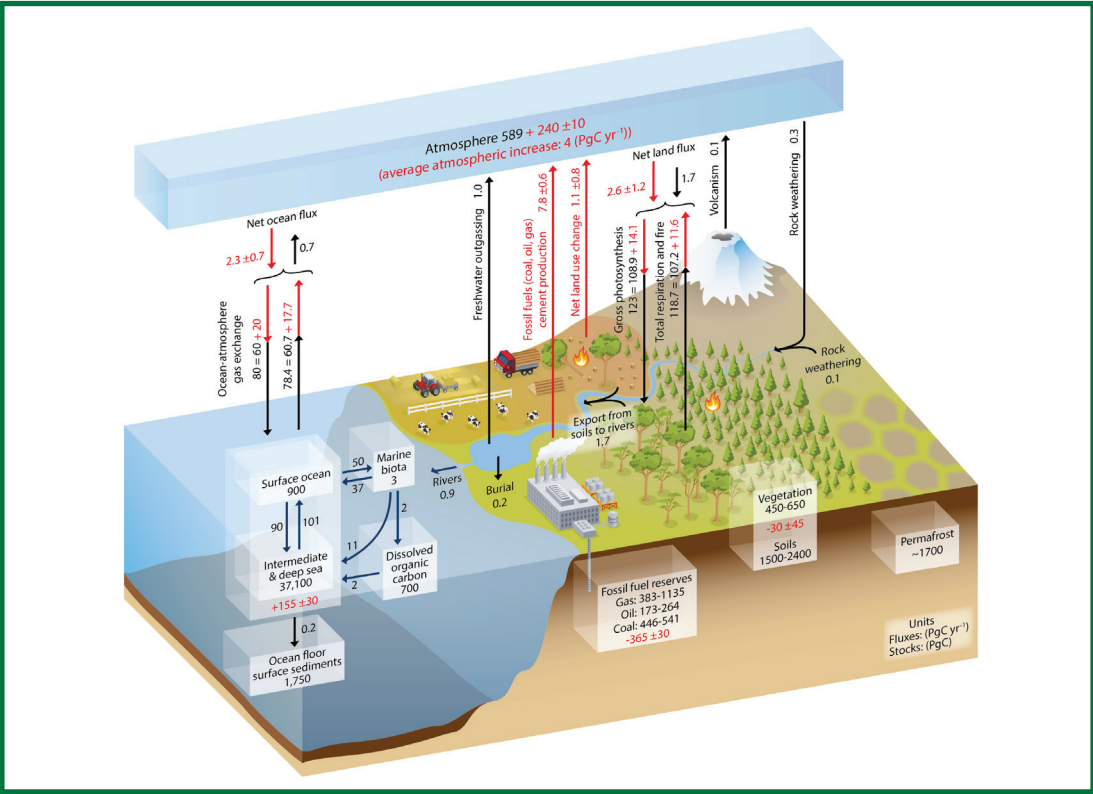


FIGURE 3
SIMPLIFIED
SCHEMATIC OF
THE GLOBAL
CARBON CYCLE
Source:
IPCC AR5 WGR1, 2013

PROJECTIONS OF FUTURE CHANGES IN CLIMATE

As emissions continue to rise, further changes are expected by the end of the century (IPCC AR5, 2013). These may include:



ATMOSPHERE

It is very likely that global surface temperature will increase by 2°C by the end of the century. It is also expected that the contrast between wet and dry regions and seasons will increase.



OCEANS

Warming of the oceans will increase by the end of the century and will reach deeper levels of the water, therefore affecting its circulation. Further carbon absorption will lead to further ocean acidification.



SEA LEVEL

Average global sea levels will increase in more than 95% of the total ocean area at a much higher rate compared to 1971–2010. Thus a 0.4 to 0.63cm average sea level rise is predicted by the end of the century, and it is foreseen that 70% of all coastlines will be affected by these increases.



CRYOSPHERE

Further decreases in the Arctic sea ice cover and the amount of spring snow in the Northern Hemisphere is expected. While AR5 assigned low probability for the decrease of the total sea ice extent and volume in the Antarctic, new scientific research, released in May 2014, has confirmed a massive glacier system loss in West Antarctica (National Geographic, 2014).

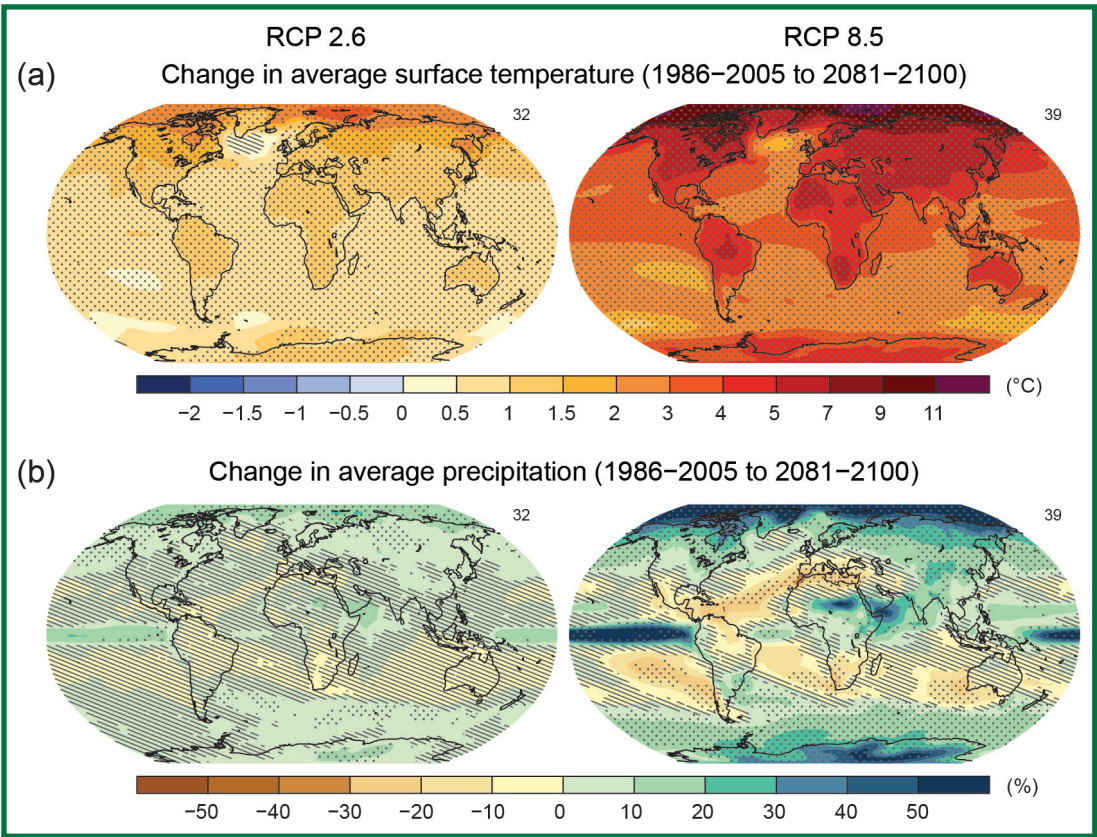


FIGURE 4
MAPS OF
PROJECTED LATE
21ST
CENTURY
ANNUAL MEAN
SURFACE
TEMPERATURE
CHANGE,
ANNUAL MEAN
PRECIPITATION
CHANGE

Source:
IPCC AR5 WGR1, 2013

SOCIO-ECONOMIC IMPACTS OF CLIMATE CHANGE

Although the impacts will vary, climate change will affect most countries negatively in the coming decades, and will affect the health and state of the physical, biological and human systems.

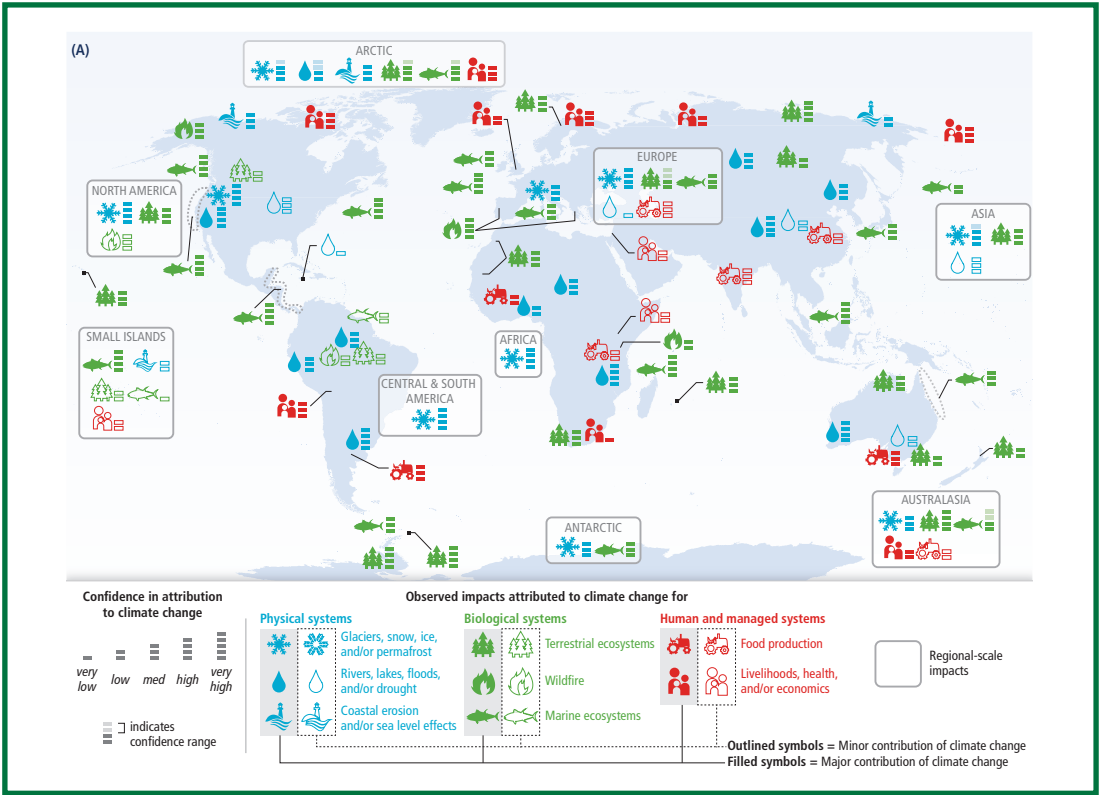


FIGURE 5
OBSERVED
IMPACTS
ATTRIBUTED TO
CLIMATE CHANGE
FOR PHYSICAL,
BIOLOGICAL,
AND HUMAN AND
MANAGED
SYSTEMS

Source:
IPCC AR5, 2014

Major observed and projected impacts include:



EXTREME WEATHER EVENTS

In combination with other climatic changes, these events are mostly likely to affect those who live in coastal areas, and will especially aggravate the life of those in poor living conditions. In the future, the frequency and the intensity of weather-induced natural disasters is expected to increase.



WATER STRESS

Due to changes in precipitation patterns, the global area affected by droughts has been increasing since the 1970s. Meanwhile, in certain areas of the Mediterranean, Southern Africa and parts of Southern Asia, overall precipitation has been declining, resulting in more frequent drought events. Due to increases in temperatures in mountain areas, mountainous ice-packs have been shrinking in recent decades. These phenomena have a two-fold effect. First, it can reduce the available amount of freshwater for people living in these areas and second, during summer months it can cause flash flood events by the melting of these ice-packs into the rivers.



BIODIVERSITY

Climate-induced changes have already been affecting various biological processes and species (e.g. earlier start of the spring season). If warming trends continue, many plant and animal species are expected to become extinct by the end of the century.



HUMAN HEALTH

Heat-, water- and food-related illnesses can increase due to climate change. In addition, communicable diseases carried by mosquitoes (e.g. malaria, dengue) can reach parts of the world hitherto unaffected, as habitat patterns change.



AGRICULTURE

The yield levels of major crops, such as maize and wheat, have been decreasing since 1981 by 40mt/per year globally. According to IPCC calculations, a 1°C increase in temperature will result in a 5% yield decrease in tropical, sub-tropical and temperate regions (UNFCCC, 2014). Yields will be affected by various changes (e.g. rainfall patterns) but also by indirect changes (e.g. climate change-induced changes in biodiversity).

CLIMATE CHANGE & ITS SOCIO-ECONOMIC IMPACTS IN SOUTHEAST ASIA

Southeast Asia is considered a highly vulnerable region to climate change and is already being affected by sea level rises, extreme weather events and heat waves (IPCC AR5 WG2). In this section, we discuss observed and predicted changes in the region as well as observed and projected environmental and socio-economic impacts.

Observed and predicted changes in the climate of the Southeast Asian region include:



ANNUAL MEAN TEMPERATURE

Observations since the 1960s have shown that each decade has seen an average increase in temperature of 0.14°C-0.20°C (IPCC AR5 WGII, 2014). With regard to predicted future changes, the average temperature change in high-latitude areas could increase by a range of 3-6°C by the end of the 21st century.



PRECIPITATION

Although regional and seasonal variations persist, increased precipitation can also be observed in the region, with higher numbers of wet-day and extreme-rainfall days (IPCC AR5 WGII, 2014). In the future, precipitation patterns will likely be more extreme near the centres of tropical cyclones.



EXTREME WEATHER EVENTS

The frequency of extreme events have augmented in the northern parts of Southeast Asia, although they have reportedly decreased in other countries, such as Myanmar (IPCC AR5 WGI, 2014).



SEA LEVEL RISE

Due to the projected increase in seas levels, it is very likely that a million people in the region will be exposed to an increased risk of flooding (IPCC AR5 WGII, 2014).

Fast population growth and related urbanization trends in the Southeast Asia region will put an increased pressure on natural resources, and make urban population especially vulnerable to the impacts of climate change (ASEAN, 2007). As the national economies of the region rely heavily on their rich natural resources and agricultural production, climate change has the potential to amplify socio-economic differences and decrease the political security of the region (IFAD, 2009).

Major observed and projected impacts include:



WATER STRESS

The region is already affected by changes in rainfall patterns, droughts, floods and cyclones.

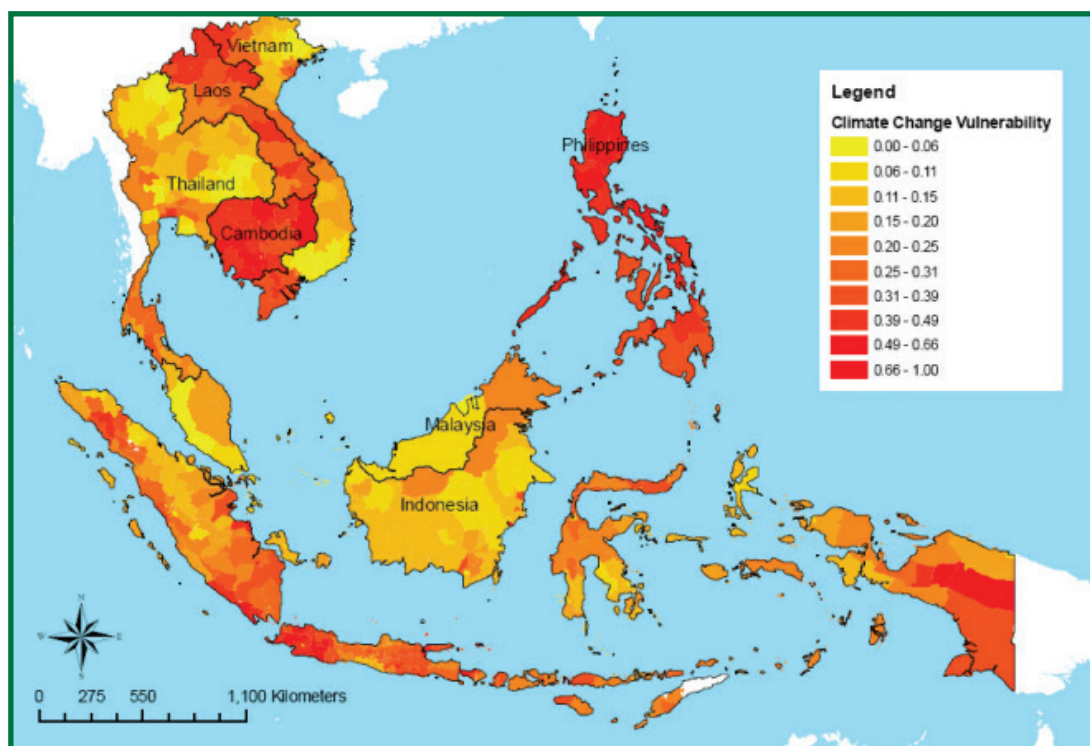


FIGURE 6
CLIMATE CHANGE
VULNERABILITY
MAP OF
SOUTHEAST
ASIA

Source:
Yusuf and Francisco,
2009

These changes severely impact the lives of the rural poor, who tend to lack adaptive capacity (IFAD, 2009). In the future, increased droughts (as a result of changing precipitation patterns and reduced snow-fed river flows) may result in decreased food security, more frequent forest fires, and increased exposure to infectious diseases (IPCC AR5 WG2, 2014). Increases in population density, agricultural and industrial activities could worsen water shortages. In addition, extreme rainfall events will cause further problems, by increasing the number of flooding events. While overall the region will be negatively impacted by water stress, localized impacts of climate change may be slightly positive, e.g. future water shortages may become less frequent in the Philippines (IFAD, 2009).



BIODIVERSITY

The region is very rich in biodiversity and natural resources.³ Coral reefs are prone to sea-temperature rise, while mangrove wetlands can be affected by sea-level rise and changing rainfall patterns (IFAD, 2009). Changes in drought frequency and patterns can influence flowering in lowland rainforests in the region (IPCC AR5 WG2, 2005). Droughts may also negatively amplify the fragmentation of forests (IPCC AR 5, WG1) and result in dieback of tropical forests, more frequent forest diseases and forest fires (IFAD, 2009). Some declines in fauna are also expected, such as a projected decrease in bat species richness and distribution (Hughes et al., 2012). However, studies also found that forests and vegetation can also experience positive effects of climate change, e.g. Thailand's total tropical forest cover may increase (IFAD, 2009). Overall, the degradation of ecosystems can seriously impact access to food and water as well as to natural resources (e.g. timber) for commercial purposes (IPCC AR5 WG2, 2005).



AGRICULTURE

Changing precipitation patterns will affect water quality and supply in the region, which will make irrigation systems more vulnerable. An increase in temperature may have various effects

3. 40% of all world species live in the Southeast Asian forests, 35% of the mangrove forests, and about 30% of the coral reefs of the world are also found in the region. Indonesia, Malaysia and Philippines together represent around 80% of global biological diversity. Source: http://www.iccgov.org/FilePageStatische/Files/Publications/Reflections/13_Reflection_January_2013.pdf

on crop yields. Moderate temperature increase (below 2 °C) may be beneficial for rice yields in Indonesia and Malaysia, but would already negatively affect the Philippines (IFAD, 2009). The sensitivity of major cereal and tree crops will mostly affect the rural poor, who rely on traditional agricultural methods and marginal lands (IFAD 2009).



COASTAL AREAS

ASEAN countries have a total combined coastline length of 173 000 km, with 14% of the world's marine fish population (IFAD, 2009). Due to geological and geographical characteristics, population increase and infrastructure developments, the coastal zones of the region are highly prone to climate change. Major climatic changes include increases in sea-surface temperature and sea-levels, tidal variations, tropical cyclones and rainfall increase. These can negatively affect coastal and marine ecosystems, increasing the risk of coastal erosion and land loss, sea flooding and salinization of freshwater, as well as result in coastal hazards and displacement of several million people. Risks are especially high in the delta regions of Bangladesh, Myanmar, Thailand and Viet Nam, as well as in the lower areas of Indonesia, Malaysia and the Philippines (IFAD, 2009).

Overall, the region of Southeast Asia is set to be highly affected by future climatic changes, which will affect social and economic sectors of each nation in different ways. Observed and potential climate changes and related socio-economic impacts at the national level are discussed in more detail in Chapter 4.

2

GLOBAL CLIMATE NEGOTIATIONS

In this section we provide an overview of the development of global climate negotiations and their current status. We also discuss major climate mechanisms and climate finance initiatives.

INTRODUCTION TO THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE AND THE KYOTO PROTOCOL

Although since the 1960s it has been well-known that global average temperatures have been increasing, it was only in 1990 that the IPCC first confirmed global warming, and called for action to reverse the process.

To limit projected increases in the average global temperature, the UNFCCC was adopted in 1992 and entered into force in 1994. The Convention aimed to keep “*greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous interference with the climate system*” (UNFCCC, 1992). To strengthen the commitments of the Convention, the Kyoto Protocol (KP) entered into force in 1997, with legally binding GHG emission reduction targets for developed countries to be reached by 2012 and 2020 (UNFCCC, 2014). To date, the UNFCCC has been signed by 196 Parties and the Kyoto Protocol by 192 Parties.⁴

The UNFCCC consists of various bodies. The Conference of the Parties (COP), the main decision-making body, meets annually to oversee and review the implementation of the Convention. The COP also serves as the Meeting of the Parties to the Kyoto Protocol (CMP), organized annually since 2005, is held back-to-back with the COP with the aim to overview and improve the implementation of the KP. Other bodies, such as the Subsidiary Body for Scientific and Technological Advice (SBSTA), the Subsidiary Body for Implementation (SBI) and the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) also meet regularly to support the work of the COP and the CMP. The UNFCCC Secretariat provides technical and organizational support to the negotiations.

COPs are meant to be held in Bonn, Germany (where the UNFCCC Secretariat is based), unless a Party offers to host a session. Together with the COP Presidency, the session venue tends to rotate between the main global regions: Africa, Asia, Eastern Europe, Latin America and the Caribbean, Western Europe and Others.

UNFCCC website: It includes a variety of information, providing essentials on background information, mechanisms and latest developments. The website also gathers country communications, submissions and presents emissions data. URL: www.unfccc.int

UNFCCC handbook: Published in 2006, it provides an overview of the processes of international climate change negotiations and activities related to the implementation of the Convention, including adaptation to climate impacts, mitigation of climate change, finance, technology transfer, capacity-building, and reporting. URL: <http://unfccc.int/resource/docs/publications/handbook.pdf>

IPCC website: As the leading scientific body on climate change, it includes a wealth of information on the activities of its working groups, and provides access to its assessment reports and publications, which serve as the scientific bases for UNFCCC negotiations and aims to support policy and decision-makers. URL: www.ipcc.ch

The training materials of the Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention (CGE) are gathered on the UNFCCC website to facilitate the preparation of national communications by non-Annex I Parties. The collection offers a variety of guidance document on vulnerability, mitigation and adaptation assessments

BOX 2
READ MORE
ABOUT THE
UNFCCC AND THE
KYOTO
PROTOCOL

4. In both cases, Parties are not only States but also one regional organization, the European Union.

as well as on GHG inventories. URL: http://unfccc.int/national_reports/non-annex_i_natcom/training_material/methodological_documents/items/349.php

Climate Change Information Network (CC:iNet): hosted by the UNFCCC website, it serves as a clearing house mechanism to the Parties and provides them with a variety of materials promoting education, training and awareness-raising. URL: http://unfccc.int/cc_inet/cc_inet/items/3514.php

MECHANISMS OF THE UNFCCC AND THE KYOTO PROTOCOL

As the main countries responsible for past and current GHG emissions, the industrialized nations (known as 'Annex 1' Parties) have a prioritized role in the Convention. Under the KP, developed countries committed to limit their GHG emissions by 2008/2012. The commitments varied between countries, ranging from -8 to +10% compared to a 1990 baseline (UNFCCC, 2014). At the 18th COP session held in 2012 (COP18) in Doha, developed countries renewed their commitments and pledged to reduce their GHG emissions by at least 18% by 2020 below 1990 levels (Conference of the Parties to the Kyoto Protocol, 2012).

Apart from binding emissions reduction targets under the KP, developed countries also are bound to annually report on their GHG emissions, prepare regular updates about their climate policies and measures, as well as support developing countries in their mitigation and adaptation activities through technology transfer and financial assistance. Developing countries (or 'Non-Annex 1' countries) have less strict obligations in terms of reporting, and their climate mitigation and adaptation activities are subject to the availability of funding (UNFCCC, 2014).

To support emission reduction efforts, three mechanisms have been introduced under the KP:



EMISSIONS TRADING

By defining GHG emissions as a commodity, it allows countries to sell permitted but not used emissions to other countries. Apart from this, countries can also trade in removal units from land use, land-use change and forestry (LULUCF), such as reforestation, and from specific emission reduction projects via the Joint Implementation and Clean Development Mechanisms. To date, the largest emission trading scheme is operated by the European Union. (UNFCCC, 2014)



JOINT IMPLEMENTATION (JI)

This supports emission reduction efforts in developed countries, which are committed to reduce their emissions under the KP. The JI scheme awards emissions reduction units (ERU) for projects which have achieved reductions in emissions, which can be later traded or sold. (UNFCCC, 2014)



CLEAN DEVELOPMENT MECHANISM (CDM)

The CDM supports emissions reduction projects in developing countries by providing such projects with certified emission reduction (CER) credits, which can then be traded or sold. By purchasing CERs, developed countries are allowed to meet a part of their own emission reduction targets under the KP. (UNFCCC, 2014)

Moreover, to support developing countries in action against climate change, the UNFCCC has created three additional mechanisms:



TECHNOLOGY MECHANISM

This aims to promote technology development and support technology transfer that enables

climate change mitigation and adaptation in developing countries. Established in 2010, the mechanism is being implemented by the Technology Executive Committee (TEC) and the Climate Technology Centre and Network (CTCN). To identify priority technology needs of developing countries, Party-driven technology needs assessments are carried out, involving different stakeholders. (UNFCCC, 2014)



REDUCING EMISSIONS FROM DEFORESTATION AND FOREST DEGRADATION AND THE ROLE OF CONSERVATION, SUSTAINABLE MANAGEMENT OF FORESTS AND ENHANCEMENT OF FOREST CARBON STOCKS IN DEVELOPING COUNTRIES (REDD+)

REDD+ targets developing countries and aims to promote emission reductions in the forestry sector by addressing deforestation and supporting sustainable forest management. By assigning market value to the carbon stored in forests, it provides incentives to developing countries to implement mitigation projects in the forest sector. Most recently, within the Warsaw Framework for REDD+, decisions were adopted at COP19 with regards to implementation, financing, monitoring, verification and reporting of the mechanism. (UNFCCC, 2014)



WARSAW INTERNATIONAL MECHANISM FOR LOSS AND DAMAGE ASSOCIATED WITH CLIMATE CHANGE IMPACTS

Established at COP19 in Warsaw, this mechanism aims to promote integrated approaches to address loss and damages resulting from climate change impacts in developing countries. It aims to build knowledge on managing climate risks, strengthening co-operation among various stakeholders, and promoting and enhancing disaster risk management actions. To guide the implementation of the Mechanism, the COP established an Executive Committee for it in Warsaw. (UNFCCC, 2014)

EMISSIONS TRADING

- UNFCCC website on emissions trading.

URL: http://unfccc.int/kyoto_protocol/mechanisms/emissions_trading/items/2731.php

- UNCTAD: International Rules for Greenhouse Gas Emissions Trading. Defining the principles, modalities, rules and guidelines for verification, reporting and accountability.

URL: <http://unctad.org/en/Docs/pogdsgfsbm6.en.pdf>

- The European Commission: The EU Emissions Trading System.

URL: http://ec.europa.eu/clima/publications/docs/factsheet_ets_en.pdf

JOINT IMPLEMENTATION

- The UNFCCC website on Joint Implementation. URL: <http://ji.unfccc.int/index.html>

- French Inter-ministerial Greenhouse Gas Mission: Climate Change: Guide to the Kyoto Protocol Mechanisms. The Joint Implementation mechanism.

URL: http://www.ffem.fr/webdav/site/ffem/shared/ELEMENTS_COMMUNS/U_ADMINISTRATEUR/5-PUBLICATIONS/Changement_climatique/GuideC_projets_Kyoto_angl.pdf

CLEAN DEVELOPMENT MECHANISM (CDM)

- UNFCCC website on CDM.

URL: <http://cdm.unfccc.int>

- The Clean Development Mechanism: A review of the First International Offset Program prepared for the Pew Center on Global Climate Change.

BOX 3
READ MORE
ABOUT THE
UNFCCC
MECHANISMS

URL: <http://www.c2es.org/docUploads/clean-development-mechanism-review-of-first-international-offset-program.pdf>

TECHNOLOGY MECHANISM

- UNFCCC Technology Information Clearing House.

URL: <http://unfccc.int/ttclear/pages/home.html>

REDD+

- REDD Web Platform.

URL: https://unfccc.int/methods/redd/redd_web_platform/items/4531.php

- FIELD: Guide for REDD+ negotiators.

URL: <http://www.field.org.uk/guides/guide-for-redd-plus-negotiators-august-2013>

- REDD+ Partnership website.

URL: <http://reddpluspartnership.org/en/>

WARSAW INTERNATIONAL MECHANISM FOR LOSS AND DAMAGE ASSOCIATED WITH CLIMATE CHANGE IMPACTS

- UNFCCC introduction.

URL: https://unfccc.int/adaptation/workstreams/loss_and_damage/items/8134.php

- The Work Programme of the Mechanism.

URL: http://unfccc.int/adaptation/workstreams/loss_and_damage/items/6056.php

- GermanWatch: Roadmap to Relevance for the Warsaw International Mechanism. URL: <http://www.lossanddamage.net/4952>

CLIMATE FINANCE

The UNFCCC and its Parties also recognize the importance of climate finance, and of providing financial assistance to developing countries, with fewer resources. The landscape of climate finance is rather complex, with a variety of funding sources and mechanisms.

First, various financial mechanisms and funds operate directly under the Convention. These include:

GLOBAL ENVIRONMENT FACILITY (GEF)

As an international partnership, it serves as the financial mechanism for several environmental conventions, including the UNFCCC. The GEF reports to the COP and its activities are regularly reviewed. The GEF finances mitigation and adaptation projects in developing countries and economies in transition, and aims to finance projects that offer win-win solutions for local economies (GEF, 2013).

LEAST DEVELOPED COUNTRIES FUND

This was established to support the implementation of National Adaptation Programmes of Action (NAPAs) in Least Developed Countries (LDCs), which are especially vulnerable to climate change. NAPAs are developed via country-driven processes and the definition of priority areas for adaptation actions. The Fund is managed by the GEF. (UNFCCC, 2014)

SPECIAL CLIMATE CHANGE FUND

This focuses on financing long- and short-term adaptation activities in various sectors, and

promoting technology transfer. Priority areas include water resource management, agriculture, coastal zones, and natural resources. The Fund is managed by the GEF (UNFCCC, 2014 and GEF, 2013).

ADAPTATION FUND

This fund supports adaptation programmes and projects in developing countries that are Parties to the KP. The Fund is financed from the CDM, by a 2% levy after each CER issued by the CDM. It was established in 2001 and is managed by the Adaptation Fund Board. The Adaptation Fund had raised 100 million USD by the end of 2013.

GREEN CLIMATE FUND (GCF)

This was established at COP16 to serve as an operating body of the Convention’s financial mechanism in the long term. The Fund is managed by the Green Climate Fund Board, and is currently being established (GCF, 2014). It aims to support developing countries in their climate activities - to support this, developed countries pledged to provide 100 billion USD by 2020 (UNFCCC, 2009) via the GCF.

Climate financing is also available via multi- and bi-lateral donor sources. Table 1 below provides a summary of existing multi- and bilateral climate funds, besides the UNFCCC financing mechanisms.

NAME OF FUND	ADMINISTRATION	FOCUS AREA
Clean Technology Fund	World Bank	Mitigation
Forest Carbon Partnership Facility	World Bank	REDD
Forest Investment Program	World Bank	REDD
Pilot Program for Climate Resilience	World Bank	Adaptation
Scaling-Up Renewable Energy Program for Low Income Countries	World Bank	Mitigation
Strategic Climate Fund	World Bank	Adaptation, mitigation, REDD
MDG Achievement Fund – Environment and Climate Change thematic window	UNDP	Adaptation, mitigation, REDD
UN-REDD Programme	UNDP	REDD
Global Climate Change Alliance	European Commission	Adaptation, mitigation, REDD
Global Energy Efficiency and Renewable Energy Fund	European Commission	Mitigation
UK’s International Climate Fund	Government of the United Kingdom	Adaptation, mitigation, REDD
Germany’s International Climate Initiative	Government of Germany	Adaptation, mitigation, REDD
Australia’s International Forest Carbon Initiative	Government of Australia	REDD
Japan’s Fast Start Finance - private sources	Government of Japan	Adaptation, mitigation, REDD
Japan’s Fast Start Finance - public sources	Government of Japan	Adaptation, mitigation, REDD
Norway’s International Climate and Forest Initiative	Government of Norway	REDD

TABLE 1
LIST OF
AVAILABLE
MULTI AND
BILATERAL
CLIMATE FUNDS

Source:
www.climatefundsupdate.org/listing

Lastly, regional and national funding initiatives also exist, which have the aim of up-scaling and better prioritizing climate finance in a certain region or country. Examples include the Congo Basin Forest Fund, the Amazon Fund in Brazil and the Indonesia Climate Change Trust Fund.

As a national funding body, the Trust Fund provides a platform for linking national investment priorities to international financing, from multi- and bi-lateral donors. The funds are disbursed via three thematic windows, including adaptation, mitigation and REDD, and are provided as grants, without co-financing requirements. Donors of the Trust Fund pledged for the capitalisation of USD 21 million and USD 4.5 million in technical assistance support, with 53% of committed funds deposited by December 2013. The UNDP was assigned as interim fund administrator and the State Ministry of National Development Planning manages the Fund, channeling funding through responsible ministries to project beneficiaries, such as sub-national governments.

BOX 4
AN EXAMPLE OF
NATIONAL
FUNDING
MECHANISM:
INDONESIA
CLIMATE CHANGE
TRUST FUND
Source: ODI, 2013

As for the funding sources, climate finance is provided both by various public and private actors. In 2011 and 2012, 38% of global climate finance (approximately USD 135 million) was provided by public sources, while 62% (USD 224 billion) was from private sources. The below chart, prepared by the Climate Policy Initiative (CPI) provides an overview of the global climate financing landscape as it was in 2013.

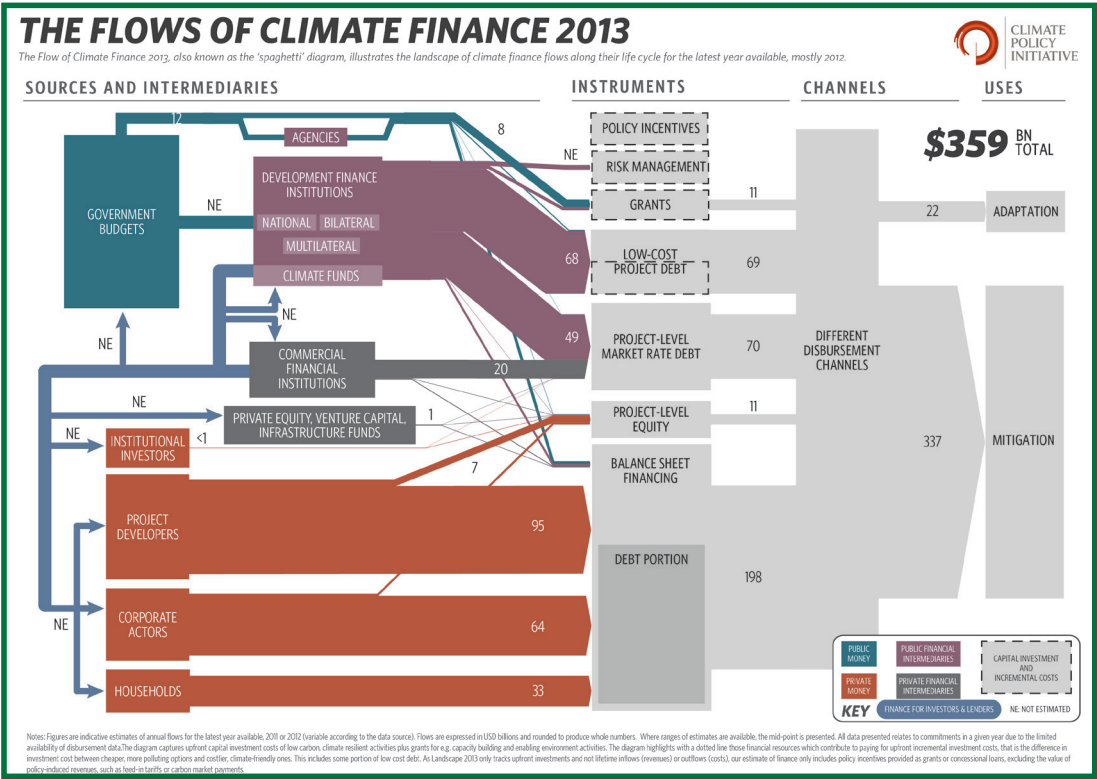


FIGURE 7
THE FLOWS OF
CLIMATE FINANCE
IN 2013
Source:
Climate Policy Initiative,
2013

- REDD X Tracking Forest Finance: www.reddx.forest-trends.org
- Voluntary REDD+ Database: www.reddplusdatabase.org
- Fast Start Finance: www.faststartfinance.org
- Independent Fast Start Finance Tracking of the World Resource Institute: www.wri.org/publication/summary-of-developed-country-fast-start-climate-finance-pledges
- REDD Countries Database: www.theredddesk.org/countries
- Fast-Start Finance Submissions by Annex 1 Parties www.unfccc.int/resource/docs/2011/cop17/eng/inf01.pdf
- Climate Finance Tracker: www.climatefinanceoptions.org/cfo/node/189
- UN Multi-Partner Trust Fund Office Gateway: www.mdtpf.undp.org
- World Bank Forest Carbon Partnership Facility (FCPF) Dashboard: www.forestcarbonpartnership.org/fcp/node/283

BOX 5
INITIATIVES
TRACKING
CLIMATE FINANCE

CURRENT STATUS OF CLIMATE CHANGE NEGOTIATIONS, AND
OUTLOOK TO 2014 AND 2015

In 2010 at COP16 in Cancún, Mexico, governments adopted the Copenhagen Accord and agreed to limit global temperature increases below 2°C, by reducing global GHG emissions. This commitment is challenging, especially in the light of the recently released IPCC report (IPCC AR5, 2013), which suggests that half of the cumulative (or historical) “CO₂ emissions budget”, that would allow us to limit global warming to below 2°C, had already been used up by the end of 2011.

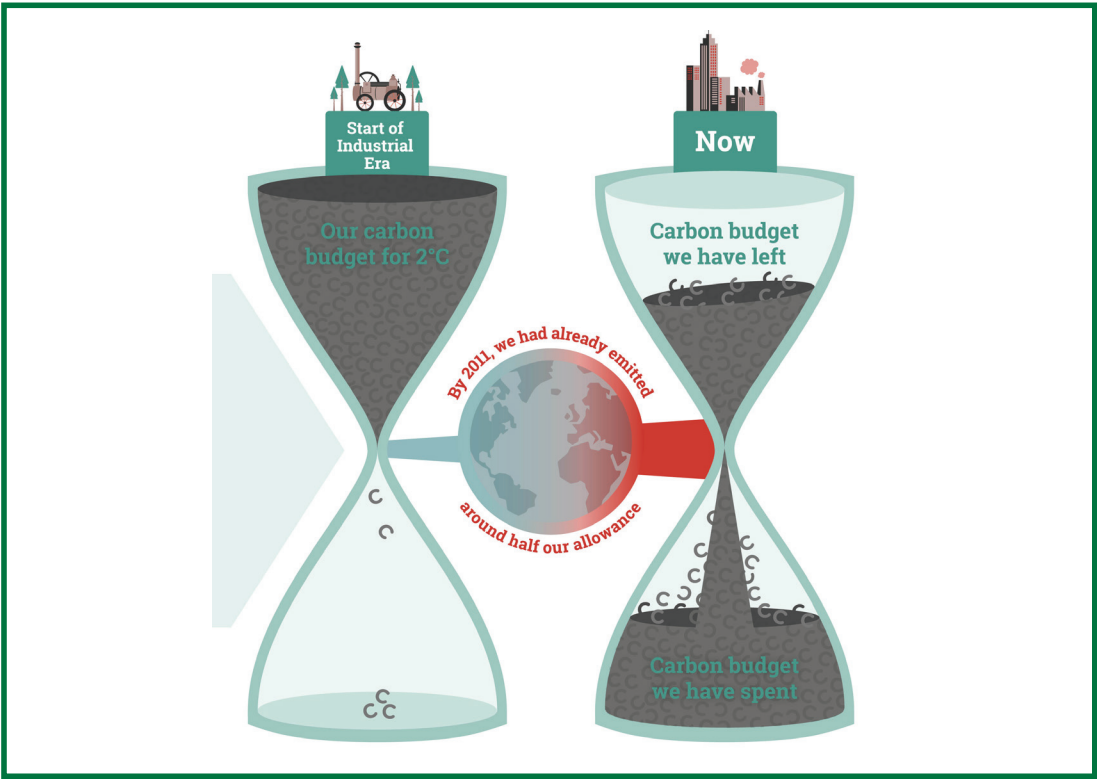


FIGURE 8
CARBON BUDGET
Source:
University of
Cambridge, Program
for Sustainability and
Leadership

To accelerate climate actions for keeping global warming below 2°C, at COP17 in 2011 in Durban, South Africa, the Parties to the Convention established the basis for creating a new international emissions reduction protocol. This was done by setting up an Ad-Hoc Working Group on the Durban Platform for Enhanced Action (ADP) (UNFCCC website, 2014). The Platform works in two streams. The first workstream aims to develop the text of the so-called “2015 Agreement”, a protocol with legal force that shall be adopted by the Parties at the 21st COP in Paris, France and shall enter into force in 2020. The second work stream focuses on enhancing mitigation actions prior to 2020, before the new 2015 Agreement enters into force. To pursue this joint effort, technical and information portals have been set up.

While the UNFCCC and the KP contained both bottom-up and top-down elements, the Cancún Agreement introduced a much more flexible approach by allowing both Annex 1 and non-Annex 1 Parties to define their own mitigation contribution via a pledging process (Bodansky and Diring, 2014). Although so far, many states have expressed their willingness to make voluntary commitments, experience shows that these pledges seem insufficiently ambitious and difficult to assess and compare (Bodansky and Diring, 2014).

When the UNFCCC launched the preparation of the 2015 Agreement, with the establishment of the ADP, it foresaw to develop a “protocol”, “another legal instrument” or “an agreed outcome with legal force” under the Convention, applicable to all Parties. With regard to its binding nature, it is still to be decided whether the Agreement is legally-binding or not, if the contributions or commitments are mandatory or discretionary, and whether they have a specific or prescriptive nature (World Resource Institute, 2011). With regard to the scope, developed countries initially suggested to focus on mitigation, while developing countries have promoted the inclusion of other aspects, including adaptation, finance, technology, transparency of action and support, and capacity-building (World Resource Institute, 2011).

BOX 6 SCOPE AND BINDING NATURE OF THE 2015 AGREEMENT

Source:
Presentation of Elpidio
V. Peria Member,
Philippine delegation
to the UNFCCC at
the ASEF ENVForum
“Climate Change for
Policy-makers for ASEAN
Members” training in
Hanoi, Viet Nam, 18-19
June 2014

At COP18 in Doha, Qatar and at COP19 in Warsaw, Poland, organized in 2012 and 2013 respectively, the Parties strengthened their commitments towards a more ambitious climate agreement.

The Doha Climate Gateway, the final agreement of COP18, set out a timetable for the 2015 Agreement, streamlined the negotiations in focus of the new agreement, acknowledged the need for both ambitious mitigation activities and increased adaptation measures, launched a new commitment for the developed countries under the KP for the period 2013-2020, and took steps for establishing a support framework to developing countries for clean energy use and sustainable growth (UNFCCC, 2014).

In Warsaw, the Parties decided to prepare the draft of the new climate agreement by December 2014 and finalize it by May 2015. They emphasized the role of national-level activities and agreed to launch domestic preparations for putting forward their commitments by the end of 2014. They also decided to accelerate mitigation actions until 2020, to improve the transparency of long-term climate-financing, to establish the Warsaw Framework for REDD+ and the Warsaw International Mechanism for Loss and Damage, to support developing countries especially affected by the impacts of climate change.

In June 2014, at the Bonn Conference, the ADP achieved progress on the elements of the draft negotiating text and identified information on intended nationally determined contributions and related processes. With regard to pre-2020 ambitions, it identified elements for the draft decision (ADP, 2014).

After the Bonn Conference, the co-chairs of the ADP highlighted a greater clarity in the development of the 2015 Agreement. They noted that the agreement will provide a long-term direction for mitigation, but would consider other areas, such as adaptation. As for implementation, they emphasized the key role of existing mechanisms, such as the Technology Mechanism or financing mechanisms (ADP, 2014). With regards to challenges, they listed the identification of long-term mitigation aspects, the assessment of global mitigation ambitions, the definition of a global goal for adaptation, practicalities of setting the intended nationally-determined contributions, ensuring financing, technology transfer, capacity-building and establishing transparency arrangements (ADP, 2014).

3

THE ROLE OF COUNTRY COALITIONS IN CLIMATE NEGOTIATIONS, AND THE ASEAN APPROACH

In this section we provide an introduction to major negotiation and regional interest group coalitions at the UNFCCC negotiation, as well as giving an overview of the climate co-operation among the ASEAN countries.

COALITIONS IN THE CLIMATE CHANGE NEGOTIATION PROCESS

Traditionally, the Parties to the Convention are grouped into five regional groups, which are: the African States, the Asian States, the Eastern European States, the Latin American and the Caribbean States, and the Western European and Other States (UNFCCC, 2014).

Besides the above regional groupings, Parties are also organized in negotiating coalitions based on their country's interest. These groups can effectively promote the viewpoint of member countries as well as play a major role in building consensus at the negotiations. Membership is not exclusive, and one country can be a member of more than one group.

OVERVIEW OF NEGOTIATING COALITIONS

Over the last two decades of climate negotiations, several significant groups have been established to represent the common interests of their members (UNEP, 2007). The major coalitions include:

EUROPEAN UNION (EU): As a regional organization, the EU consists of 28 Member States from Europe. Besides its Member States (MSs), the EU itself is a Party to the Convention, although without voting rights. During the negotiation process, the EU is responsible for representing the interests and the common position of its MSs, as well as for ratification of new international agreements.

ENVIRONMENTAL INTEGRITY GROUP (EIG): This group includes Mexico, the Republic of Korea and Switzerland and the mini-states of Lichtenstein and Monaco, and is operational since 2000.

GROUP OF 77 AND CHINA (G-77 AND CHINA): As the largest coalition in the UN system, this group provides a platform for 133 developing countries. The group meets before the regular UN sessions at ministerial meetings and agrees on the viewpoints to be represented. Many of its member countries also take part in other, smaller coalitions, such as the African Group, the Alliance of Small Island States (AOSIS) or the group of Least Developed Countries (LDCs).

AFRICAN GROUP (AG): This is a diverse group as it includes more-developed countries, oil-exporters, as well as many of the LDCs, comprising altogether 53 countries from Africa. Their negotiation interests may therefore differ considerably. In recent years, the AG has become more effective and proactive, and has advocated for financing for developing countries, and for preparing a legally-binding agreement by 2020.

ALLIANCE OF SMALL ISLAND STATES (AOSIS): This is a coalition of 44 low-lying coastal states and small island countries, representing approximately 5% of the global population. These countries are from different locations but they all face similar environmental, geographic, social and economic challenges, and are particularly vulnerable to sea-level rise. As an ad-hoc lobbying group, the AOSIS is represented at the negotiations by the Chairman or the Vice-Chairman.

LEAST DEVELOPED COUNTRIES (LDCs): This group includes those countries that are defined by the UN as least developed states with low-income and weak human and economic capital. Many of the LDC countries are especially vulnerable to climate change, but lack resources for adequate adaptation activities. Currently there are 48 countries in the LDC group, with more than half from Africa and the rest from Asian countries or Small Island Developing States (SIDS).

UMBRELLA GROUP: This is a loose coalition consisting of the non-EU developed countries, including Australia, Canada, Iceland, Japan, New Zealand, Norway, the Russian Federation, Ukraine and the United States. The members frequently speak also individually, but in their joint statements they usually promote that developing countries should also adopt legally-binding commitments.

LIKE-MINDED DEVELOPING COUNTRIES ON CLIMATE CHANGE(LMDC): This group was established in 2012 by China, Ecuador, Egypt, India, Malaysia, Nicaragua, Pakistan, The Philippines, Saudi Arabia, Thailand and Venezuela. Since then, some of the founding members (such as Thailand) have left the group, but other G77 and China group members have also joined. Now the group has approximately 20 members.

In addition to major negotiating coalitions, there are also several regional and other interest groups, which act on a more ad-hoc basis. These do not necessarily form official negotiation groups, but may issue joint statements, promote their common interests, and support each others’ views.

- ASEAN:** Association of Southeast Asian Nations
- BASIC:** Brazil, South Africa, India and China
- BRICS:** Brazil, Russia, India and China
- CACAM Group:** Countries from Central Asia and Caucasus, Albania and Moldova
- GRULAC:** Countries from Latin America and the Caribbean, including many Middle Income Countries and vulnerable SIDS
- League of Arab States:** Regional organization of North African and Middle Eastern Arab countries
- OPEC:** Organization of Petroleum Exporting Countries⁵
- Intergovernmental Agency of the Francophonie:** Organisation of French-speaking countries

BOX 7
OTHER REGIONAL
INTERESTS
GROUPS AT THE
NEGOTIATIONS

Source:
UNFCCC website and
UNEP, 2007

Besides the UNFCCC negotiation groups, a variety of joint climate initiatives have been formed, which brings together countries with similar climate interests and objectives (Widerberg and Stenson, 2013). Although these are more flexible mechanisms, which operate on a voluntary basis, they may contribute to the development of the 2015 Agreement by setting examples for ambitious commitments and actions, and by creating an enabling environment at the national level.

Type of co-operation	Initiatives
Country co-operations	G7/G8
	G20
	Asia-Pacific Economic Co-operation (APEC)
Energy partnerships	REN21
	Renewable Energy and Energy Efficiency Partnership (REEEP)
Emissions reduction partnerships	Climate and Clean Air Coalition (CCAC)
	Coalition for Rainforest Nations
	Carbon Sequestration Leadership Forum (CSLF),
	Global Methane Partnership
	International Partnership on Mitigation and Measurement Reporting and Verification (M-MRV)
	LEDS Global Partnership
	REDD+ Partnership

TABLE 2
EXAMPLES OF
CLIMATE INITIA-
TIVES OUTSIDE
THE UNFCCC

Source:
Based on Widerberg and
Stenson, 2013

5. Including Qatar, Indonesia, Libya, the United Arab Emirates, Algeria, Nigeria, Ecuador, Gabon and Angola.

THE ROLE OF NEGOTIATING COALITIONS

Over the last two decades many negotiating coalitions have been successful in working together on climate agreements. The EU has been traditionally effective in promoting its initiatives, and often plays a major role in moving the negotiations forward. The EIG has ensured representation of its members at closed-door, smaller group negotiations on different occasions. The OPEC countries, although they have not formed an official bloc, often take a common standpoint in their national statements.

Representing its 28 Member States, the EU played an important role in the launch of the Kyoto Protocol (KP) by convincing other developed countries (e.g. Japan and Canada) to join the Protocol. Although at the COP15 in Copenhagen, Denmark, it failed to promote a new climate agreement, during COP17 in Durban, South Africa, it successfully lobbied for the launch of the second commitment period of the KP (The Climate Group, 2011). Furthermore, by building a coalition with over 100 developing countries, it also managed to pave the way and launch the preparations for the 2015 Agreement (The Climate Group, 2011).

In addition, the EU, as a regional co-operation mechanism, can also serve as an example and inspire actions in other countries. A legally-binding⁶ climate-energy package set three key emissions reduction and energy targets by 2020. These were also adopted by the Europe 2020 strategy with smart, sustainable and inclusive growth as headline targets.

BOX 8
THE EUROPEAN UNION AND REGIONAL CLIMATE CO-OPERATION

Source:
UNFCCC website and UNEP, 2007

At the same time, other coalitions have had more difficulties in pursuing a common negotiation agenda. The G77 and China Group includes a high number of diverse countries with considerable differences in levels of development and in economic interest. As a result, the members of the G77 and China frequently intervene as individual countries in debates, representing their own interest in terms of climate actions. In addition, many countries of the G77 and China Group have formed smaller coalitions (AOSIS, LDCs, and the AG). Despite struggling with capacity and budget constraints in recent years, these smaller country coalitions have become more successful in promoting their common interests. (UNEP, 2009 and UNFCCC website, 2014).

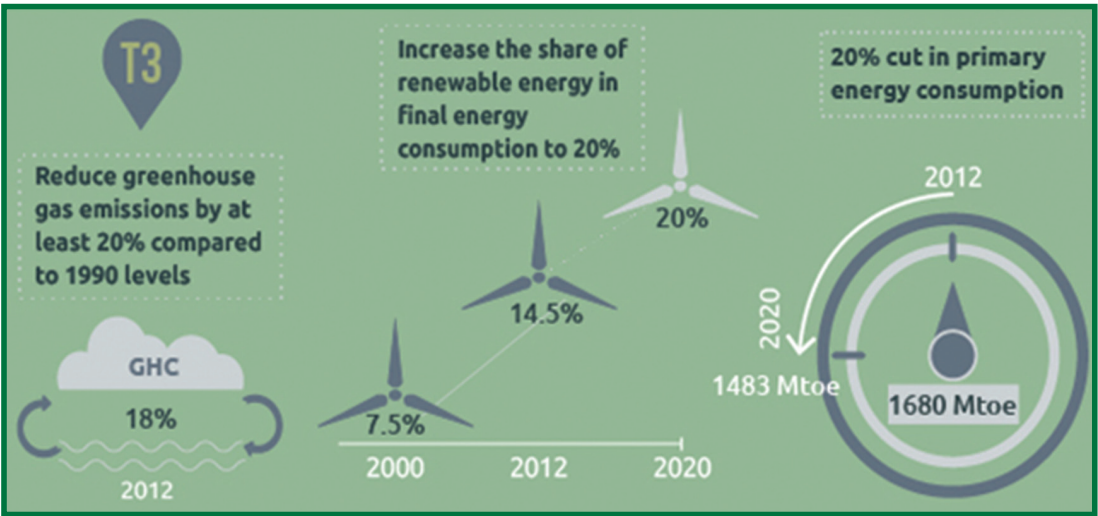


FIGURE 9
THE THREE TARGETS OF THE EU2020 STRATEGY ON CLIMATE CHANGE AND ENERGY

Source:
<http://www.dotinfographics.com/projects>

The importance of developing country coalitions is further amplified by the fact that developing countries often lack resources and capacities to effectively represent their negotiating interests. For example, especially if compared to developed countries, they often have a smaller delegation that makes it impossible for them to attend all parallel sessions or informal meetings, or have a

6. Providing a longer-term vision, in 2011 the EU has adopted a Roadmap to a Competitive Low-Carbon Economy by 2050. In line with the EU roadmap, the Member States were also called to develop their national low-carbon roadmaps. More recently, in 2013, the EU Strategy on Adaptation to Climate Change was also adopted and aims to climate-proof EU policies of vulnerable sectors and to support Member States in developing national adaptation strategies.

comprehensive negotiation team with a variety of capacities, including politicians, scientists, lawyers, economists and diplomats (UNEP, 2009). By teaming up with like-minded countries and working together with NGOs, their representation can be more efficient during negotiations.

The UNEP Guide for Negotiators of Multilateral Environmental Agreements offers a variety of practical information on the negotiation process and guidance on negotiation tactics.

URL: <https://www.cbd.int/doc/guidelines/MEAs-negotiators-guide-en.pdf>

Short Guide to the UNFCCC Process for Negotiators: Developed by the Foundation for International Environmental Law and Development, the guide provides useful information in three themes: before the conference, at the conference and legal terms.

URL: http://www.field.org.uk/sites/field.org.uk/files/guides/field_short_unfccc_guide_may_2012.pdf

Multilateral Environmental Agreement Negotiator's Handbook for the Pacific Region:

This recently published handbook by the Secretariat of the Pacific Regional Environment Programme (SPREP) discusses various MEAs, covers treaty law, the rules of procedure and finance, and key actors. It also provides practical guidance to negotiations and describes outcomes of the different negotiation phases.

URL: http://www.sprep.org/attachments/Publications/EMG/MEA_Handbook_2013.pdf

Climate Change Toolkit for Parliamentarians: This is based on the discussions held during the 3rd International Parliamentary Conference on Climate Change. Apart from discussing the basics of climate change, it provides an overview of the role of parliamentarians to tackle the climate challenge and discusses how they can collaborate with other actors.

URL: http://www.agora-parl.org/sites/default/files/cpa_uk_climate_change_toolkit.pdf

UNEP Manual for NGOs: Negotiating and Implementing Multilateral Environmental Agreements (MEAs): The manual targets NGOs and aims to strengthen the role of civil society in MEA formulation. It provides background and negotiation process information as well as guidance for more effective stakeholder engagement.

URL: <http://www.stakeholderforum.org/fileadmin/files/MEAs%20Final.pdf>

BOX 9

LEARN MORE ABOUT NEGOTIATION TECHNIQUES

Source:
UNFCCC website and
UNEP, 2007

OUTLOOK TO THE MAIN NEGOTIATING GROUPS' STANDPOINTS ON THE 2015 AGREEMENT

In preparing for and working on the 2015 Agreement, the negotiating groups expressed considerably different viewpoints (Duyck, 2013).

The EU advocates for legally-binding targets for all countries, but suggests that targets should be distinguished according to different country situations (Duyck, 2013). It also stresses the importance of scaling up the pre-2020 ambitions and promotes voluntary commitment. The EU also recognizes that mitigation and adaptation are closely interlinked activities and both are essential (Council of the European Union, 2013).

The group of **Like-Minded Developing Countries (LMDC)** called for a fair, universal and rule-based regime (a strengthened Kyoto agreement), in which developed countries launch and pursue ambitious mitigation actions as well as support developing countries in their contribution to tackling climate change (Duyck, 2013). The group underlines the importance of balancing mitigation and adaptation actions, in accordance with the Convention's principle on comprehensiveness, stressing that the new agreement must appropriately address the issue of financing and technology transfer by developed countries (LMDC, 2013).



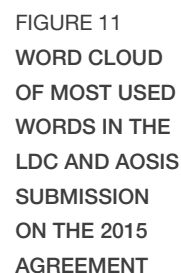
FIGURE 10
WORD CLOUD
OF MOST
USED WORDS
IN THE LMDC
SUBMISSION
ON THE 2015
AGREEMENT

Source:
Duyck, 2013

The **African Group** advocates for the adoption of global goals, including mitigation, adaptation, financing and technology support (Duyck, 2013b). At the same time, it underlines the principle of common but differentiated responsibility and advocates for developed countries taking a lead role (African Group, 2013). To ensure fairness and adequacy of contributions, the launch of an ex-ante evaluations is suggested (African Group, 2013).

The **LDC** group also outlines the responsibility of developed countries, but in addition it advocates for all countries to take climate actions and suggests the introduction of a strong compliance mechanism (Duyck, 2013). For developed countries, it advocates for absolute economy-wide emissions targets. For developing countries it suggests various commitment forms, such as relative economy wide targets or sectoral emissions reduction targets. In case of all targets, however, the group recommends adjustability over time. It calls for balance between adaptation and mitigation and for the inclusion of the Loss and Damage mechanism in the agreement. Apart from this, the LDC group also outlines the importance of means of implementation, including finance, technology development and transfer, and capacity building (LDC, 2014).

The **AOSIS** calls for a legally-binding agreement, but as a group of highly vulnerable countries to climate change, emphasizes the historical responsibility and the leadership role of developed countries (Duyck, 2013). At the same time, it also calls for accelerated mitigation action pre-2020 to ensure that global warming remains under 1.5 °C.



Source:
Duyck, 2013

The newly established **Independent Alliance of Latin America and the Caribbean (AILAC)**⁷ also advocates for all countries to take on mitigation commitments, but at the same time it calls Parties to carry out negotiations on means of implementation. It advocates for an agreement, in which countries in need can receive financial, technological and capacity building support to their adaptation activities (Duvck, 2013).

ASEAN Member States (AMS) have been working on harmonizing their environmental policies since the 1990s, when the first regional Strategic Plan of Action on the Environment was introduced for the period 1999-2004 (Trevisan, 2013). Joint climate co-operation activities were launched in the second half of the 2000s. On the one hand, they aim to establish a joint representation at the global UNFCCC negotiations. On the other hand, they work for the harmonization of climate change activities at the regional (ASEAN) level.

According to the official UN grouping, Southeast Asian states are part of the Asian states at the negotiations. As for negotiating coalitions, the AMS are members of the G77 and China Group; Cambodia, Lao PDR and Myanmar are also involved in the LDC group; while Malaysia, Philippines and Thailand participate in the LMDC group. Many of the AMS are also members in various international and regional climate initiatives. An overview of AMS membership in negotiating coalitions and other climate initiatives is presented below.

7. Including Chile, Colombia, Costa Rica, Guatemala, Panama and Peru.

	G77	LDC	LMDC	Coalition for Rainforest Nations	Global Methane Initiative	International Partnership on Mitigation and MRV	LEDS Global Partnership	Asia LEDS Partnership	REEEP	REDD+ partnership
Brunei D.	❖							❖		
Cambodia	❖	❖						❖		❖
Indonesia	❖			❖	❖	❖	❖	❖	❖	❖
Lao PDR	❖	❖						❖		❖
Malaysia	❖		❖	❖		❖		❖		❖
Myanmar	❖	❖						❖		
Philippines	❖		❖		❖	❖		❖	❖	❖
Singapore	❖					❖		❖	❖	❖
Thailand	❖				❖	❖		❖		❖
Viet Nam	❖			❖	❖	❖	❖	❖		❖

TABLE 3
ASEAN MEMBER
STATES IN
CLIMATE
NEGOTIATING
GROUPS AND
CLIMATE
INITIATIVES

Source:
Based on Widerberg and
Stenson, 2013

In recent years, the AMS have also recognized the importance of joint representation at the climate negotiations and have sought to promote their common regional interests. As a result, AMS country leaders issued a joint statement for the COP13, 15, 16 and 17, in 2007, 2009, 2010 and 2011 respectively.⁸

The joint AMS statements recognized climate change as a serious threat to humanity and sustainable development, and one of the major causes of the high climate vulnerability of the ASEAN. The importance of ‘common but differentiated responsibilities’ was also highlighted. The statements repeatedly called on Annex-1 Parties to continue taking a lead role in activities to combat climate change, by making more ambitious emissions mitigation commitments and by providing financial and technological support to developing countries. At the same time, the statements emphasized the willingness of AMS to: contribute to global negotiations; to amplify their regional co-operation to tackle the climate challenge; to implement mitigation commitments; and to support clean energy and low-carbon development. Furthermore, the importance of the Clean Development Mechanism, the Adaptation Fund and the REDD+ mechanisms were also underlined in the statements.

From 2009 onwards, the climate vulnerability of the AMS was also outlined in the statements. In 2009, the AMS specified the vulnerability of urban populations, called for an integrated coastal and ocean management approach, and for the creation of the Adaptation Framework. In 2011, in order to assess climate impacts and vulnerabilities for the region, the preparation of an ASEAN Report on Climate Change Impacts and Vulnerability was announced. The AMS are also considering to issue a common position paper on the 2015 Agreement.

8. ASEAN Leaders' Statement on Climate Change to COP17 to the UNFCCC and CMP7 to the Kyoto Protocol (19th ASEAN Summit, 2011); ASEAN Leaders' Statement on Joint Response to Climate Change Ha Noi, 9 April 2010, ASEAN Joint Statement on Climate Change to COP15 to the UNFCCC and CMP5 to the Kyoto Protocol (15th ASEAN Summit, 2009); ASEAN Declaration on the COP13 to the UNFCCC and CMP3 to the Kyoto Protocol (2007)
Source: <http://environment.asean.org/documentation/>

As an important forestry block, controlling approximately 16% of global tropical forests, the AMS also issued a position paper in 2008 on Reducing Emission from Deforestation and Forest Degradation (REDD) in Developing Countries (ASEAN, 2008). It suggested that emissions measuring methods as well as mitigation activities should be less complicated and called for greater investment, technology transfer and capacity-building related to deforestation.

In the 2009-2011 statements, AMS recurrently confirmed the importance of REDD+ for the region and outlined the importance of such a mechanism to ensure emissions mitigation, biodiversity protection, and in contributing to poverty reduction. Most recently the ASEAN released two statements related to REDD+ mechanism in March 2014. The first on methodological issues related to non-market based approaches and non-carbon benefits, the second on policy incentives and positive approaches (ASEAN 2014 and ASEAN 2014b). The latter emphasizes the importance of better international co-ordination and the provision of sustainable finance to developing countries in order to implement REDD+ activities (ASEAN 2014b).

BOX 10
ASEAN
STANDPOINTS ON
REDD

REGIONAL CLIMATE COOPERATION AMONG THE ASEAN MEMBER STATES

The AMS have confirmed the importance of regional climate cooperation in various meeting statements and declarations since 2007⁹. After initial efforts, the ASEAN climate cooperation was further strengthened with the launch of the **2009-2015 Road Map for an ASEAN Community**. One of the strategic objectives (D.10) of the ASEAN Socio-cultural Community Blueprint, under the Environmental Sustainability section, is to respond to climate change and address its impacts. It aims to encourage a common understanding of the adverse effects of climate change and to ensure the implementation of necessary mitigation and adaptation actions in all affected sectors.

As was foreseen in the Socio-cultural Community Blueprint, the **ASEAN Climate Change Initiative (ACCI)** was established in 2009 at the 11th ASEAN Ministerial Meeting on Environment. Co-ordinated by the ASEAN Working Group on Climate Change (AWGCC), the ACCI serves as a consultative platform to strengthen cooperation and coordination among sectoral institutions, as well as to enhance ASEAN representation at international negotiations.

At the 16th ASEAN Summit in 2010, the ASEAN leaders' issued a 'Joint Response to Climate Change'. They repeatedly urged for a global solution to the climate challenge, and also pledged for the development of a climate change resilient ASEAN community (ASEAN, 2010). In line with the latter, an **ASEAN Action Plan on Joint Response to Climate Change (AAP-JRCC)** has been developed by the AMS. The action plan is based on the Roadmap for an ASEAN Community 2009-2015, and seeks for regional cooperation opportunities in terms of adaptation and mitigation options, climate research, and global climate negotiations (ASEAN, 2012). The AWGCC of the ACCI was designated for the implementation of the Action Plan and a lead country is appointed for the coordination of the implementation of each action programme point.

9. Examples include the ASEAN Declaration on Environmental Sustainability (13th ASEAN Summit in 2007), the Singapore Declaration on Climate Change, Energy and the Environment (3rd EAS Summit in 2007), the Singapore Resolution on Environmental Sustainability and Climate Change (11th AMME in 2009).

Adaptation: actions include strengthened climate research and R&D activities, information and experience exchange about adaptation efforts and development, and an ASEAN work programme for disaster risk reduction and management. The importance of building resilience in the hydrological and agricultural sectors to reduce water stress and enhance food security is also highlighted.

Mitigation: actions include the exchange of emissions reduction best practices in different sectors (such as energy production, land use and forestry), identification of low-carbon development solutions, promotion of Nationally Appropriate Mitigation Actions (NAMAs), Measurement, Reporting and Verification (MRV) and CDM mechanisms of the Kyoto Protocol, and development of a regional carbon cap and trade system.

Common activities for finance and investment, technology transfer and capacity building: actions include the promotion of multilateral funds, private sector investments, support for technology transfer by exchange of experiences and by strategic co-operation with the private sector, capacity-building of relevant stakeholders related to national GHG inventories, to global negotiations and adaptation capacities.

Strengthen cooperation with other regional bodies: to promote awareness of climate change and to enhance climate-related research.

The commitment of the ASEAN countries to the ACCI and the AAP-JRCC was further strengthened in the Bangkok Resolution on the ASEAN Environmental Cooperation (ASEAN, 2012). In addition, the coordinating body of the ACCI, the AWGCC, also meets regularly to discuss the implementation of climate activities under the ASCC Blueprint 2009-2015.¹⁰

Many other climate-relevant activities are also being undertaken in the framework of the ASEAN co-operation. These include both mitigation and adaptation actions under general environmental protection, disaster risk reduction, sustainable energy, transport, urban development, natural resource management, and agricultural production agreements and initiatives (Letchumanan, 2010 and Trevisan, 2013).

10. The 5th Meeting of the ASEAN Working Group on Climate Change (AWGCC) was held in April 2014 in Jakarta, Indonesia.

Theme	Agreement/Initiative
Air pollution	The ASEAN Agreement on Trans-boundary Haze Pollution
Carbon trading	Joint Crediting Mechanism (JCM)/Bilateral Offset Credit Mechanism (BOCM) between Japan and Cambodia, Indonesia, Lao PDR, Viet Nam
Disaster risk management	ASEAN Agreement on Disaster Management and Emergency Response 2010-2015
Sustainable Energy	ASEAN Plan of Action for Energy Cooperation 2010-2015 ASEAN Center for Energy (ACE) Council of the Heads of ASEAN Power Utilities and Authorities (HAPUA)
Sustainable Transport	ASEAN-Japan Action Plan on Environment Improvement in Transport Sector ASEAN-Germany technical assistance project on “energy efficiency and climate change mitigation for the land transport ASEAN-EC Air Transport Integration Project (AATIP)
Urban planning	ASEAN Initiative on Environmentally Sustainable Cities ASEAN Environmentally Sustainable City (ESC) Award Programme
Environmental Education	ASEAN Environmental Education Action Plan (AEEAP)
Water resource management	The ASEAN Strategic Plan of Action on Water Resources Management (ASPA-WRM) ASEAN Marine Water Quality Management Guidelines & Monitoring Manual
Natural resource use and Agriculture	The ASEAN Multi-Sectoral Framework on Climate Change: Agriculture, Fisheries and Forestry Towards Food Security (AFCC Framework) The Rehabilitation and Sustainable Use of Peatland Forests in South East Asia Project
Nature conservation	ASEAN Heritage Parks (AHP) Programme Heart of Borneo Initiative (HoB) Coral Triangle Initiative (CTI)

TABLE 4
ASEAN
AGREEMENTS
AND INITIATIVES
RELEVANT TO
CLIMATE CHANGE

Source:
Letchumanan, 2010,
Trevisan 2013 and
ASEAN Co-operation on
Environment website

In the future, as also emphasized in the Road Map for an ASEAN Community 2009-2015, the ASEAN aims to consider climate change more thoroughly through multi-sectoral cooperation. Besides the existing regional setting for climate change cooperation, it is also crucial that the AMS set and pursue national standards and commitments, and undertake adaptation and mitigation actions at the national level. These initiatives can amplify the results of regional climate co-operation activities and accelerate the move towards climate-resilient societies and low-carbon economic development.

4

SHORT ASEAN COUNTRY OVERVIEWS

In this section we provide an overview of climate vulnerabilities, adaptation needs, basic emissions characteristics, climate change strategies, policies and activities of each ASEAN Member State.



FIGURE 12
THE ASEAN
COMMUNITY

Source:
European Commission

Country	Total land area	Total population	Population density	Annual population growth	GDP at current prices	GDP per capita at current prices	
	km²	thousand	persons per km²	%	US\$ million	US\$	US\$ PPP
	2012	2012	2012	2012	2012	2012	2012
Brunei Darussalam	5 769	399,8	69	1,6	16 969,70	42 445,5	54 210,50
Cambodia	181 035	14 741,4	81	1,5	14 400,80	976,90	2 528,40
Indonesia	1 860 360	245 425,2	132	1,4	878 223,40	3 578,40	4 902,90
Lao PDR	236 800	6 514,4	28	2,0	9 083,10	1 394,30	2 876,20
Malaysia	330 290	29 518,0	89	1,6	305 154,40	10 337,90	16 780,00
Myanmar	676 577	60 976,0	89	1,0	51 597,50	846,20	1 571,10
Philippines	300 000	97 594,0	326	1,9	250 542,70	2 567,20	4 299,20
Singapore	715	5 312,4	7 429	2,5	284 389,00	53 533,10	62 509,40
Thailand	513 120	67 911,0	132	0,5	366 126,60	5 391,30	9 502,00
Viet Nam	330 951	88 772,9	268	1,1	141 669,10	1 595,90	3 449,00
ASEAN Total	4 435 617	617 165,1	139	1,3	2 318 156,40	3 756,10	5 793,00

TABLE 5
SELECTED
SOCIO-
ECONOMIC
INDICATORS FOR
ASEAN MEMBER
STATES

Source:
ASEAN statistics, 2014



BRUNEI DARUSSALAM

	2011
GDP per capita (current USD)	41,127
Population (thousand)	412,200
Population density (people per km² of land area)	-
Share of urban population (% of total)	76
Percentage of people under poverty line	-

Source:
UNSD, 2014 and World
Bank, 2014b

Brunei Darussalam is a small, but well-performing economy, which almost entirely depends on the export of fossil fuel energy sources. Its most important natural resource is the country's extensive forest cover, which covers over 70% of the total country area.

OBSERVED AND PROJECTED CLIMATE IMPACTS

There is limited information on climate change and its impacts in Brunei. The country has been prone to forest fires due to strong haze pollution. Floods and landslides due to heavy rainfall have been observed more frequently in recent years. Rice production may also be impacted in the future.

Climate parameters	
Projected annual temperature change (2045-65, °C)	1.5-1.9
Projected annual precipitation change (2045-65, mm)	-185 to 111
Projected change in annual hot days/warm nights	15/27
Projected change in annual cold days/cool nights	-2/-3

TABLE 6
PROJECTED
CHANGES IN
TEMPERATE AND
PRECIPITATION

Source:
World Bank, 2011

EMISSIONS

No official UNFCCC data is available on GHG emissions. According the Asia Development Bank (2013), Brunei had the highest GHG emissions per capita in the ASEAN community in 2013 (above 30 metric tons). However, due to its relatively small size, its contribution to global GHG emissions is less than 0.01% (Brunei Darussalam, 2012).

CLIMATE CHANGE STRATEGIC PLANNING

A **National Environment Strategy** was formulated, but there is no information available on a national climate strategy. Brunei is party to various international agreements including the UNFCCC, the Kyoto, and the Montreal Protocols. The country has also signed different regional environmental agreements, such as the ASEAN Agreement on Trans-boundary Haze Pollution, the ASEAN Plan of Action on Energy Cooperation of 2010-2015 and the Heart of Borneo Declaration in 2007.

CLIMATE CHANGE INSTITUTIONAL FRAMEWORK

The **National Council on Climate Change** was established with the aim to develop and implement climate change strategies, and is led by the Ministry of Development and the Energy Division at the Prime Minister's Office (Brunei Times, 2011).

CLIMATE ACTIONS

Brunei aims to work on raising environmental awareness, mainstreaming environmental considerations into planning, extending natural resource assessment and information, improving the urban and rural environment, and protecting biodiversity, forests, coastal and marine areas (Brunei Darussalam, 2012).

Examples of flagship initiatives include a Mangrove Tree Planting initiative by the local NGO Green Brunei, the Brunei Recycling Drive educational project, the Brunei Youth Environmental Leadership Programme, and the establishment of a solar power plant with 1.2 MW capacity. (Brunei Darussalam, 2012 and ACCAD, 2014).

COUNTRY REFERENCES USED

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- UNEP (2012): Building a Green Economy in the Heart of Borneo
- UNSD (2014): UN Data
- World Bank (2011): The Little Data Book on Climate Change
- World Bank (2014b): Open Database

[The full references are included in the bibliography]



CAMBODIA

	2011
GDP per capita (current USD)	897
Population (million)	14,305,000
Population density (people per km² of land area)	84 *
Share of urban population (% of total)	20 *
Percentage of people under poverty line	20.5

*Data is for 2012
Source:
UNSD, 2014 and World
Bank, 2014b

Cambodia has successfully halved the percentage of people living under the poverty line, from a previous share of 53% in 2004. Although industrial production has been on steady rise in the last two decades, the majority of its population (80%) live in rural areas and depend on agricultural production for their livelihoods. Since Cambodia, especially its least developed rural areas, is heavily affected by natural disasters, the population that depends on agricultural production is highly vulnerable to climate change. Due to the lack of infrastructure and institutional capacities, the country's adaptive capacity is also limited, which further increases the economic losses related to natural disasters (World Bank, 2014).

OBSERVED AND PROJECTED CLIMATE IMPACTS

Cambodia has recently been facing more frequent natural disasters including floods and droughts. In the future, sea level rise will pose a significant threat to low-lying coastal areas, which will cause storm surges, high tides, coastal erosion and seawater intrusion (World Bank, 2014).

	Observed	Projected
Temperature	+0.8 °C increase since 1960	+0.7-2.7°C increase by 2060
Rainfall	Inconsistent and not yet significant changes	Expected to increase in the monsoon areas (-109 to 95 mm by 2045-2065)

TABLE 7
OBSERVED AND
PROJECTED
CHANGES IN
TEMPERATURE
AND
PRECIPITATION

Source:
World Bank, 2014

ADAPTATION NEEDS

Support in accelerating adaptation efforts is required in three major areas (World Bank, 2014):

Agriculture and forestry: introduction of climate-resilient crop varieties, grain banks for drought periods, improved water use, improved access to weather information for farmers, and improved forest resource management (including restoration and conservation).

Water resources: quality and quantity assessment studies, improved water and watershed management practices, and flood prevention methods;

Healthcare: health education programmes, health extension services, and malaria surveillance systems.

GHG EMISSIONS

The latest available UNFCCC GHG emissions data is for 1994. Although the CO₂ emissions show a fourfold increase since 1994, Cambodia's per capita CO₂ emissions are still very low in international and regional comparisons. While mitigation actions are not priorities in Cambodia, it is important to protect the carbon sinks: the total forest cover has been considerably decreased, from 73.3% in 1990 to 56.6% in 2011 (World Bank, 2014). GHG emission estimations of the World Resource Institute indicate that the emissions from LUCF had a significant contribution to Cambodia's GHG emissions by 2011.

Total GHG/CO ₂ emissions	1994 (UNFCCC)	2010 (World Bank)	2011 (WRI)
CO ₂ emissions without LUCF (kt)	1,321.90	4,180.00	4,030.00
CO ₂ net emissions/removals by LUCF	-19,636.00		
CO ₂ net emissions/removals with LUCF (kt)	-18,314.00		
GHG emissions without LUCF (kt)	12,762.60		26,180.00
GHG net emissions/removals by LUCF	-17,907.70		
GHG net emissions/removals with LUCF (kt)	-5,145.10		48,850.00
CO ₂ emissions per capita emissions without LUCF (metric ton)		0.30	0.28

TABLE 8
EMISSIONS
SUMMARY FOR
CAMBODIA

Source:
UNFCCC, 2014b; World
Bank 2014b and WRI,
2014

CLIMATE CHANGE STRATEGIC PLANNING

The Government laid down its current development objectives in the **Rectangular Strategy for Growth, Employment, Equity and Efficiency (2004)** and the **National Strategic Development Plan (2006-2010 and update for 2009-2013)**.

Linked to the national development objectives, Cambodia prepared a **National Adaptation Programme of Action on Climate Change** in 2006. Most recently, in 2013, it adopted the **Climate Change Strategic Plan for 2014-2023**, defining eight strategic climate objectives and underlying action areas in line with existing development strategic objectives. These mostly focus on decreasing climate vulnerabilities and improving adaptation capacities, but also targets low-carbon economic development.

The government has not adopted climate legislation and voluntary emissions reduction targets, but in the long term it aims to give higher priority to mitigation activities. In line with this, Cambodia adopted an **Energy Sector Development Plan (2005-2024)** and is currently developing a legal framework aimed at promoting the use of renewable resources.

CLIMATE CHANGE INSTITUTIONAL FRAMEWORK

The **National Climate Change Committee** is the overall coordinating agency. To support and advise the Committee, a Climate Change Technical Team (CCTT) was also established. The **Ministry of Environment** also has a **dedicated Climate Change Department**, which focuses on a variety of issues. The main government body responsible for managing the REDD+ process is the REDD+ Taskforce and its Secretariat, but other bodies are also involved in implementation.

The government of Cambodia is also committed to support international climate efforts, and works closely with developed countries (Sweden, Denmark), international organizations (UNDP) and other regional partnerships (EU, Energy and Environment Partnership Mekong). The **Cambodia Climate Change Alliance** was created as the umbrella organization to bring together multiple players.

CLIMATE ACTIONS

The majority of climate activities are targeting adaptation, with special focus on the agriculture sector. Initiatives include water management, flood prevention measures and enhanced resistance to climate change variables.

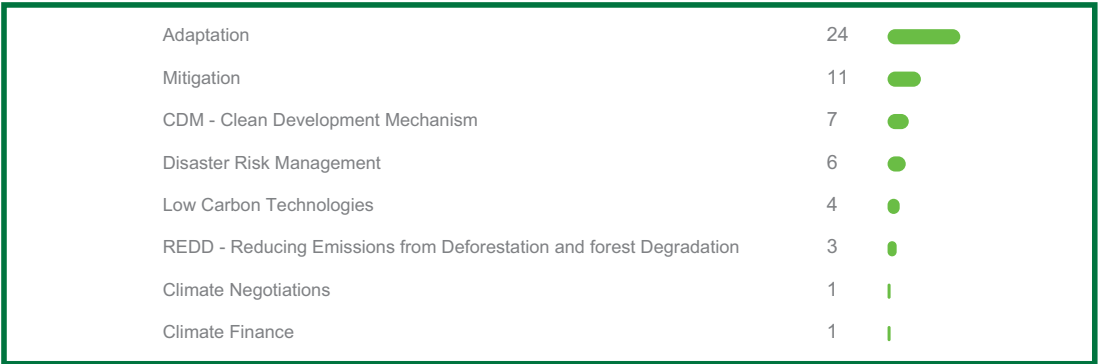


FIGURE 13
NUMBER
OF CLIMATE
PROJECTS AND
ACTIVITIES IN
CAMBODIA, BY
THEME

Source:
Southeast Asia Network
of Climate Change
Offices, 2014

Project examples include the Cambodia Community-Based Adaptation Program, the Harvest Project funded by USAID; the Climate Change and Adaptation Initiative of the Mekong River Commission; or the recently concluded Pilot Program for Climate Resilience funded by the Climate Investment Funds. Institutional governance has been identified as one of the major implementation challenges, including both the lack of infrastructural and operational capacity.

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- McSweeney (2010): UNDP Climate Change Country Profiles: Cambodia.
- UNDP Cambodia (2014): Cambodia Climate Change Alliance
- UNFCCC (2014): GHG emissions country profile
- World Bank (2014): Climate Change Knowledge Portal

[The full references are included in the bibliography]



INDONESIA

Country Parameters	2011
GDP per capita (current USD)	3,495.00
Population (million)	242,326.00
Population density (people per km ² of land area)	126.80
Share of urban population (% of total)	51.50*
Percentage of people under poverty line	43.30

*Data is for 2012
Source:
UN Stat, 2014 and World
Bank 2014b

Indonesia achieved rapid economic growth in the last decade, but about 40% of the population still lives under the poverty line of 2USD per day. The rapid urbanization and industrialization, high population density -especially in low-lying areas (11.2% in 2011) - and the economic dependence on natural resources, all make Indonesia very vulnerable to climate change. The poor will be affected the most by its impacts (World Bank, 2014).

OBSERVED AND PROJECTED CLIMATE IMPACTS

Floods and sea level rise pose a major risk to highly populated urban centers and low-lying island areas. Data from 2011 show that 11.2% of the population live on land areas below 5m in height (World Bank, 2011). The country is also affected by droughts caused largely by El Niño, which negatively impact agricultural production. In the future, flood and drought events may worsen and will result in decreased food security, higher mortality rates, and increased disaster risk management expenses.

	Observed	Projected
Temperature	0.3 °C increase since 1990	0.3 °C increase in each decade
Rainfall	2-3% increase since 1990	Changes in precipitation patterns

TABLE 9
OBSERVED AND
PROJECTED
CHANGES IN
TEMPERATURE
AND
PRECIPITATION

Source:
World Bank, 2014

ADAPTATION NEEDS

Priority adaptation areas consist of:

- **Agriculture and food security:** improved farming practices, improved institutional co-ordination, data and information development, research and awareness raising activities.
- **Protection of coastal eco-systems:** vulnerability studies, capacity building of fishermen, integrated coastal zone management practices, protection of mangrove forests and improved forestation policies.
- **Water stress:** improved infrastructure and management practices should be developed. (World Bank, 2014)

GHG EMISSIONS

The latest available UNFCCC emissions data is from 2000. While the emissions are relatively high, 60% of the GHG and 74% of CO₂ emissions were from LUCF. Since 2000, Indonesia considerably increased its CO₂ emissions, but the per capita CO₂ emissions are still well below the global level. The GHG emissions calculation of the WRI indicates that the overall GHG emissions have also increased since 2000.

Total GHG/CO ₂ emissions	2000 (UNFCCC)	2010 (World Bank)	2011 (WRI)
CO ₂ emissions without LUCF (kt)	289,527.20	433,989.00	447,180.00
CO ₂ net emissions/removals by LUCF	821,173.40		
CO ₂ net emissions/removals with LUCF (kt)	1,110,700.50		
GHG emissions without LUCF (kt)	556,728.78		834,580.00
GHG net emissions/removals by LUCF	821,254.50		
GHG net emissions/removals with LUCF (kt)	1,377,982.95		2,059,100.00
CO ₂ emissions per capita emissions without LUCF (metric ton)		1.1	1.83 ¹¹

TABLE 10
EMISSIONS
SUMMARY FOR
INDONESIA

Source:
UNFCCC, 2014; Republic
of Indonesia, 2010; World
Bank, 2014 and WRI,
2014

CLIMATE CHANGE STRATEGIC PLANNING

Indonesia included both mitigation and adaptation objectives into its long-term **National Development Plan (2005-2025)**. Objectives relate to food security, development of clean energy technologies, and environmental and disaster management. To feed the second mid-term national development plan (2009-2014) with a long-term guidance on climate change policies, Indonesia adopted the **Climate Change Sectoral Roadmap** in 2010.

In 2011, Indonesia also approved a **National Action Plan for Greenhouse Gas Emission Reductions** with a 26-41% GHG emission reduction commitment by 2020, and introduced targets on renewable energy and biofuels as well as energy conservation. In line with these commitments, Indonesia has already registered two NAMAs to UNFCCC NAMA Registry. The first one is the Sustainable Urban Transport Initiative (registered in 2012), and the second one is the Smart Street Lighting Initiative (registered in 2014).

Most recently, in 2013, a **National Action Plan for Climate Change Adaptation** was published. As a cross-cutting thematic plan, it targets food and energy security, health, settlements, infrastructure, and urban and coastal areas.

CLIMATE CHANGE INSTITUTIONAL FRAMEWORK

The National Development Planning Agency is responsible for the development of climate change strategic documents. Involving 17 ministers and the Head of the Planning Agency, the **National Council on Climate Change** was established with the mandate to coordinate the implementation of climate change activities in Indonesia. It formulates recommendations for national policies, strategies, and programmes; coordinates activities in climate change control duties; formulates mechanisms, policies, and procedures on carbon trading; implements monitoring and evaluation of climate change policies; and strengthens the country's position in international climate change fora. The implementation of policies and actions is carried out by the related member ministries of the Council.

The **Ministry of Environment** operates a National GHG Inventory System and the **Indonesian Climate Change Center** provides technical input on low-emission development strategies, on MRV, and climate resilience. A REDD+ Task Force and Agency as well as a National Commission on the Clean Development Mechanism were also established. A variety of NGOs also function in Indonesia, such as the Renewable Energy Society, the Geothermal Association and the Biofuels Association.

11. The data collection and calculation methodology of the WRI differs from the one approved by the UNFCCC. Thus, in some cases, emissions data can differ from UN or national sources.

CLIMATE CHANGE ACTIVITIES

Indonesia undertakes a variety of mitigation and adaptation activities. To mitigate emissions, Indonesia primarily plans to improve LULUCF and peatlands. The REDD+ and the CDM mechanisms are considered as important programmes in this regard. Many of the adaptation activities concentrate on the most vulnerable agricultural sectors to improve water-management, introduce more climate resilient crops, introduce risk-management schemes, and increase awareness among farmers.



FIGURE 14
NUMBER
OF CLIMATE
PROJECTS AND
ACTIVITIES IN
INDONESIA, BY
THEME

Source:
Southeast Asia Network
of Climate Change
Offices, 2014

The Climate Change Trust Fund and the Climate Change Programme Loan provides funding for a variety of climate objectives in Indonesia. An emissions trading scheme, the Nusantara Carbon Scheme (NCS) was also introduced to facilitate voluntary carbon trading in the country.

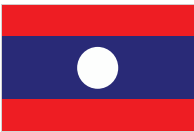
Main implementation challenges are the lack of coordination between government institutions, the decentralization of environmental management tasks and limited mainstreaming of climate change into development plans, especially in public investment and regional planning. Mitigation-specific implementation challenges include government subsidies on fuels and lack of capacity-building support in applying for funds for the development of renewables. As for adaptation activities, local government agencies often lack management capacities and there is also a lack of knowledge of existing adaptation activities and lessons learnt from these. The poor institutional and financial capacities also hamper monitoring and enforcement of deforestation policies.

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- World Bank (2014b): Open Database.

[The full references are included in the bibliography]



LAO PDR

Country Parameters	2011
GDP per capita (current USD)	1,303.00
Population	6,288,000
Population density (people per km² of land area)	26,60
Share of urban population (% of total)	35,40
Percentage of people under poverty line	27,60*

*Data is for 2012
Source:
UNSD, 2014 and World
Bank, 2014b

In recent years, Lao PDR has experienced rapid economic growth (8.2% in 2012). The country is also rich in natural resources, but in recent years its extensive forest cover has been negatively impacted by deforestation (67.9% in 2011). Since the livelihood of the majority of the population depends on natural resources, the government aims to promote low-carbon economic development (World Bank, 2014).

OBSERVED AND PROJECTED CLIMATE IMPACTS

The frequency of floods and droughts has increased. In the future, it is expected that precipitation changes will increase the frequency of flooding, while temperature increases will result in more frequent occurrences of disease and water stress. Floods and droughts will negatively impact agricultural lands and production, the main livelihood of the rural poor.

	Observed	Projected
Temperature	0.1-0.3 °C increase per decade since 1950	Up to 2.6 °C
Rainfall	Decrease in total rainfall between 1961 and 1998	10-30% increase in the eastern and southern areas

TABLE 11
OBSERVED AND
PROJECTED
CHANGES IN
TEMPERATURE
AND
PRECIPITATION

Source:
World Bank, 2014

ADAPTATION NEEDS

Adaptation efforts will be mostly needed in the agriculture and forestry, water and health sectors (World Bank, 2014). Improved information systems, awareness-raising activities, and improved policies and institutions are necessary in all sectors. Sector-specific needs include:

- **Agriculture and forestry:** enhanced land, water and forest management practices, research and provision of climate information and forest degradation.
- **Water sector:** flood prevention infrastructure.
- **Healthcare:** infrastructure and disease control programs.

GHG EMISSIONS

According to the latest available UNFCCC data (2000) most of Lao PDR' emissions were from LUCF. While the country was a carbon sink until the early 90s, since then it became a net emitter due to rapid deforestation. GHG emissions have further increased since 2000, but according to the WRI calculations, emissions from LUCF have decreased.

Total GHG/CO ₂ emissions	2000 (UNFCCC)	2010 (World Bank)	2011 (WRI)
CO ₂ emissions without LUCF (kt)	1,052.20	1,874.00	1,400.00
CO ₂ net emissions/removals by LUCF	40,711.80		
CO ₂ net emissions/removals with LUCF (kt)	41,764.00		
GHG emissions without LUCF (kt)	8,898.20		21,500.00
GHG net emissions/removals by LUCF	41,919.80		
GHG net emissions/removals with LUCF (kt)	50,818.00		44,890.00
CO ₂ emissions per capita emissions without LUCF (metric ton)		0.50	0.22 ¹²

TABLE 12
EMISSIONS
SUMMARY FOR
LAO PDR

Source:
UNFCCC, 2014; World
Bank, 2014 and WRI,
2014

CLIMATE CHANGE STRATEGIC PLANNING

In line with the national sustainable development objectives, Lao PDR adopted a **Climate Change Strategy** in 2010, focusing on seven key areas in terms of adaptation and mitigation actions.

A **National Adaptation Programme of Action (NAPA)** was also developed in 2009, identifying the agriculture and forestry sectors as the most vulnerable. It also took a strategic approach towards disaster risk management by adopting a **National Disaster Management Plan** for the period 2012-2015. The development of a green economy strategy is also under discussion, since Lao PDR aims to exploit its potential in solar, wind and hydro energy in a variety of sectors.

Lao PDR has also developed strategic action plans for environmental management, environmental education, biodiversity and forestry, water, and land resource management.

CLIMATE CHANGE INSTITUTIONAL FRAMEWORK

The **National Steering Committee on Climate Change** aims to mainstream climate change into the national development plan and identify priority actions across the seven key areas identified in the National Climate Change Strategy. **The National Environment Committee (NEC)** is responsible for the verification of the National GHG Inventory. The Ministry of Natural Resources manages the CDM and Environment (MONRE), while a separate Task Force and supporting office was created for the REDD+ mechanism.

CLIMATE CHANGE ACTIVITIES

Lao PDR promotes renewable energy deployment and has supported the implementation of numerous hydropower projects in remote rural areas, which provide low-cost electricity. A variety of adaptation projects have been financed from international sources to develop sectoral strategies, address vulnerabilities, and to improve capacities to tackle the climate challenge. The agricultural sector and disaster risk management are priority areas.

Project examples include a Flood Vulnerability Assessment and Mapping Project by the Mekong River Commission, a UNDP-GEF project for Improvement of the Resilience of the Agriculture Sector To Climate Change Impacts, and a Capacity Enhancement for Coping with Climate Change project funded by ADB and the Nordic Development Fund for Community Based Disaster Preparedness Program (2007-2011).

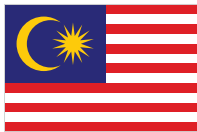
Important implementation barriers include the lack of co-ordination between different government levels, the lack of financial and human capacities within government institutions, and low levels of public awareness.

12. The data collection and calculation methodology of the WRI differs from the one approved by the UNFCCC. Thus, in some cases, emissions data can differ from UN or national sources.

COUNTRY REFERENCES USED

- ASIA Leds Partnership (2014): Country Profile.
- Lao PDR, Ministry of National Resources and Environment (2012): National Rio+20 Report for Lao PDR
- Lao PDR, Ministry of National Resources and Environment (2013): Second National Communication on Climate Change of Lao PDR
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- Southeast Asia Network of Climate Change Offices (2014): ASEAN Climate Change Action Database
- UNFCCC (2014): GHG emissions country profile
- UNSD (2014): UN Data
- World Bank (2014): Climate Change Knowledge Portal
- World Bank (2014b): Open Database

[The full references are included in the bibliography]



MALAYSIA

Country Parameters	2011
GDP per capita (current USD)	9,977.00
Population	28,859,000
Population density (people per km² of land area)	87.20
Share of urban population (% of total)	73.50*
Percentage of people under poverty line	2.30**

*Data is for 2012;
**Data is for 2009
Source:
UNSD, 2014 and World Bank, 2014b

Malaysia experienced steady economic and population growth in the last decade. Along with high population density and high level of urbanization (73.5% in 2012), these trends have put growing pressure on the country’s natural resources and rich biodiversity.

Observed and Projected Climate Impacts

The amount of rainfall has not increased noticeably, but rainfalls became more intense and is expected to further intensify and result in more extremes in the future. Sea levels have been rising, and a 1.3 mm annual increase was observed during the 1986-2006 period. By 2050 a 0.5m total rise is expected (Malaysia, Ministry of Natural Resources and Environment, 2011).

	Observed	Projected
Temperature	0.6-1.2 °C increase since 1969	1.5-2 °C increase by 2050
Rainfall	No noticeable increase	More intense rainfalls

TABLE 13
OBSERVED AND
PROJECTED
CHANGES IN
TEMPERATURE
AND
PRECIPITATION

Source:
World Bank, 2014

Malaysia is especially vulnerable to increased water stress and sea level rise. In the second National Communication to the UNFCCC (2011), it identified six main priority adaptation areas. These comprise extreme weather events including droughts and floods, agriculture production losses, human health problems, biodiversity, and coastal and marine habitat losses.

ADAPTATION NEEDS

Priority action areas include (Adaptation Knowledge Platform, 2011):

- **Water resource management:** enhanced water supply efficiency, demand management practices, revision of flood management plans, improved rainfall and flood forecasting, disaster warning systems, and flood hazard mapping;
- **Agriculture (palm oil production in particular):** drainage system improvements, irrigation facilities, and cultivar breeding programmes;
- **Biodiversity:** conservation and protection corridors, protection of genetic resource via gene banks, and rehabilitation centers for fauna;
- **Healthcare:** surveillance programmes and detection mechanisms for vector and waterborne diseases, and community involvement in defense strategies.

GHG EMISSIONS

While Malaysian forests were still major carbon sinks in 2000, according to emission estimations, Malaysia became a net emitter by 2005 (see WRI calculations for 2011). In 2010, the CO₂ emissions per capita was above the level of other countries in the region, but still below the global average.

Total GHG/CO ₂ emissions	2000 (UNFCCC)	2010 (World Bank)	2011 (WRI)
CO ₂ emissions without LUCF (kt)	138,695.00	216,804.00	205,930.00
CO ₂ net emissions/removals by LUCF	-221,034.00		
CO ₂ net emissions/removals with LUCF (kt)	-82,00339		
GHG emissions without LUCF (kt)	193,396.60		294,970.00
GHG net emissions/removals by LUCF	-220,194.20		
GHG net emissions/removals with LUCF (kt)	-26,797.60		441,290.00
CO ₂ emissions per capita emissions without LUCF (metric ton)		1.20	

TABLE 14
EMISSIONS
SUMMARY FOR
MALAYSIA

Source:
UNFCCC, 2014; World
Bank, 2014 and WRI,
2014

CLIMATE CHANGE STRATEGIC PLANNING

Malaysia recognized sustainable development as one of the three main pillars of the **New Economic Model (2010)**. In line with this, the government advocates for a holistic approach to deal with climate change and considers green technology deployment as key to sustainable development. The government developed and approved the **National Policy on Climate Change** and the **Green Technology Policy** in 2009 to provide a comprehensive framework for addressing climate change and promoting low-carbon development.

Malaysia has also pledged to reduce its emissions intensity by up to 40% by 2020 (compared to 2005). It also adopted legislation related to renewable energy in 2011.

In its 10th National Plan for 2010-2015, the government also recognized the need for mainstreaming climate adaptation objectives into national planning documents.

CLIMATE CHANGE INSTITUTIONAL FRAMEWORK

Led by the Prime Minister, the **National Green Technology and Climate Change Council** was established in 2010 to co-ordinate implementation of the Climate and Green Technology strategies. The Ministry of Energy, Green Technology and Water and the Ministry of Natural Resources and Environment are both involved in climate activities (green technology development and adaptation measures, respectively). The Ministry of Natural Resources and Environment is also responsible for the REDD+ programme.

A variety of NGOs and associations also function in Malaysia, such as the Business Council on Sustainable Development Malaysia, the Malaysia Environmental NGOs (MENGO), the Environmental Protection Society of Malaysia, and the Malaysian Youth Climate Justice Network.

CLIMATE CHANGE ACTIVITIES

Since 2007, Malaysia has implemented various mitigation and adaptation programmes in 17 different sectors. Measures to improve public awareness and build infrastructure (especially for water resources) are considered of strategic importance. Agriculture and food security, as well as public health measures, are also prioritized. As for mitigation, renewable energy investments, especially in solar energy, are promoted.

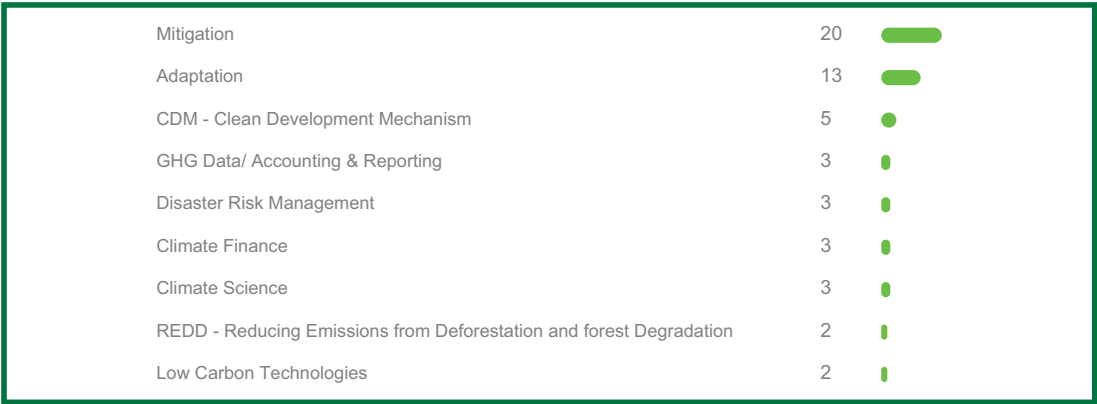


FIGURE 15
NUMBER
OF CLIMATE
PROJECTS AND
ACTIVITIES IN
MALAYSIA

Source:
Southeast Asia Network
of Climate Change
Offices, 2014

Implementation challenges include insufficient institutional coordination, institutional capacity, public participation, and monitoring mechanisms. Lack of research and technical capacity and inadequate consolidation of the environmental laws were also recognized as barriersto implementing mitigation options.

COUNTRY REFERENCES USED

- Adaptation Knowledge Platform (2011): Scoping Assessment on Climate Change Adaptation in Malaysia.
- Malaysia, Ministry of Natural Resources and Environment (2011): Second National Communication to the UNFCCC.
- Southeast Asia Network of Climate Change Offices (2014): ASEAN Climate Change Action Database.
- UNFCCC (2014): GHG emissions country profile.
- UNSD (2014): UN Data.
- World Bank (2014): Climate Change Knowledge Portal.
- World Bank (2014b): Open Database.

[The full references are included in the bibliography]



MYANMAR

Country Parameters	2011
GDP per capita (current USD)	1,144.00
Population	60,976,000
Population density (people per km² of land area)	90
Share of urban population (% of total)	33.20
Percentage of people under poverty line	N.A

Source:
UNSD, 2014 and World
Bank, 2014b

Myanmar has experienced rapid economic growth since 2010. The economy is primarily based on agricultural production, with the livelihood of the rural population largely dependent on national resources. This makes Myanmar especially sensitive to climate change and natural disasters.

OBSERVED AND PROJECTED CLIMATE IMPACTS

Future effects of climate change in Myanmar are expected to vary by regions, seasons and different climate scenarios. Climate risks include increased frequency of extreme weather events, flood and storm surges, more intense rainfall, extreme daytime temperature, drought and sea level rise.

	Observed	Projected
Temperature	+0.3-0.8 °C increase between 1971-2000	+0.4-0.7 °C increase by 2020 and 0.8-1.4 °C by 2050
Rainfall	Increased rainfall from March to November and decreased during the rest of the year	Increase in rainfall by 2050

TABLE 15
OBSERVED AND
PROJECTED
CHANGES IN
TEMPERATURE
AND
PRECIPITATION

Source:
World Bank, 2014

Agriculture, water resources, public health, forests, coastal zones, and biodiversity are identified as the sectors most prone to climate change.

ADAPTATION NEEDS

In Myanmar, the most prioritized adaptation sectors include agriculture, forestry, disaster risk reduction, public health, and water resources. Necessary adaptation actions are as follows (World Bank, 2014):

SYSTEMS AND FORT

- **Agriculture:** crop diversification and climate-resilient varieties, and diversification of production;
- **Disaster risk reduction:** improved weather observation capacity, flood and drought early warning systems, and assessment of the hydrological impact of climate change on river systems.
- **Forests:** reforestation, community reforestation in watershed areas, and community-based mangrove restoration.
- **Public health:** climate-resilient health facilities, prevention of heat-related disorders in

agricultural and industrial sectors, Intensive Care Units (ICU) in hospitals to treat heat-related disorders, and safe water supplies and sanitary latrines.

- **Water resources:** assessment of the status of dams and regional rainfall-runoff relationships, construction of small-scale water impoundments, channel improvements, and adaptation.

GHG EMISSIONS

According to the latest available UNFCCC data (for 2005), Myanmar is a carbon sink, with total net GHG and CO₂ emissions removal. The CO₂ emissions have not increased radically in the past years: in 2010 CO₂ emissions per capita was 0.2 metric tons (World Bank). However, this data is conflicted, as according to the calculations of the WRI, GHG emissions have radically increased.

Total GHG/CO ₂ emissions	2000 (UNFCCC)	2010 (World Bank)	2011 (WRI)
CO ₂ emissions without LUCF (kt)	8,264.60	8,995.00	8,520.00
CO ₂ net emissions/removals by LUCF	-95,774.70		
CO ₂ net emissions/removals with LUCF (kt)	-87,510.10		
GHG emissions without LUCF (kt)	38,374.90		161,220.00
GHG net emissions/removals by LUCF	-95,774.70		
GHG net emissions/removals with LUCF (kt)	-57,399.80		239,180.00
CO ₂ emissions per capita emissions without LUCF (metric ton)		0.20	0.16

TABLE 16
EMISSIONS
SUMMARY FOR
MYANMAR

Source:
UNFCCC, 2014; World
Bank, 2014 and WRI,
2014

CLIMATE CHANGE STRATEGIC PLANNING

Myanmar has mainstreamed green economy and climate change considerations into its latest national development strategies. However, it does not have a comprehensive climate strategy, or targets for binding emissions reductions or renewable energy.

Myanmar developed a **National Adaptation Programme of Action (NAPA)** in 2012. The Programme defines five strategic objectives including mitigating GHG emissions, adapting to climate change, developing underlying policies and plans, supporting climate research, and mainstreaming climate objectives into national development plans. An inter-ministerial task force also prepared the **Myanmar Action Plan on Disaster Risk Reduction** for 2009-2015. In 2013, the EU established the Myanmar Climate Change Alliance within the Ministry of Environmental Conservation and Forestry. Myanmar also aims to improve energy efficiency and promote renewable energy use.

CLIMATE CHANGE INSTITUTIONAL FRAMEWORK

The **National Environmental Conservation Committee** is the main coordinator of implementation of environmental objectives since 2011. The Ministry of Environmental Conservation and Forestry and the Ministry of Foreign Affairs are responsible for the UNFCCC negotiations. The Ministry of Environmental Conservation and Forestry is also responsible for the afforestation (i.e. REDD task force, where a Dry Zone Greening Department was also established).

Activities of the NGO sector have also increased in recent years, mainly regarding forest rehabilitation, environmental conservation, and climate change mitigation and adaptation.

CLIMATE CHANGE ACTIVITIES

Myanmar has implemented various climate activities to date, but considers reforestation is as its main priority. An example for REDD+ activities is a reforestation project in the BagoYoma Region, financed by the Republic of Korea

Mitigation activities include rural electrification, renewable energy promotion, and decrease of emissions from the agricultural sector. Adaptation efforts target the agriculture and forest sector, development of early warning systems, improvement of public health, improvement of water resource management and protection of coastal zones.

Implementation challenges comprise of public and private financing constraints, insufficient governmental presence and coordination, lack of emissions data, insufficient promotion of renewable energy and energy efficiency measures in specific sectors (e.g. for industries), and lack of technical capacities.

COUNTRY REFERENCES USED

- ASIA Leds Partnership (2014): Country Profile.
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- UNSD (2014): UN Data.
- World Bank (2014): Climate Change Knowledge Portal.
- World Bank (2014b): Open Database.

[The full references are included in the bibliography]



PHILIPPINES

Country Parameters	2011
GDP per capita (current USD)	2,370.00
Population	94,852,000
Population density (people per km ² of land area)	316.20
Share of urban population (% of total)	49.10% *
Percentage of people under poverty line	41.50**

*Data is for 2012;
**Data is for 2009
Source:
UNSD, 2014 and World
Bank, 2014b

The Philippines has experienced strong economic growth in recent years. However, its socio-economic development is heavily affected by various extreme weather events and natural disasters, and is considered as one of the most climate change- and disaster-prone countries.

OBSERVED AND PROJECTED CLIMATE IMPACTS

Major future climate impacts include increased temperature, landslides, and floods, tropical cyclones, and decreased rice yield. It is also expected that the more frequent occurrence of El Niño will increase droughts. Sea level is projected to rise by 0.35m by 2090-2100. Heavy rainfall and typhoons are likely to intensify due to rising sea surface temperature.

	Observed	Projected
Temperature	+0.3°C per decade between 1971-2000 in the South Pacific	1.4°C to 3.1°C by 2100 in the Pacific region
Rainfall	Number of rainy days and tendency for heavy rainfall increased since 1990	60–100% increase in annual rainfall in Central Visayas and Southern Tagalog provinces, including Metro Manila, and up to 11% reduction in annual average rainfall in Mindanao by 2050

TABLE 17
OBSERVED AND
PROJECTED
CHANGES IN
TEMPERATURE
AND
PRECIPITATION

Source:
World Bank, 2014

Droughts will negatively impact agricultural production and food security, and thus economic development.

ADAPTATION NEEDS

The Philippines prioritizes adaptation actions in the agriculture sector, and in urban and coastal areas.

- **Agriculture and food security:** improved management of soil and water resources to mitigate droughts, flood and drought monitoring systems, soil conservation measures, windbreaks, improved seeding and farming techniques, and mapping of vulnerable agricultural areas.
- **Coastal areas:** integrated coastal resources management, and improved observation and research on coastal environmental change.
- **Urban areas and infrastructure:** storm surge barriers, improved pumping capacity, upgrading informal settlements, and improved coordination.

GHG EMISSIONS

The latest available UNFCCC GHG emissions data is for 1994. According to the World Bank and WRI calculations (2010 and 2011), there has been a 50% increase in the CO₂ and GHG emissions, while the per capita CO₂ emissions is still low (0.6 metric tons in 2010).

Total GHG/CO ₂ emissions	2000 (UNFCCC)	2010 (World Bank)	2011 (WRI)
CO ₂ emissions without LUCF (kt)	138,695.00	216,804.00	205,930.00
CO ₂ net emissions/removals by LUCF	-221,034.00		
CO ₂ net emissions/removals with LUCF (kt)	-82,339.00		
GHG emissions without LUCF (kt)	193,396.60		294,970.00
GHG net emissions/removals by LUCF	-220,194.20		
GHG net emissions/removals with LUCF (kt)	-26,797.60		441,290.00
CO ₂ emissions per capita emissions without LUCF (metric ton)		1.20	

TABLE 18
EMISSIONS
SUMMARY FOR
THE PHILIPPINES

Source:
UNFCCC, 2014; World
Bank, 2014 and WRI,
2014

CLIMATE CHANGE STRATEGIC PLANNING

In 2009, the Philippines passed the **Climate Change Act**, which established the Climate Change Commission. The Commission developed the **National Framework Strategy on Climate Change** (2010), which serves as the basis for climate activities, and the **National Climate Change Action Plan** (2011), which defines concrete mitigation and adaptation actions for 2011–2028.

Various legislations targeting renewable energy development have been enacted, including the Renewable Energy Act of 2008 and the Biofuels Act of 2008. The Philippines has also committed to a 5% voluntary emission reduction target by 2012 (compared to 1990 levels). In addition, the Philippines Energy Plan aims for a 10% reduction in energy consumption by 2028.

CLIMATE CHANGE INSTITUTIONAL FRAMEWORK

Chaired by the President of the Republic, the **Climate Change Commission** is responsible for developing, coordinating, monitoring, and evaluating climate change strategies and programmes. A cross-sectoral advisory board from government agencies, local governments, academia, business and NGOs support the activities of the Commission.

CLIMATE CHANGE ACTIVITIES

The Philippines implements both mitigation and adaptation actions for food, water and human security, ecological and environmental stability, green industries and services, sustainable energy, and knowledge and capacity development.

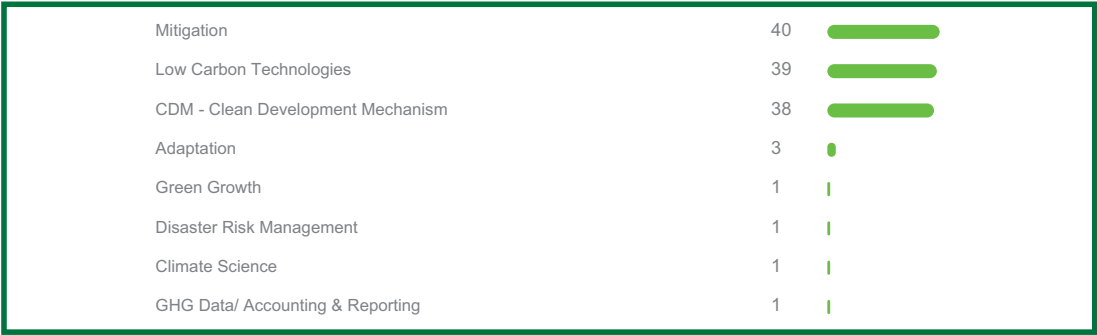


FIGURE 16
NUMBER
OF CLIMATE
PROJECTS AND
ACTIVITIES IN THE
PHILIPPINES, BY
THEME

Source:
Southeast Asia Network
of Climate Change
Offices, 2014

Project examples include the implementation of the Low-Cost Warning System for Flood/Slide-Prone Communities; the preparation of a National Wetlands Action Plan, and extensive national education programmes for schools and local authorities.

The main implementation challenge is the extreme diversity of the archipelago, which makes the adoption of a homogeneous strategy difficult.

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- UNSD (2014): UN Data.
- World Bank (2014): Climate Change Knowledge Portal.
- World Bank (2014b): Open Database.

[The full references are included in the bibliography]



SINGAPORE

Country Parameters	2011
GDP per capita (current USD)	49,009.00
Population	5,188,000
Population density (people per km ² of land area)	7,263.00
Share of urban population (% of total)	100
Percentage of people under poverty line	N/A

Source:
UNSD, 2014 and World
Bank, 2014b

As a small, densely-populated urban city state, Singapore relies heavily on external energy sources or alternative energy development. In addition, its rapid population growth puts a constantly increasing pressure on its natural resources and the ecosystem.

OBSERVED AND PROJECTED CLIMATE IMPACTS

In 2007, Singapore commissioned a climate vulnerability study, which found that future climate projections for the city-state are in line with IPCC scenarios. In addition to temperature increase and changes in precipitation patterns, a 0.24-0.65m sea level rise was projected by 2011.

	Observed	Projected
Temperature	N/A	2.7 to 4.2 °C increase by 2100
Rainfall	N/A	-134 to 49 mm by 2045-2065

TABLE 19
OBSERVED AND
PROJECTED
CHANGES IN
TEMPERATURE
AND
PRECIPITATION

Source:
Singapore National
Environment Agency,
2010

As a low-lying, densely populated island, Singapore is especially vulnerable to climate change. Potential climate change impacts include increased flooding, droughts, and loss in coastal land.

ADAPTATION NEEDS

Adaptation actions include reducing the impacts of floods, water and heat stress, tackling coastal land and marine biodiversity losses, and mitigating the public health impact of resurgence of diseases and heat stresses.

GHG EMISSIONS

According to the latest available climate information, Singapore had per capita emissions of 2.66 metric tons in 2010. However, as an island country, nearly all of its fuel and energy is imported from nearby countries, and most of the related emissions are considered under the International Transports item. Since the WRI calculations account for these latter emissions at the national level, it shows considerably higher emissions for the country (see WRI data for 2011, in the table below).

Total GHG/CO ₂ emissions	2000 (UNFCCC)	2010 (World Bank)	2011 (WRI)
CO ₂ emissions without LUCF (kt)	37,755.80	13,520.00	64,770.00
CO ₂ net emissions/removals by LUCF			
CO ₂ net emissions/removals with LUCF (kt)	37,755.80		
GHG emissions without LUCF (kt)	38,790.00		70,890.00
GHG net emissions/removals by LUCF			
GHG net emissions/removals with LUCF (kt)	38,790.00		70,890.00
CO ₂ emissions per capita emissions without LUCF (metric ton)		2.66	12.49

TABLE 20
EMISSIONS
SUMMARY FOR
SINGAPORE

Source:
UNFCCC, 2014; World
Bank, 2014 and WRI,
2014

CLIMATE CHANGE STRATEGIC PLANNING

The **Sustainable Singapore Blueprint**, issued in 2009, aims to reduce carbon emissions in all sectors, to support green growth, to adapt to climate change effects, and to participate in multilateral efforts. The Blueprint also targets a 35% energy efficiency improvement by 2030 (from 2005 levels). To promote this objective, an **Energy Conservation Act** was introduced in 2013 to regulate large-scale energy consumers. Within the NAMA framework, Singapore has also pledged to reduce its greenhouse gas emissions by 16% by 2020.

CLIMATE CHANGE INSTITUTIONAL FRAMEWORK

Under the Prime Minister’s Office, the **National Climate Change Secretariat** was established in 2010 to co-ordinate the implementation of climate activities with public and private organizations. The Secretariat also created an Inter-Ministerial Committee on Climate Change. Since 2007, the Energy Efficiency Programme Office is responsible for national energy efficiency improvements. The Ministry of National Development co-ordinates an inter-governmental committee to review existing infrastructural adaptation measures.

CLIMATE CHANGE ACTIVITIES

Singapore is capable of financing its own green initiatives and undertakes a variety of activities. Research and investment is prominent for solar energy deployment. Energy efficiency and clean energy deployment have also increased by introducing market competition in the energy sector. To support new industrial sites in increasing their energy performance, a “Design for Efficiency Scheme” was launched in 2008. Besides industry, energy efficiency and savings measures are also promoted in the public transport, building, and household sectors.

Singapore also undertakes a variety of climate adaptation actions. To tackle flooding, new coastal reclamation sites are now regulated and a drainage infrastructure system is being developed. To increase resilience of water supply, desalination plants have also been established. Measures were introduced to reduce the risk of dengue disease. To reduce the urban heat islands effect, green parks and areas have been established.

The main implementation challenge in achieving clean energy deployment is the limited renewable development capacity of the country, due to its small size.

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- ASIA Leds Partnership (2014): Country Profile.
- Southeast Asia Network of Climate Change Offices (2014): ASEAN Climate Change Action

Database.

- Singapore National Environment Agency (2010): Singapore's Second National Communication under the UNFCCC.
- Singapore Ministry of Foreign Affairs (2010): Nationally Appropriate Mitigation Actions.
- Singapore National Climate Change Secretariat (2012): National Climate Change Strategy.
- Singapore Ministry of the Environment and Water Resources (2006): The Singapore Green Plan 2012.
- UNFCCC (2014): GHG emissions country profile.
- UNSD (2014): UN Data.
- World Bank (2014): Climate Change Knowledge Portal.
- World Bank (2014b): Open Database.

[The full references are included in the bibliography]



THAILAND

Country Parameters	2011
GDP per capita (current USD)	5,318.00
Population	69,519,000
Population density (people per km² of land area)	135.50
Share of urban population (% of total)	34
Percentage of people under poverty line	0.40

Source:
UNSD, 2014 and World
Bank, 2014b

Thailand’s economy has been rapidly growing, but climate change could heavily affect the country’s future growth potential. The agricultural sector, which ensures the livelihood of 40% of the population, and the country’s 2,600km coastline - an ecosystem that is highly important to the socio-economic development of the country - are especially vulnerable to climate impacts (World Bank, 2014).

OBSERVED AND PROJECTED CLIMATE IMPACTS

	Observed	Projected
Temperature	0.1-0.2 °C per decade since 1960	1.7 to 2.1 °C increase by 2045-2065
Rainfall	Variability has been large, both within a year and between years	-109 to 76 mm change by 2045-2065

TABLE 21
OBSERVED AND
PROJECTED
CHANGES IN
TEMPERATURE
AND
PRECIPITATION

Source:
World Bank, 2014

In the future, increased occurrence of droughts and floods are expected due to fluctuating rainfall and increasing level of sea surface water.

ADAPTATION NEEDS

The agriculture sector, especially maize and rice production, may be heavily impacted by climate change. Sea-level rise will negatively affect coastal ecosystems. Public health will be impacted by enhanced potential spread of malaria and dengue disease. The type and structure of forests, forest ecosystems, and the biological diversity of the fauna and flora can also be affected by climate change.

GHG EMISSIONS

Thailand almost doubled its CO₂ emissions between 2000 and 2010. As a result, Thailand’s CO₂ emissions rose to 1.4 metric ton per capita emissions in 2010.

Total GHG/CO ₂ emissions	2000 (UNFCCC)	2010 (World Bank)	2011 (WRI)
CO ₂ emissions without LUCF (kt)	165,997.00	295,282.00	261,470.00
CO ₂ net emissions/removals by LUCF	-8,139.90		
CO ₂ net emissions/removals with LUCF (kt)	157,857.10		
GHG emissions without LUCF (kt)	236,946.90		354,650.00
GHG net emissions/removals by LUCF	-7,890.50		
GHG net emissions/removals with LUCF (kt)	229,056.40		352,860.00
CO ₂ emissions per capita emissions without LUCF (metric ton)		1.40	

TABLE 22
EMISSIONS
SUMMARY FOR
THAILAND

Source:
UNFCCC, 2014; World
Bank, 2014 and WRI,
2014

CLIMATE CHANGE STRATEGIC PLANNING

Thailand introduced the “Sufficiency Economy” principle, which considers moderation in co-existence with nature as a way to tackle climate change. Thailand also has a long-term, **National Master Plan on Climate Change 2011-2050** and a short-term strategy for 2008-2012. Bangkok also has a city-level Climate Change Action Plan.

The 11th National Economic and Social Development Plan (2012-2016) aims to promote green economy development, along with a **Renewable and Alternative Energy Development Plan 2012-2021** and a 20-year **Energy Efficiency Plan 2010-2030**. These energy strategies aim for a 25% share for alternative energy by 2021.

A Strategic Plan on Climate Change in the Agricultural Sector was also developed.

CLIMATE CHANGE INSTITUTIONAL FRAMEWORK

The **National Climate Change Committee (NCCC)** consists of a Negotiation sub-committee and a Technical sub-committee, and is chaired by the Prime Minister. A Royal Decree established the Thailand Greenhouse Gas Management Organization.

An Energy Policy and Planning Office (EPPO) was established within the Ministry of Energy. The Department of National Parks, Wildlife and Plant Conservation in the Ministry of Environment co-ordinates the country’s REDD+ activities.

CLIMATE CHANGE ACTIVITIES

Mitigation activities aim to promote energy security, energy savings and renewable, clean energy sources. They also aim to support emissions reduction by improvements in the forestry sector, and by measuring the carbon footprint of products and services. A carbon tax system is also under development and low-carbon growth of cities is being promoted.

Adaptation actions aim to collect climate information, develop financial mechanisms to support policy integration, and capacity building activities. In addition, multi-country projects are implemented for various sectors for capacity building, vulnerability assessment, research, and policy integration and formulation.



FIGURE 17
NUMBER
OF CLIMATE
PROJECTS AND
ACTIVITIES
IN THAILAND, BY
THEME

Source:
Southeast Asia Network
of Climate Change
Offices, 2014

Mitigation project examples include feasibility studies for waste management, renewable energy development, energy efficiency improvements, solar power and biogas installations, energy efficiency measures implementation, capacity building, and awareness-raising projects on various themes. A Carbon Footprint and a Carbon Reduction Label Program has also been introduced. Adaptation project examples include flood and water resource management projects, feasibility studies, and various climate vulnerability and impact studies. A Sustainable Tourism action plan has been developed.

Implementation challenges include improvement of GHG inventory for major sectors, development of sub-national, local GHG inventories, and development of specific know-how related to mitigation activities in different sectors. In terms of climate scenarios, there is a lack of capacity to downscale available information and a lack of research techniques, to prioritise key sectors and analyse best alternatives for adaptation. Moreover, the integration of adaptation options of risk-prone communities should be further studied.

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[The full references are included in the bibliography]



VIET NAM

Country Parameters	2011
GDP per capita (current USD)	1,392.00
Population	88,792,000
Population density (people per km ² of land area)	268.30
Share of urban population (% of total)	31.70
Percentage of people under poverty line	N/A

Source:
UNSD, 2014 and World
Bank, 2014b

Viet Nam’s economy has been steadily growing and rapidly industrializing in recent years, but 60% of the overall population still relies primarily on agriculture, particularly on rice production. Viet Nam is among the five countries that are likely to be most affected by climate change. This vulnerability is enhanced since the major part of the population and the main economic and production centres are located along the country’s 3,260 km coast line which is heavily affected by the impacts of climate change (World Bank, 2014).

OBSERVED AND PROJECTED CLIMATE IMPACTS

The coastline of the country is frequently affected by storms, and many of the provinces are exposed to water stress as a result of droughts. By 2050, 0.28-0.33m sea level rise is projected, which will also increase coastal flooding and salt-water intrusion.

	Observed	Projected
Mean annual temperature	0.4°C increase since 1906	1°C increase by 2050
Mean annual rainfall	The variation and the intensity of rainfalls have increased	Winter and summer rainfall is expected to increase, and the frequency of heavy and extreme rainfalls and flooding will also rise

TABLE 23
OCHANGES IN
TEMPERATURE
AND
PRECIPITATION IN
CAMBODIA

Source:
World Bank, 2014

ADAPTATION NEEDS

Adaptation activities need to improve the resilience of the agriculture and the forestry sectors, to develop disaster-resistant energy services, and to protect and improve coastal areas and biodiversity (World Bank, 2014).

- **Agriculture:** changes in cultivation practices and cropping patterns, more efficient land and water management, agricultural incentives and insurances, and research in agricultural technology will also be needed to reduce vulnerability in the long term.
- **Coastal ecosystems:** aquaculture plans, heat-tolerant varieties in aquafarming, improved aquafarming management capacities, additional storm shelters for fishing ships, and improve hazard warning communication.
- **Energy and transportation:** energy efficiency and conservation measures, assessment of future energy demand at provincial level, planning and design of climate-resilient energy, and transport infrastructure needs to be geared to handle potential changes in climate and hydrological variables.

- **Forests:** Improved sustainable forest management, research to identify resilient plant and tree species, improved timber use efficiency, afforestation and reforestation programs, and poverty reduction in upland forest areas.

GHG EMISSIONS

Since 2000, Viet Nam almost tripled its CO₂ emissions and doubled its total GHG emissions (without LUCF). Until present, the CO₂ emissions per capita have reached 1.7 metric tons, which is higher than the regional average.

Total GHG/CO ₂ emissions	2000 (UNFCCC)	2010 (World Bank)	2011 (WRI)
CO ₂ emissions without LUCF (kt)	55,905.70	150,230.00	164,700.00
CO ₂ net emissions/removals by LUCF	11,860.20		
CO ₂ net emissions/removals with LUCF (kt)	67,765.90		
GHG emissions without LUCF (kt)	135,795.00		274,230.00
GHG net emissions/removals by LUCF	15,104.70		
GHG net emissions/removals with LUCF (kt)	150,899.70		260,340.00
CO ₂ emissions per capita emissions without LUCF (metric ton)		1.70	1.87

TABLE 24
EMISSIONS
SUMMARY FOR
VIET NAM

Source:
UNFCCC, 2014; World
Bank, 2014 and WRI,
2014

CLIMATE CHANGE STRATEGIC PLANNING

Viet Nam adopted a **National Climate Change Strategy in 2011**, in line with the national development objectives. A **National Green Growth Strategy** was also developed and adopted in 2012. Its objectives include the reduction of GHGs, greening lifestyles, promoting sustainable consumption, and adopting communication and awareness strategies.

There are no binding targets, but the country adopted a voluntary 20% GHG emissions mitigation target to be achieved by 2020 (compared to 2005 levels). In its statement at the COP18, it also pledged to reduce the national GHG emissions intensity by 8 to 10% (compared to 2010); energy consumption per unit of GDP by 1-1.5% per year, and GHG emissions from energy activities by 10% to 20%. As a response to the effects of climate change on agriculture and rural development, an Action Plan for 2011-2015 and a Vision until 2050 was issued by the Ministry of Agriculture and Rural Development (MARD) in 2011.

CLIMATE CHANGE INSTITUTIONAL FRAMEWORK

The Ministry of Natural Resources and Environment was appointed by the government as the National Focal Point to implement the UNFCCC and the KP. It also serves as the permanent agency of the National Committee for Climate Change; the main coordination body for implementation of the National Climate Change Strategy.

CLIMATE CHANGE ACTIVITIES

Viet Nam's climate activities focus on a wide variety of sectors including agriculture, forestry, aquaculture, energy, transportation, and public health. Greenhouse gas mitigation is also promoted by identifying energy efficiency and conservation, as well as emissions mitigation areas and implementation of renewable energy projects. Education, training and public awareness raising activities on mitigation and adaptation are also carried out.



FIGURE 18
NUMBER
OF CLIMATE
PROJECTS AND
ACTIVITIES IN
VIET NAM , BY
THEME

Source:
Southeast Asia Network
of Climate Change
Offices, 2014

There are numerous public and private funded climate initiatives in Viet Nam. The Ministry of Environment and Natural Resources introduced a National Target Program to Respond to Climate Change. The National Program on Energy Efficiency and Conservation aims to achieve energy targets set by the government. Viet Nam has also implemented many CDM projects with a total emission reduction of 17.5 million tCO₂e by 2010. Examples of adaptation projects include a Mangrove Management Information System, Water-Related Information System for the Sustainable Development of the Mekong Delta in Viet Nam, development and implementation of Climate Change Adaptation Measures to Increase Resilience of National Development, Development of a Prototype System for Dam and Disaster Management in Viet Nam.

Implementation challenges include data collection and interpretation for the national GHG inventory, lack of public awareness and technical expertise in relevant ministries, and a lack of long-term planning.

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5

AN ASEAN CLIMATE CHANGE PROFILE

With future prospects of worsening climate impacts, the ASEAN community must seek common interest areas at the climate negotiations, and promote these interests for the 2015 Climate Agreement. In order to help facilitate these points of convergence, the below section provides an overview of climate vulnerabilities, adaptation needs, emission characteristics, mitigation commitments, and climate strategies and actions of the ASEAN Community. Please also see Annex 1 for further suggested common points of discussion.

CLIMATE VULNERABILITIES

The ASEAN region is highly vulnerable to climate change and is already heavily affected by climate changes. The recently released Germanwatch Global Climate Risk Index lists four of the AMS (Myanmar, Viet Nam, the Philippines and Thailand) among the ten most affected countries by extreme weather events between 1993 and 2012.

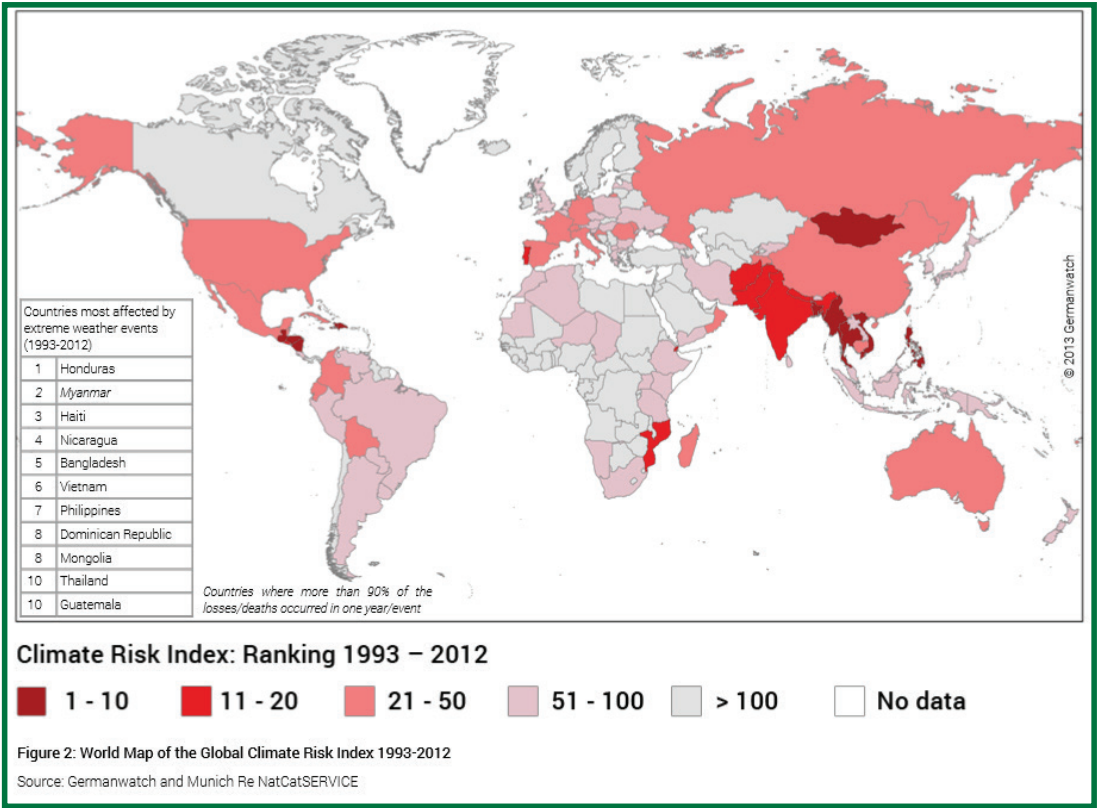


FIGURE 19
GLOBAL CLIMATE
RISK INDEX:
OVERALL
RANKING
BETWEEN 1993-
2012
Source:
Germanwatch, 2014

The Germanwatch study calculated the Global Climate Risk Index by quantifying the human and economic losses due to extreme weather events during the 1993-2012 period. The below table provides an overview of these figures in the AMS. For the overall ASEAN community, the death toll of extreme weather events was 8670 persons – i.e. 1.73 deaths per 100 000 inhabitants during the 1993-2012 period. As for GDP, the total GDP loss due to such extreme events in the ASEAN was 9549 million USD (at PPP) during the 1993-2012 period.

Overall CRI Rank	Country	Death Toll	Deaths per 100 000 inhabitants	Losses in million USD PPP	Losses per GDP in %
2	Myanmar	7135,9	13,51	617,79	1,119
6	Viet Nam	419,7	0,52	1637,5	0,906
7	Philippines	643,35	0,79	736,31	0,293
10	Thailand	160,35	0.26	5410,06	1,291
26	Cambodia	45,8	0,35	153,34	0,857
72	Indonesia	246,15	0,11	744,65	0,093
77	Lao PDR	4,8	0,09	83,03	0,806
86	Malaysia	43,7	0,18	163,79	0,057
174	Singapore	0,1	0	2,48	0,001
179	Brunei D.	0,1	0,03	0,3	0,002

TABLE 25
GERMANWATCH
GLOBAL
CLIMATE RISK
COMPONENTS IN
ASEAN FOR THE
1993-2012 PERIOD

Source:
Germanwatch, 2014

The degree to which a certain country will be affected by climate change also depends on its adaptive capacity. This encompasses the socio-economic and technological factors that can offset damages caused by extreme weather events.¹³ According to the below assessment (Yusuf and Francisco, 2009), Malaysia, Thailand and Viet Nam have relatively higher adaptive capacities, compared to Cambodia and Lao PDR who have relatively lower adaptive capacities among the ASEAN states. Thus, the latter countries are less resilient to climate change.

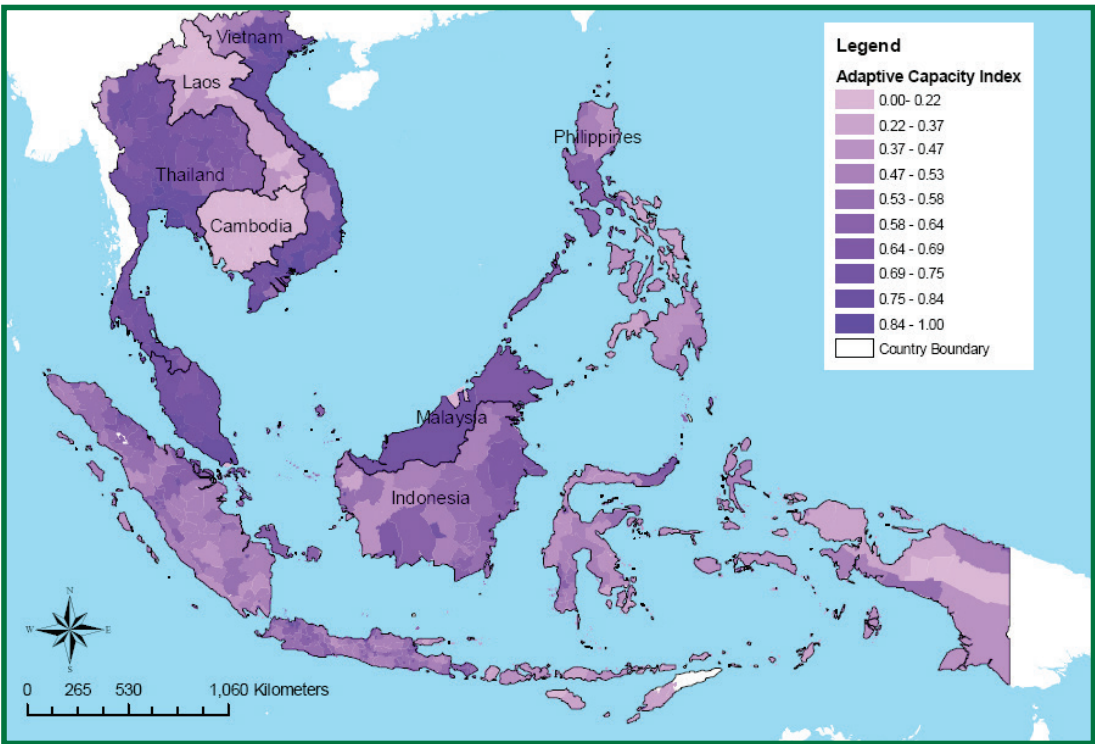


FIGURE 20
ADAPTIVE
CAPACITY OF
THE SOUTHEAST
ASIAN REGION
(2005)

Source:
Yusuf and Francisco,
2009

13. Factors include the level of human development (measured by HDI), poverty, economic inequalities, as well as the existence of road and telecommunication infrastructure, energy and irrigation systems.

ADAPTATION NEEDS AND ACTIONS

While some of the expected climate impacts are country-specific, other sectors and areas will be affected throughout most of the ASEAN region. The table below gives an overview of the most vulnerable sectors in each of the AMS.

	Agriculture Food Security	Coastal Zones	Marine ecosystems	Terrestrial Ecosystems	Forestry	Disasters	Energy	Public Health	Waste Sector	Water Resources
Brunei D. ¹⁴										
Cambodia	❖	❖			❖			❖		
Indonesia	❖	❖			❖			❖		❖
Lao PDR	❖				❖			❖		❖
Malaysia	❖	❖	❖		❖	❖	❖	❖	❖	❖
Myanmar	❖	❖	❖	❖	❖	❖		❖		❖
Philippines	❖	❖	❖	❖				❖		
Singapore		❖	❖					❖		❖
Thailand	❖	❖	❖		❖		❖	❖		❖
Viet Nam	❖	❖	❖	❖	❖		❖			❖

TABLE 26
GERMANWATCH
GLOBAL
CLIMATE RISK
COMPONENTS IN
ASEAN FOR THE
1993-2012 PERIOD

Source:
Germanwatch, 2014

Due to similar regional characteristics, there are some adaptation areas that are prioritized in the majority of the AMS. These include coastal zones, coastal and marine ecosystems, public health, agriculture and food security, as well as forestry. Identified adaptation solutions throughout the AMS include (but are not limited to) the following:

- **Agriculture:** climate-resilient crop varieties, diversified production, improved management of soil and water resources, drainage systems, irrigation facilities, and flood and drought monitoring systems.
- **Forestry:** research and provision of climate information and forest degradation, community reforestation programmes, improved sustainable forest management, and poverty reduction in forest areas.
- **Coastal areas:** integrated coastal resources management, and improved observation and research on coastal environmental change.
- **Disaster risk reduction:** improved weather observation capacities, flood and drought early warning systems, and assessment of the hydrological impact of climate change on river systems.
- **Healthcare:** health education programmes, health extension services and malaria surveillance systems, infrastructure and disease control programmes, community involvement in defense strategies, climate-resilient health facilities, safe water supplies, and sanitary latrines.
- **Water resource management:** quality and quantity assessment studies, improved forecasting, water and watershed management practices, and flood prevention infrastructures.

14. No data available for Brunei.

GHG EMISSIONS

For most of the AMS, the latest UNFCCC GHG emissions data is available for the year 2000, thus limiting the applicability of the data for emissions performance assessment.

More up-to-date GHG emissions data is available via the World Resource Institute's Climate Analysis Indicators tool (CAIT), however the data collection and calculation is not identical to the one used by the UNFCCC, creating some difficulties for comparison. Nevertheless the data collected by CAIT can give a good approximate indication of the latest emissions trends. According to this dataset, in 2011, the GHG emissions in the ASEAN region reached 2.2 billion tCO₂, excluding LUCF, and 3.68 billion tCO₂ including LUCF: 4.81% and 8.02% of the world's total GHG emissions respectively. These figures are also in line with the calculations of the European Commission's Joint Research Center, which estimated a total of 7.53% of global GHG emissions from the ASEAN region, LUCF included.

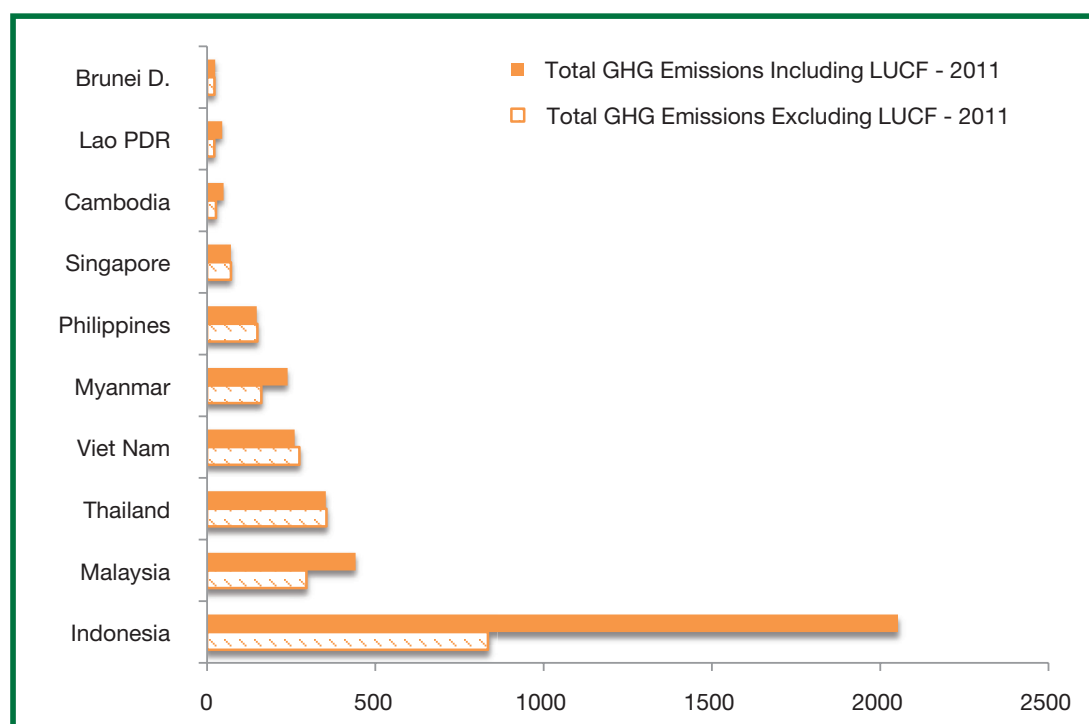


FIGURE 21
TOTAL GHG
EMISSIONS OF
ASEAN MEMBER
STATES – 2011
(MTCO₂)

Source:
WRI, 2014

The CAIT calculations also indicate that the relative share of GHGs emissions in the ASEAN region considerably differs from the world average, with a higher share of methane and nitrous oxide gases, originating from the forestry and agriculture sectors. Although the majority of GHG emissions (56%) was from CO₂ emissions in the ASEAN region, methane and nitrous oxide gases also had a significant share; 29% and 14% respectively.

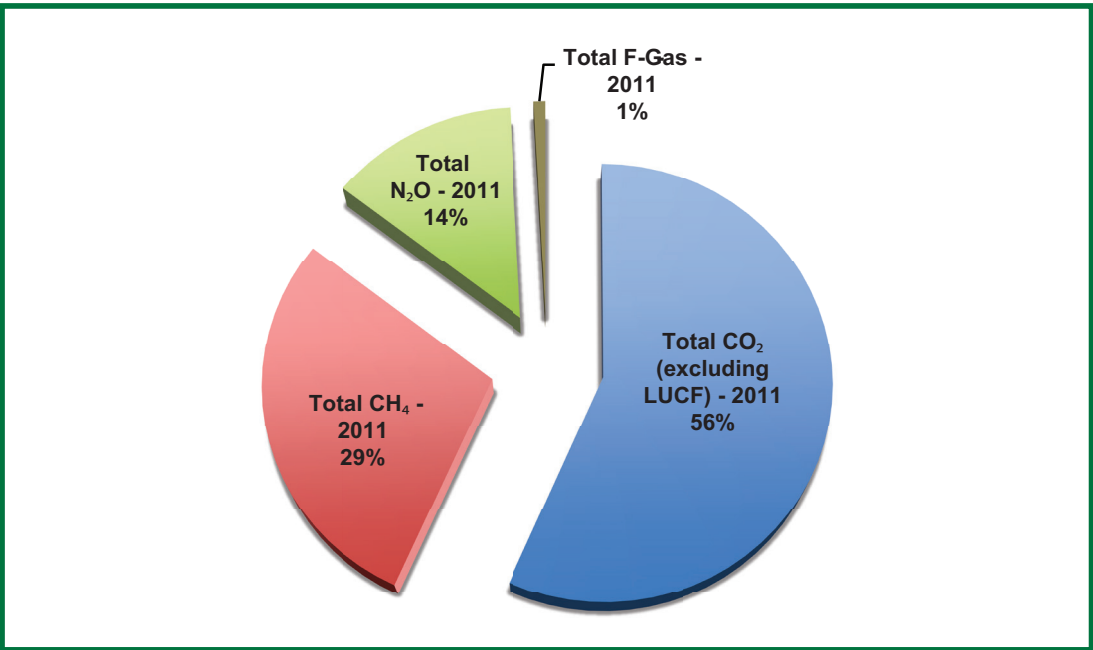


FIGURE 22
GHG EMISSIONS
BY GAS – 2011
(MTCO₂) IN THE
ASEAN REGION
Source:
CIAT, 2012

While up-to-date official emissions data is not available for all GHGs in the ASEAN region, CO₂ data is collected by the Carbon Dioxide Information Analysis Center of the US Department of Energy, figures which are also endorsed by the United Nations and the World Bank. According to these calculations, the per capita CO₂ emissions in the region have been increasing since 1990, however these are still well below the emissions per capita of the world average (4.8 metric in 2010), except in Brunei Darussalam and Singapore.

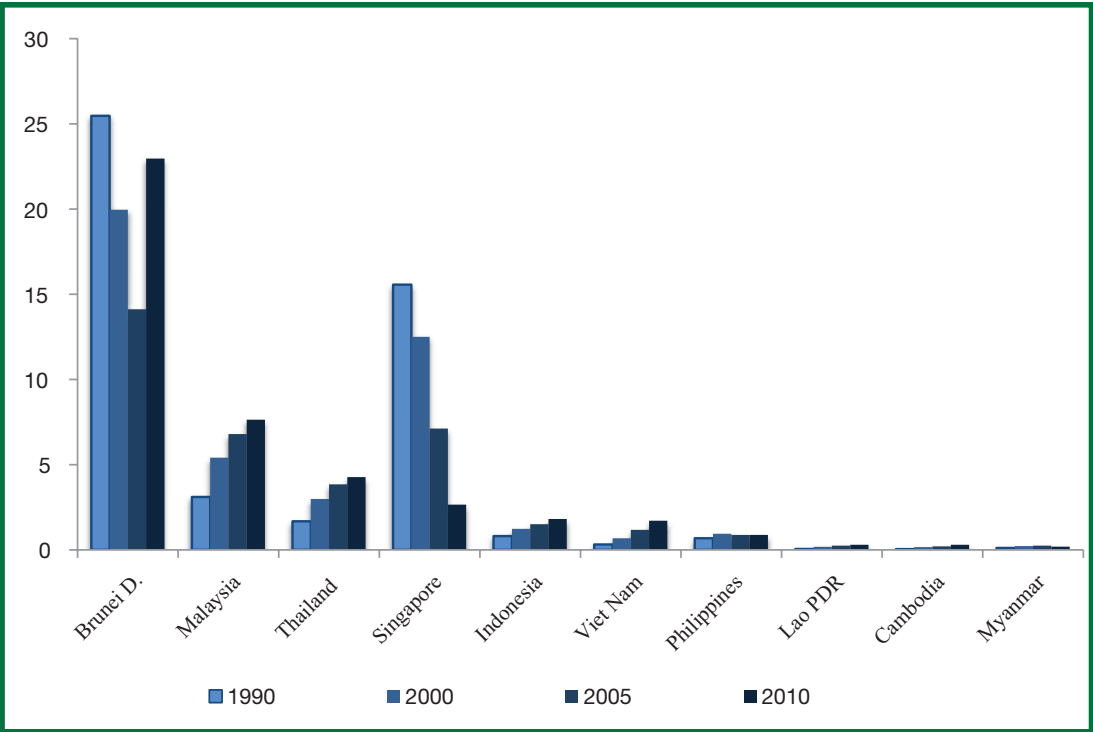


FIGURE 23
CARBON DIOXIDE
EMISSIONS PER
CAPITA IN ASEAN
MEMBER STATES
- METRIC TONS
OF CO₂ PER
CAPITA
Source:
CDIAC, 2014

VOLUNTARY COMMITMENTS TO MITIGATE GHG EMISSIONS

To slowdown the increase of GHG emissions, many of the AMS have pledged to contribute to international GHG mitigation efforts. The below table outlines these commitments, including overall GHG emission reduction pledges, energy consumption improvements, and reforestation and afforestation targets.

	Field of action
Brunei D.	N/A
Cambodia	N/A
Indonesia	26% GHG emissions reduction + 15% with international efforts
Lao PDR	70% forest cover by 2020
Malaysia	11% renewable energy increase by 2020 Emissions intensity of GDP reduction by 40% by 2020 (2005 base level)
Myanmar	N/A
Philippines	5% GHG emission reduction target by 2012 (1990 levels) and 10% consumption reduction by 2028 (later withdrawn).
Singapore	Energy efficiency increase by 35% from 2005 levels by 2030 16% GHG emissions reduction by 2020
Thailand	25% alternative energy share by 2021
Viet Nam	20% GHG emission reduction by 2020 in the following sectoral share: Energy: 8%; Agriculture 20%; LULUCF 20%; Water: 5%. GHG emissions intensity reduction by 8-10% (compared to 2010). Energy consumption reduction per unit of GDP by 1-1.5% per year

TABLE 27
AMS VOLUNTARY
PLEDGES

Source:
ASEAN country profiles
in Chapter 4 of this
Handbook

- **Energy measures:** As stated in the **ASEAN Plan of Action for Energy Cooperation (APAEC) 2010-2015**, energy efficiency and conservation measures are considered an important way to enhance energy security, address climate change, and improve competitiveness in the region. In line with this, the APAEC aims to reduce regional energy intensity by at least 8% by 2015 based on the 2005 level; and achieve 15% renewable energy in the total regional installed power capacity by 2015. Objectives to promote clean coal technologies are also laid down in the ASEAN's Coal and CCT in APAEC (2010-2015).
- **Agriculture and forestry:** Agricultural production and forests are highly vulnerable to climate change in the ASEAN region. At the same time, these sectors are also responsible for a significant share of the region's total GHG emissions. Recognizing the scale of the problem, the ASEAN adopted the **Multi-Sectoral Framework on Climate Change: Agriculture, Fisheries and Forestry Towards Food Security** in 2009 with the aim to contribute to the development of adaptation and mitigation strategies, as well as to the implementation of relevant measures (Letchumanan, 2009). Priority cooperation areas include: development of forest inventories, community forest development and capacity-building for sustainable forest management practices.
- **Carbon Trading:** The ASEAN region has benefited from the CDM mechanism since 2001 and has also undertaken regional cooperation efforts to increase the number of projects and their positive outcomes in the AMS. Since 2012, economy-wide carbon market initiatives have also gained importance in the region, especially after South Korea has adopted a law for the launch of national carbon trading from 2015 onwards (Townshend, 2014). To date, a few regional and national initiatives have been launched. At the regional level, bi-lateral carbon trading between Japan and some AMS via the Joint Crediting Mechanism is already operational. At the national level, both Indonesia and Thailand are in the process of introducing voluntary emission trading schemes (Hsieh, 2014).

CLIMATE CHANGE POLICIES AND PROGRAMMES

The AMS ratified both the UNFCCC and the KP, and participate at the COPs. Furthermore, the challenge of climate change is also outlined and addressed in their national development plans. Except Brunei D. and Myanmar, to date all AMS have adopted a national climate change strategy and assigned a committee or council to co-ordinate the implementation of the strategy. Many of them have also developed adaptation plans or programmes.

	UNFCCC and KP	Climate change mentioned in the development plan	Climate Change Strategy	Climate Change Committee or Council	Adaptation Action Plan or Programme
Brunei D.	❖	❖			
Cambodia	❖	❖	❖	❖	❖
Indonesia	❖	❖	❖	❖	❖
Lao PDR	❖	❖	❖	❖	❖
Malaysia	❖	❖	❖	❖	
Myanmar	❖	❖			❖
Philippines	❖	❖	❖	❖	❖
Singapore	❖	❖	❖	❖	
Thailand	❖	❖	❖	❖	
Viet Nam	❖	❖	❖	❖	❖

TABLE 28
CLIMATE CHANGE STRATEGIC AND INSTITUTIONAL FRAMEWORKS IN THE ASEAN

Source:
Adopted from Yuen at al. 2009

The implementation of climate change mitigation and adaptation activities have also accelerated in recent years. For example, the number of implemented climate projects has considerably increased. Prominent activities include climate research, CDM and REDD+ projects, disaster risk management projects, development of GHG emissions inventories, and low carbon technology deployment.

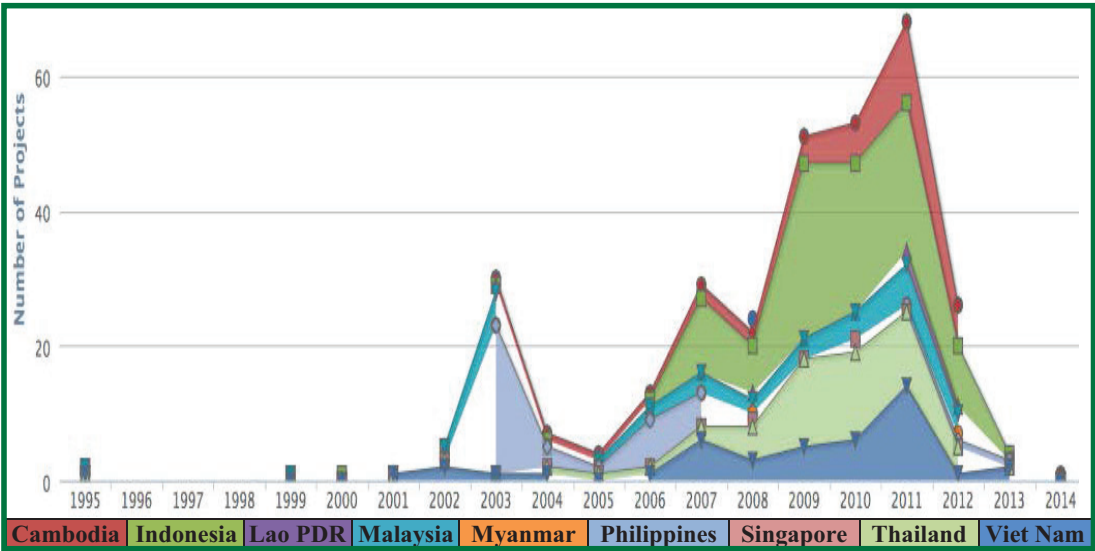


FIGURE 24
GROWTH TRENDS OF CLIMATE PROJECTS IN ASEAN MEMBER STATES

Source:
ASEAN Climate Change Action Database (ACCAD)

All these trends point towards a positive momentum in AMS in addressing the current and future challenges of climate change. However, in order to maintain such momentum, there is a need for countries and communities to ensure specific regional and national challenges are dealt with in a timely manner.

As presented in this Handbook, many of the AMS already face or will face a variety of challenges, which can be linked to climate change. Their high vulnerability to climate change may severely affect their socio-economic development and potentially also political stability. In addition, such negative developments may not remain solely a national-level problem, but spill over to other countries in the region as well. At the same time, it has been recognized that many of the most vulnerable sectors (such as agriculture, forestry, healthcare or water management) require a prioritization of adaptation needs, which are relatively similar across AMS. These challenges can provide the AMS with a variety of opportunities for co-operation and identification of common solutions.

Such co-operation opportunities can also be identified for the mitigation of GHG emissions in the region. Constituting of rapidly growing economies, the region has an increasing contribution to global emissions, which accelerates the need for ensuring a greener, low-carbon development. Important co-operation areas in this regard include the energy and the forest sector, and the establishment of carbon trading mechanisms.

These similar challenges and co-operation opportunities can be especially important in preparation for the negotiations of the 2015 Climate Agreement and the post-2015 development agenda.

Recognizing common areas that may be jointly represented at the negotiations, could considerably strengthen the position of the AMS in securing a fair and ambitious Climate Agreement. Examples of such areas for future discussion are listed in Annex 1.

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- **Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP):** a subsidiary body of the UNFCCC mandated to develop a protocol, another legal instrument, or an agreed outcome with legal force under the Convention applicable to all Parties. By the same mandate, the COP has also launched a workplan on enhancing mitigation ambition to identify and to explore options for a range of actions that can close the ambition gap, with a view to ensuring the highest possible mitigation efforts by all Parties.
- **Afforestation:** Planting of new forests on lands that have not been recently forested.
- **Anthropogenic:** Human made. In the context of greenhouse gases, emissions that are produced as the result of human activities.
- **Atmosphere:** The mixture of gases surrounding the Earth, consisting of about 79.1% nitrogen (by volume), 20.9% oxygen, 0.036% carbon dioxide, and trace amounts of other gases.
- **Biofuel:** Gas or liquid fuel made from plant material (biomass).
- **Biomass:** Total dry weight of all living organisms that can be supported at each trophic level in the food chain.
- **Bunker fuel:** Fuel supplied to ships and aircraft for international transportation, irrespective of the flag of the carrier, consisting primarily of residual and distillate fuel oil for ships and jet fuel for aircraft.
- **Carbon cycle:** All carbon reservoirs and exchanges of carbon between reservoirs by various chemical, physical, geological, and biological processes.
- **Carbon dioxide:** A colorless, odourless, non-poisonous gas that is a normal part of the ambient air. Carbon dioxide is a product of fossil fuel combustion. Although carbon dioxide does not directly impair human health, it is a greenhouse gas that traps terrestrial (i.e. infrared) radiation and contributes to the potential for global warming.
- **Carbon equivalent:** A metric measure used to compare the emissions of the different greenhouse gases based upon their global warming potential (GWP).
- **Carbon sinks:** Carbon reservoirs and conditions that take in and store more carbon (i.e. carbon sequestration) than they release.
- **Climate system (or Earth system):** The atmosphere, the oceans, the biosphere, the cryosphere, and the geosphere all together make up the climate system.
- **Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP):** The supreme body of the UNFCCC which serves as the meeting of the Parties to the Kyoto Protocol. All States that are Parties to the Kyoto Protocol are represented at the Conference of the Parties, serving as the Meeting of the Parties to the Kyoto Protocol (CMP), while States that are not Parties participate as observers. The CMP reviews the implementation of the Kyoto Protocol and takes decisions to promote its effective implementation.
- **Conference of the Parties:** COP is the supreme decision-making body of the UNFCCC. All States that are Parties to the Convention are represented at the COP, at which they review the implementation of the Convention and any other legal instruments that the COP adopts, and take the necessary decisions to promote the effective implementation of the Convention, including institutional and administrative arrangements.
- **Deforestation:** Those practices or processes that result in the conversion of forested lands for non-forest uses. This is often cited as one of the major causes of the enhanced greenhouse effect.
- **Ecosystem:** The complex system of plant, animal, fungal, and microorganism communities and their associated non-living environment interacting as an ecological unit.

- **Emissions:** Releases of gases to the atmosphere (e.g. the release of carbon dioxide during fuel combustion). Emissions can be either intended or unintended releases.
- **Fossil fuel:** A general term for buried combustible geologic deposits of organic materials, formed from decayed plants and animals that have been converted to crude oil, coal, natural gas, or heavy oils by exposure to heat and pressure in the earth's crust over hundreds of millions of years.
- **Global warming:** The progressive gradual rise of the earth's surface temperature thought to be caused by the greenhouse effect and responsible for changes in global climate patterns.
- **Green Climate Fund (GCF):** The GCF is an operating entity of the financial mechanism of the UNFCCC and is accountable to and functions under the guidance of the COP. It is governed by a Board comprising 24 members (with equal numbers from developed and developing country Parties) and is intended to be the main fund for global climate change finance in the context of mobilizing USD 100 billion by 2020. Greenhouse effect: trapping and build-up of heat in the atmosphere (troposphere) near the earth's surface.
- **Greenhouse gas (GHG):** Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include, but are not limited to, water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrochlorofluorocarbons (HCFCs), ozone (O₃), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).
- **Intergovernmental Panel on Climate Change (IPCC):** The IPCC is a scientific body that reviews and assesses, at regular intervals, the most recent scientific, technical and socioeconomic information produced worldwide, relevant to the understanding of climate change. It does not conduct any own research nor does it monitor climate-related data or parameters. The UNFCCC COP receives the outputs of the IPCC, and uses IPCC data and information as a baseline on the state of knowledge on climate change in making science based decisions.
- **Methane (CH₄):** A hydrocarbon that is a greenhouse gas with a global warming potential estimated at 21. Methane is produced through anaerobic (without oxygen) decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.
- **Metric ton:** Common international measurement for the quantity of greenhouse gas emissions. A metric ton is equal to 1000 kilograms, 2204.6 pounds, or 1.1023 short tons.
- **Nitrous oxide (N₂O):** A powerful greenhouse gas with a global warming potential evaluated at 310. Major sources of nitrous oxide include soil cultivation practices, especially the use of commercial and organic fertilizers, fossil fuel combustion, nitric acid production, and biomass burning.
- **Parts per billion (ppb):** Number of parts of a chemical found in one billion parts of a particular gas, liquid, or solid mixture.
- **Parts per million (ppm):** Number of parts of a chemical found in one million parts of a particular gas, liquid, or solid.
- **Radiative forcing:** A change in the balance between incoming solar radiation and outgoing infrared (i.e. thermal) radiation. Without any radiative forcing, solar radiation coming to the Earth would continue to be approximately equal to the infrared radiation emitted from the Earth. The addition of greenhouse gases to the atmosphere traps an increased fraction of the infrared radiation, reradiating it back toward the surface of the Earth and thereby creates a warming influence.
- **Renewable energy:** Energy obtained from sources that are essentially inexhaustible, unlike, for example, fossil fuels, of which there is a finite supply. Renewable sources of energy include

wood, waste, geothermal, wind, photovoltaic, and solar thermal energy.

- **Subsidiary Body for Implementation (SBI):** The SBI supports the work of the COP and the CMP through the assessment and review of the effective implementation of the Convention and the Kyoto Protocol.
- **Subsidiary Body for Scientific and Technological Advice (SBSTA):** The SBSTA supports the work of the COP and the CMP through the provision of timely information and advice on scientific and technological matters as they relate to the Convention or the Kyoto Protocol.

Source: UNFCCC website

ASEAN DISCUSSION POINTS IN PREPARATION FOR THE 2015 AGREEMENT

Since a variety of common challenges and opportunities can be identified for co-operation, ASEAN Member States could consider to undertake joint preparation for the upcoming negotiations. Topics include the 2015 Agreement scope and its bindingness, climate change financing, forest and agriculture sector, and climate change adaptation, with special focus on loss and damage initiatives.

Potential common negotiation points in each topic for future consideration have emerged from the participants of the ASEF “Climate Change for Policy-makers for ASEAN Members” training in Hanoi, Viet Nam, 18-19 June 2014.

2015 AGREEMENT:

- The scope of the Agreement should include adaptation, mitigation, finance, MRV and transparency, technology transfer and capacity building. AMS leaders could agree on promoting these six elements.
- Each country has to make its own climate decisions before commitment is taken at the ASEAN level. Binding mitigation targets in the AMS may not be realistic by 2015, but regional level mitigation targets (e.g. on energy efficiency) may be feasible.
- In the long-term, AMS will need to define nationally binding mitigation targets and set sectoral mitigation targets at the regional level.

CLIMATE CHANGE FINANCING

- The new agreement should concern mitigation, adaptation, transfer of technology, capacity building, and transparency of action, but priority should be given to adaptation finance.
- To support disaster relief and food security in the ASEAN region, the establishment of a specific fund is suggested, linked to the Green Climate Fund.
- To scale up climate finance, the existing list of donors can be reviewed and specific relationships can be defined.
- To promote mitigation actions, suggested initiatives include:
 - ◊ A regional carbon trading mechanism;
 - ◊ A network of ASEAN cities, focusing on energy efficiency improvements and deployment of renewables; and
 - ◊ A regional NAMA (RAMA) registry system of regionally approved mitigation actions.

FOREST, AGRICULTURE AND REDD+

- Agriculture and food security are of major importance in the region; the UNFCCC should consider financing, technology development and capacity building for these sectors.
- A regional network of research centres on agriculture productivity can serve as a platform for knowledge sharing among AMS.
- The role of ASEAN regional knowledge network on forest and climate change under the scope of the ASEAN Senior Official on Forestry could be strengthened.
- Sustainable financial and technical support for forestry implementation (e.g. Green Climate Fund, international sources, and in kind support) is crucial.

ADAPTATION, LOSS AND DAMAGE:

- The ASEAN countries could consider working towards a common position on the Warsaw International Mechanism for Loss and Damage to enhance action and to help developing countries in addressing losses and damages linked to climate change.
- To ensure that a high priority is given to the mechanism, it should be placed outside the Adaptation Fund.
- Exchange of experiences of AMS at handling extreme weather events is desirable.

During the course of the discussion, participants also emphasized that while adaptation is a main priority for the region, mitigation should be also considered, including deployment of renewables, energy efficiency improvements, and low-carbon technologies. To this end, the importance of regional (South-South) co-operation was also underlined for research and development, and for exchange of experience.

TIMELINE OF THE UNFCCC

- 1979 – First World Climate Conference (WCC)
- 1988 – Establishment of the Intergovernmental Panel on Climate Change
- 1990 – IPCC publishes its first assessment report. United Nations General Assembly negotiations on a framework convention begin
- 1991 – First meeting of the Intergovernmental Negotiating Committee (INC)
- 1992 – The UNFCCC is adopted and opened for signature at the Earth Summit in Rio de Janeiro, Brazil
- 1994 – The UNFCCC enters into force after its ratification by 50 countries
- 1995 – First Conference of the Parties (COP1) in Berlin. Berlin Mandate for setting commitments for developed countries
- 1996 – The UNFCCC Secretariat is set up to support action under the Convention
- 1997 – The Kyoto Protocol (KP) is formally adopted at the COP3 by more than 150 signatory countries with legally binding GHG emissions reduction targets for developing countries
- 1998 – The Buenos Aires Plan of Action was adopted at the COP4 for developing implementation mechanisms for the Kyoto Protocol
- 2001 – IPCC's Third Assessment Report. Bonn Agreement on the mechanisms for implementation of the KP adopted based on the Buenos Aires Plan of Action of 1998. Marrakesh Accords adopted at COP7, detailing rules for implementation of the KP
- 2002 – Delhi Ministerial Declaration adopted at the COP8, calling for developed countries to transfer technology
- 2005 – Kyoto Protocol enters into force. COP11 and First Meeting of the Parties to the Kyoto Protocol (CMP1) in Montreal. Nairobi Work Programme on Adaptation is accepted and agreed on as part of the next phase of the KP
- 2007 – IPCC's Fourth Assessment Report. Public awareness of climate change increases. Agreement at COP13 about the Bali Road Map, which focuses on mitigation actions after the KP expires in 2012
- 2009 – In lack of binding commitments, the establishment of the Copenhagen Accord was announced at the COP15. Countries were asked to pledge for non-binding emissions reductions and mitigation actions
- 2010 – Cancún Agreement at the COP16
- 2011 – Establishment of the Durban Platform for Enhanced Action at the COP17
- 2012 – The Doha Amendment to the KP was adopted by the CMP at CMP8 and created a second commitment phase for 2013-2020
- 2013 – Agreements about advancement of the Durban Platform, the Green Climate Fund and Long-Term Finance, the adoption of the Warsaw Framework for REDD+ and the establishment of the Warsaw International Mechanism for Loss and Damage at the COP19/CMP9
- 2014 – COP20 in Lima, Peru
- 2015 – COP21 in Paris, France

Source: UNFCCC website, Environment and Energy Study Institute

MEMBERS OF NEGOTIATING COALITIONS

ALLIANCE OF SMALL ISLAND STATES (AOSIS)

Antigua and Barbuda, The Bahamas, Barbados, Belize, Cape Verde, Comoros, Cuba, Dominica, Federated States of Micronesia, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, Maldives, Marshall Islands, Mauritius, Nauru, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Seychelles, Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu, Vanuatu.

AFRICAN GROUP

Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo (Democratic Republic of), Congo, Côte d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libyan Arab Jamahiriya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe.

EUROPEAN UNION (EU)

Austria, Belgium, Bulgaria, Croatia, Cyprus, The Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, the Netherlands, The United Kingdom.

ENVIRONMENTAL INTEGRITY GROUP (EIG)

Lichtenstein, Mexico, Monaco, Korea, Switzerland.

GROUP OF 77 AND CHINA

Afghanistan, Algeria, Angola, Antigua and Barbuda, Argentina, Bahamas, Bahrain, Bangladesh, Barbados, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Chile, China, Columbia, Comoros, Congo, Costa Rica, Côte d'Ivoire, Cuba, Democratic People's Republic of Korea, Democratic Republic of Congo, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Ethiopia, Fiji, Gabon, Gambia, Ghana, Grenada, Guatemala, Guinea, Guinea Bissau, Guyana, Haiti, Honduras, India, Indonesia, Iran (Islamic Republic of) Iraq, Jamaica, Jordan, Kenya, Kuwait, Lao People's Democratic Republic, Lebanon, Lesotho, Liberia, Libyan Arab Jamahiriya, Madagascar, Malawi, Malaysia, Maldives, Mali, Marshall Islands, Mauritania, Mauritius, Micronesia (Federated States of), Mongolia, Morocco, Mozambique, Myanmar, Namibia, Nepal, Nicaragua, Niger, Nigeria, Oman, Pakistan, Palestine, Panama, Papua New Guinea, Paraguay, Peru, The Philippines, Qatar, Rwanda, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, Sao Tome and Principe, Saudi Arabia, Senegal, Seychelles, Sierra Leone, Singapore, Solomon Islands, South Africa, Sri Lanka, Sudan, Suriname, Syrian Arab Republic, Swaziland, Thailand, Timor-Leste, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkmenistan, Uganda, United Arab Emirates, United Republic of Tanzania, Uruguay, Vanuatu, Venezuela, Viet Nam, Yemen, Zambia, Zimbabwe.

LEAST DEVELOPED COUNTRIES (LDCS)

Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Cape Verde, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Lao People's Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Maldives, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Samoa, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, Sudan, Timor-Leste, Togo, Tuvalu, Uganda, United Republic of Tanzania, Vanuatu, Yemen, Zambia.

LIKE-MINDED DEVELOPING COUNTRIES ON CLIMATE CHANGE (LMDC)

Bolivia, China, Cuba, Dominica, Ecuador, Egypt, El Salvador, India, Iran, Iraq, Malaysia, Mali, Nicaragua, The Philippines, Saudi Arabia, Sri Lanka, Sudan, Venezuela.

UMBRELLA GROUP

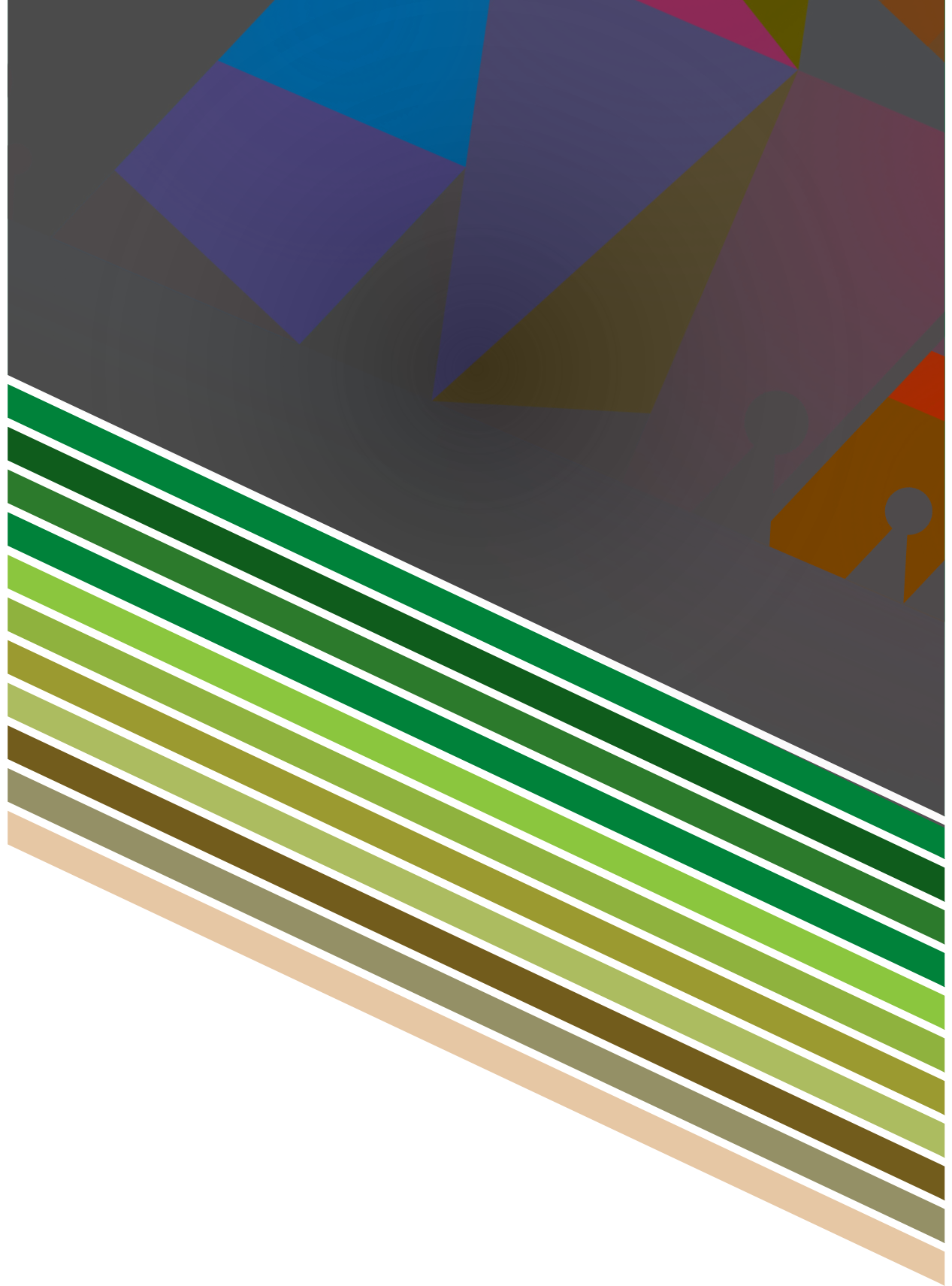
Japan, United States, Switzerland, Canada, Australia, Norway, New Zealand, Iceland, Andorra, Korea, Liechtenstein, Mexico, San Marino, Turkey and Israel.

Source: UNEP Guide for Negotiations of MEAs

ASEAN SOCIO-CULTURAL COMMUNITY BLUEPRINT RESPONDING TO CLIMATE CHANGE AND ADDRESSING ITS IMPACTS (SECTION D.10)

STRATEGIC OBJECTIVE: Enhance regional and international cooperation to address the issue of climate change and its impacts on socio-economic development, health and the environment in ASEAN Member States through implementation of mitigation and adaptation measures, based on the principles of equity, flexibility, effectiveness, common but differentiated responsibilities, respective capabilities, as well as reflecting on different social and economic conditions.

- Encourage ASEAN common understanding on climate change issues and where possible, engage in joint efforts and common positions in addressing these issues;
- Encourage the efforts to develop an ASEAN Climate Change Initiative (ACCI);
- Promote and facilitate exchange of information/knowledge on scientific research and development (R&D), deployment and transfer of technology and best practices on adaptation and mitigation measures, and enhance human resource development;
- Encourage the international community to participate in and contribute to ASEAN's efforts in afforestation and reforestation, as well as to reduce deforestation and forest degradation;
- Develop regional strategies to enhance capacity for adaptation, low carbon economy, and promote public awareness to address effects of climate change;
- Enhance collaboration among ASEAN Member States and relevant partners to address climate related hazards, and scenarios for climate change;
- Develop regional systematic observation system to monitor impact of climate change on vulnerable ecosystems in ASEAN;
- Conduct regional policy, scientific and related studies, to facilitate the implementation of climate change convention and related conventions;
- Promote public awareness and advocacy to raise community participation on protecting human health from the potential impact of climate change;
- Encourage the participation of local governments, private sector, non-governmental organisations, and communities to address the impacts of climate change;
- Promote strategies to ensure that climate change initiatives lead to an economically vibrant and environment friendly ASEAN Community taking into account win-win synergies between climate change and the economic development.



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