2.6 CF for ASEAN stakeholders (28 - 29 March 2016)

Climate Finance For Southeast Asia

TGO

ITC

JICA

Climate Change International Technical and Training Center

Introduction

Impact of climate change can now be seen all over the world. Especially Southeast Asia region is one of the most vulnerable areas in the world and actions for climate change are the important and immediate agenda for this region.

The United Nations Framework Convention on Climate Change (UNFCCC) and other UN agencies have established financial mechanisms to provide funds to both climate change mitigation and adaptation measures in developing countries. The Global Environment Facility (GEF) is operating financial mechanism under the UNFCCC. At COP17 in 2011, Parties decided to designate the Green Climate Fund (GCF) as an operating entity of the Financial Mechanism of the UNFCCC. Furthermore, International decision concluded long-term climate finance and the GCF's initial capitalization target of 10 billion USD has been met in 2014. However, many countries are still facing barriers and difficulties to access such international financial sources, and also facing budget constraints to implement climate change related actions.

Thailand Greenhouse Gas Management Organization (Public Organization) (TGO), a responsible agency of climate change mitigation under the Ministry of Natural Resources and Environment (MONRE) of Thailand, has been conducting various activities to promote low carbon and resilient society, one of which is the establishment of **Climate Change International Technical and Training Center (CITC)** in Thailand, which aims to be a "one-stop technical and training center" and networking platform on climate change for various stakeholders in Southeast Asian countries. CITC project is receiving support from Japan International Cooperation Agency (JICA).

CITC has set up a variety of training courses that aim to enhance the capacity of a wide range of stakeholders and networking among them, including policymakers and practitioners from central and local government in Southeast Asia, as well as private companies. Being aware of the significance of accessing climate finance and also the needs for capacity development on this issue for stakeholders in the region, CITC has developed a training program for ASEAN stakeholders related to **climate finance**.

This training material was developed for a "*Regional Training on Climate Finance in Southeast Asian countries*" training course of CITC, which aims to provide a general understanding of the current nature and variety of climate financing opportunities and the types of climate mitigation and adaptation projects that they can support.

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Abbreviations

Abbreviation	Description
ADA	Agency for Agricultural Development of Morocco
ADB	Asian Development Bank
ADBI	Asian Development Bank Institute
AF	Adaptation Fund
AFC	Africa Finance Corporation
AFD	Agence Française de Développement
AfDB	African Development Bank
AFOLU	Agriculture, Forestry and Other Land Use
AR	Afforestation and Reforestation
AR5	Fifth Assessment Report
ASEAN	Association of Southeast Asian Nations
BAU	Business As Usual
BUR	Biennial Update Reports
CAF	Corporación Andina de Fomento
CCCCC	Caribbean Community Climate Change Centre
CDM	Clean Development Mechanism
CERs	Certified Emission Reductions
CFC	Chlorofluorocarbon
CH4	Methane
CI	Conservation International
CITC	Climate Change International Technical and Training Center
CO2	Carbon Dioxide
COP	Conference of the Parties
CPI	Climate Policy Initiative
CPI	Climate Policy Initiative
CSE	Centre de Suivi Écologique
DBSA	Development Bank of Southern Africa
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
EIF	Environmental Investment Fund
ESG	Environment, Social and Governance
ESS	Environmental and Social Safeguards
FAO	Food and Agriculture Organization
FDI	Foreign Direct Investment
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GWP	Global Warming Potential
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IDB	Inter-American Development Bank
IDFC	International Development Finance Club
IEA	International Energy Agency
IFC	International Finance Corporation
IGES	Institute for Global Environmental Strategies
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
IRR	Internal Rate of Returns

IUCN	International Union for Conservation of Nature
JCM	Joint Crediting Mechanism
JICA	Japan International Cooperation Agency
KfW	Kreditanstalt für Wiederaufbau
LCOE	Levelized Cost of Electricity
LDCs	Least Developed Countries
MAC	Marginal Abatement Cost
MINIRENA	Ministry of Natural Resources of Rwanda
MOFEC	Ministry of Finance and Economic Cooperation of the Federal Republic of Ethiopia
MONRE	Ministry of Natural Resources and Environment
MRV	Measurement, Reporting and Verification
N2O	Nitrous Oxide
NABARD	National Bank for Agriculture and Rural Development
NDA	National Designated Authority
NEMA	National Environment Management Authority of Kenya
NIE	National Implementing Entity
NTFP	Non-Timber Forest Product
OAS	Online Accreditation System
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
OOF	Other Official Flows
PPP	Public private partnership
PROFONANPE	Fondo de Promoción de las Áreas Naturales Protegidas del Péru
RBF	Results-based Finance
RE	Renewable Energy
REDD	Reducing Emissions from Deforestation and Forest Degradation
ROI	Return on Investment
SD	Sustainable Development
SIDs	Small Island Developing States
SPREP	Secretariat of the Pacific Regional Environment Programme
TC	Transitional Committee
TGO	Thailand Greenhouse Gas Management Organization
UCAR	Unidad Para el Cambio Rural from Argentina (Unit for Rural Change)
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollars
WEF	World Economic Forum
WFP	World Food Programme
WMO	World Meteorological Organization

CHAPTER 1 INTRODUCTION OF CLIMATE CHANGE

What readers can learn in this chapter

Chapter 1 illustrates the scientific background of climate change; its causes and effects. Also by reflecting the future projection and impacts of climate change, the chapter summarizes the importance of climate actions both in mitigation and adaptation.

1.1 Climate change science and climate change impacts

1.1.1 Anthropogenic and natural climate change

Climate routinely and naturally changes in the long-term and short-term. Causes of the routine climate changes vary from variations in earth's axial revolution and rotation, changes in solar activity, and an increase of fine particles in the atmosphere by volcanic activity.

Since the industrial revolution in the late 18th century, emissions of **Greenhouse Gas (GHG)**, typically in the form of **carbon dioxide (CO_2)**, have dramatically increased due to human activities such as deforestation and fossil fuel combustion. Such gases have been accumulated in the atmosphere, and escalating the greenhouse effect. As a result, air temperature has raised and **anthropogenic (human-induced) climate change** has emerged. In a scientific term, both 'anthropogenic' changes and 'natural' changes are called 'climate change.' On the other hand, international communities such as the United Nations Framework Convention on Climate Change (UNFCCC) and countries limit the cause of climate change to 'anthropogenic' changes. UNFCCC defines in its Article 1 climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods."

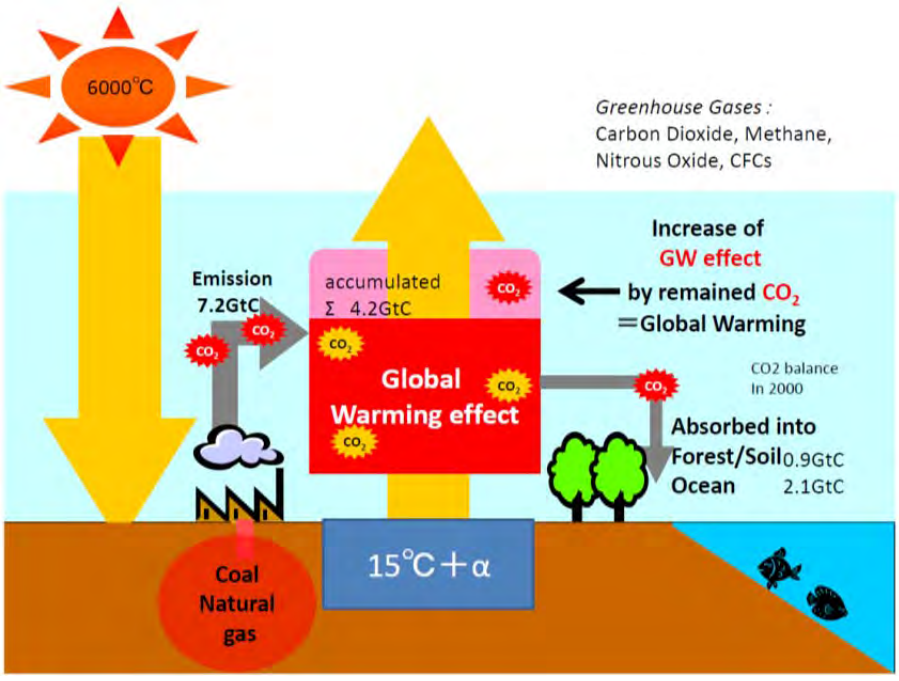

Figure 1-1 Anthropogenic global warming (Source: IGES)

1.1.2 Greenhouse effect: how global temperature is determined

Energy from the sun whose surface temperature is approximately 6,000 °C enters into the earth, which heats up the earth surface temperature to 15 °C on overall average. The energy balance is maintained by the earth emitting the same amount of energy obtained from the sun into the space. Climate on the ground is formulated by the atmosphere in the troposphere up to a height of about 10,000 meters. Atmospheric constituent is composed of 78% nitrogen, 21% oxygen and less than 1% argon, and contains a tiny amount of GHG such as carbon dioxide (concentration of 260 ppm in pre-industrial era and 400 ppm = 0.04% at present), methane and nitrous oxide. Short wavelength energy emitted from the high temperature surface of the sun passes through atmospheric layers without interfering in the greenhouse gases. On the other hand, energy emitted from the earth surface with lower temperature (about 15 °C) has long wavelength. GHGs are activated in synchronization with the energy and raise the atmospheric temperature.

This is called '**greenhouse effect**.' If there is no GHG in the atmosphere, the temperature of the earth is estimated to be minus 18 °C. Thus, the 33 °C difference from the 15 °C is the temperature raise generated by the greenhouse effect.

After all, a surface of the earth can keep warm temperature which is suitable to the existing organisms by holding GHGs in the atmosphere. However, as the concentration of GHGs increases, the atmospheric temperature becomes higher due to enhancement of greenhouse effect. The greenhouse effect is theoretically supported by Swedish scientist Svante August Arrhenius and others in the late 19th century, and is a scientifically established phenomenon. Controversy is sometimes created by skeptics who question about the causes of global warming other than greenhouse effect (e.g. solar activity and earth revolution and rotation changes) and the uncertainties in climate mechanisms (e.g. such as the formation of cloud and the degree of greenhouse effect).

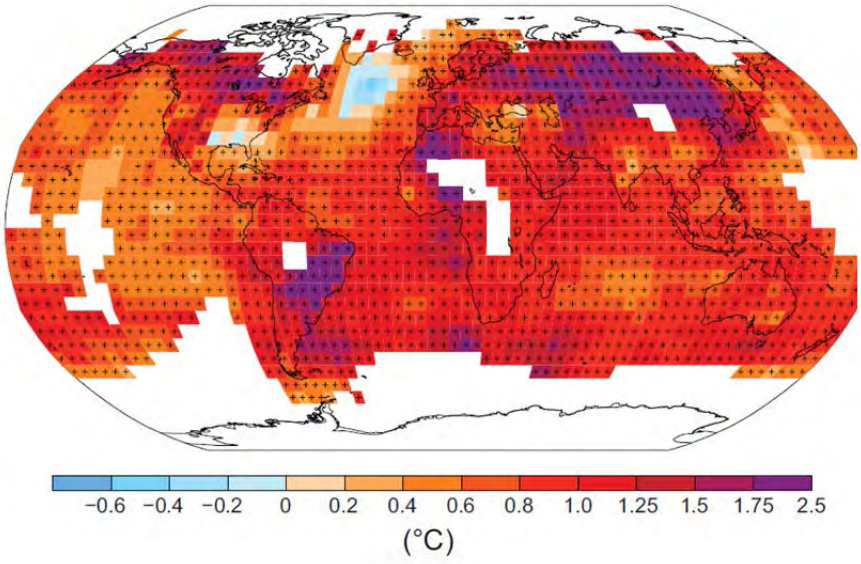

Figure 1-2 Observed change in surface temperature 1901–2012
(Source: IPCC Fifth Assessment Report)

1.1.3 Anthropogenic 'global warming'

Since the industrial revolution, GHG emissions have dramatically increased mainly due to the increased carbon dioxide emissions generated from **fossil fuel combustion** (account for about 60% of world GHG emissions today) and from **deforestation** (17%) due to farmland development in response to the population growth, methane emissions from rice paddies (14%), and nitrous oxide from agricultural activities (8%). Thus, the 'anthropogenic' greenhouse effect was added to the conventional 'natural' greenhouse effect, and earth's atmosphere temperature further increases and lead to **global warming**.

Consequently, climate change that alters the entire climate system has come to be a concern. Climate system is defined by the UNFCCC in its Article 1 paragraph 3 as "the totality of the atmosphere, the hydrosphere and geosphere and their interaction."

As global warming continues, present stable climate will change in terms of temperature, rainfall, wind, ocean temperature and extreme events such as typhoon. Global average temperature rises, but the temperature temporarily increases in some places and decreases in other places. In this sense, the use of term 'climate change' is more scientifically appropriate than 'global warming.'

1.1.4 Present situation and projection of climate change

Climate on the earth surface where humans live has shifted from ice age to warmer interglacial age about 15,000 years ago. Then, although the climate changed by repeating natural variability within approximately 1 °C range, under the relatively stable climate, agriculture was started and humans have obtained stable foods and maintained their productions and living.

But in the 20th century, the temperature began to rise. Although the rise in temperature once became stationary coinciding with natural variability of temperature decrease during 1940's – 70's, the increase in temperature has been accelerated again since. The increase since pre-industrial periods is estimated to be 0.85 °C now. It has been accelerated in recent years, and the increase since 1880 has been observed to be 0.85 °C. On the other hand, GHG

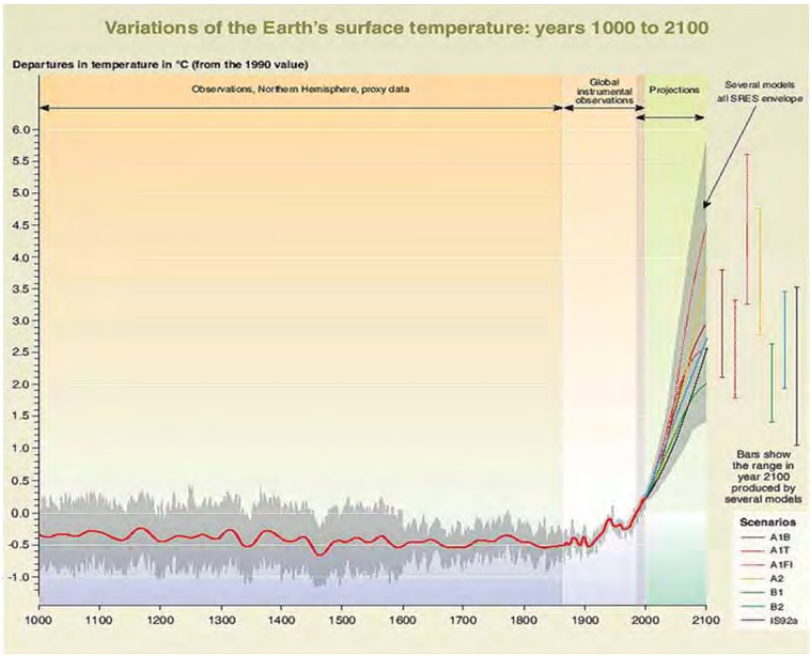

Figure 1-3 Variations of earth's surface temperature: Year 1000 to Year 2100 (Source: IPCC synthesis report 2001)

concentrations in the atmosphere have increased to an unprecedented level in the past 800,000 years. They exceeded the preindustrial level by about 40% in carbon dioxide and 150 % in methane. Report by Intergovernmental Panel on Climate Change[1] (IPCC) concluded that "it is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century."

If humans continue such activities that depend heavily upon the use of fossil fuels in a **Business-as-Usual (BAU)** condition, according to the Fifth Assessment Report by IPCC, about 4 °C temperature rise is expected by the end of the 21st century. This temperature rise is expected to cause great damages worldwide. In 2010, at the 16th Conference of the Parties (COP) to UNFCCC held in Cancun, Mexico, international community agreed to establish a new international framework to hold any temperature increase to below 2 °C above preindustrial levels.

In addition, recently, the Paris Agreement marks a change in direction towards a new world. It confirms the target of keeping the rise in temperature below 2 °C. The agreement even establishes, for the first time, that we should be aiming for 1.5 °C, to protect island states, which are the most threatened by the rise in sea levels.

1.1.5 GHG and Global Warming Potential

Major anthropogenic greenhouse gases are **carbon dioxide (CO_2)** resulting from fossil fuel combustions and deforestation, **methane (CH_4)** resulting from paddy, rumination of livestock and waste, **nitrous oxide (N_2O)** from nitrogen-based fertilizer and adipic acid production, sulfur hexafluoride (SF_6) and alternative for chlorofluorocarbon (CFC).

Each per weight gas has different effects (radiative forcing) to global warming. The measurement of how much heat each greenhouse gas traps in the atmosphere per unit, in comparison to carbon dioxide, is called **Global Warming Potential (GWP)**. When the same 1 kg is emitted to the atmosphere, CH_4 is 28 times, N_2O is 265 times and CFCs is thousands times more than CO_2 according to IPCC Fifth Assessment Report (AR5).

IPCC AR5 states CO_2 is the major anthropogenic GHG accounting for 76% of total anthropogenic GHG emissions in 2010, 16% come from CH_4, 6% from N_2O, and 2% from fluorinated gases.

[1] Intergovernmental Panel on Climate Change (IPCC) was established by an initiative of the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988. It is an international panel for scientists, policymakers and international organizations. Generally, the evaluation or assessment reports are issued in every 5 to 7 years. Latest report was issued from 2013 to 2014 as its fifth report (Fifth Assessment Report (AR5). Functions of IPCC include regular survey of the latest scientific knowledge indicated by a number of academic papers, scientific assessment of such knowledge, and utilization of such knowledge for policymaking process.

1.1.6 Climate Change Impacts

Climate change alters the ecosystems, water resources and weather in many parts of the world. A change in the occurrence of extreme natural events such as typhoon, drought or heavy rainfall is expected to lead to water shortage, damages to agriculture and food, and increases in natural disasters.

Flooding in coastal mega-city and salinization of coastal farmland occurs along with sea level rise due to melting land ice and expansion of sea water. Heat stroke and expansion of vector-born infectious diseases are also expected.

Photo 1-1 Climate change impacts

Some of the damages are almost irreversible such as ecosystem change and extinction of species and sea level rise that certainly proceeds for a long time. While there is also a possibility that temperature rise may expand suitable agricultural land in the northern region, there is a possibility to have geographically uneven occurrence of damages especially in developing countries where adaptation capacity to the climate change is rather limited.

The impact of GHG emissions and their accumulation have given rise to temperature increases, resulting in the destabilization of the climatic system. Responses to this situation have been undertaken by communities, ecosystems, enterprises and institutions. These responses have been broadly defined as '**adaptation'** to climate change induced events. Over the last two decades, adaptation measures are becoming more visible across the world and an adaptation science is emerging. Adaptation has become central to climate negotiations.

What is becoming more evident is that there is a 'limit to adaptation.' More recently the concept of **loss and damage** is drawing attention. This is more true for small island developing states (SIDs) and Least Developed Countries (LDCs) which have been demanding that the climate convention addresses the question of 'loss and damage' due to impacts of climate change. As climate finance-related discourses and approaches move forward, there is a need to undertake research, develop methodologies and determine real financial, tangible and non-tangible loss and damage to climate-induced impacts by societies, ecosystem and economies.

1.2 Overview of climate change mitigation and adaptation

1.2.1 Climate change mitigation

Objective of the UNFCCC is defined in its Article 2 as "*to achieve... stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner*."

Although some of GHGs emitted into the atmosphere is absorbed by the forest and soil, more than half of the GHGs remain and are accumulated in the atmosphere. Therefore, as long as the emissions continue, the concentrations of atmospheric GHGs continue to grow. The temperature continues to rise accordingly. In order to stabilize the climate, it is necessary to reduce GHG emissions and eventually reach to **zero emission**, in other words, **mitigate** climate change.

GHG has been emitted from all sectors of human activities. According to IPCC Fifth Assessment Report, the shares of sectoral emissions are: energy supply (35%), agriculture, forestry and other land use (24%) in AFOLU, industry (21%), transport (14%) and buildings (6.4%).

In technological society that is deeply dependent on energy, GHGs are closely related to people's living and production activities, thus we are facing great difficulties to reduce GHG emissions. In order to prevent further huge climate damages in the future, there is no other options but to reduce GHG emissions by cutting off fossil fuels.

1.2.2 Adaptation to climate change impacts

Climate change has been already progressed and anthropogenically-derived changes have influenced the ecosystem and human life in many parts of the world. In facing these issues, human beings have made efforts to **adapt** to the climate change, through such measures as developing infrastructure, changing the crop varieties, installing air conditioners, etc.

In Japan, for example, quality of rice has worsened in the south and improved in the north due to climate change. In order to adapt to this change, farmers in the south have developed strong rice which is **resilient** to climate change, in this case, resilient to higher temperature in order to secure agricultural production.

One cannot expect adaptation measures can fully cover the damage from climate change, and they cannot be effective if the climate change is escalated. Therefore, **mitigation** of climate change still is the best adaptation measure.

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CHAPTER 2 CLIMATE FINANCE MECHANISMS

What readers can learn in this chapter

This chapter outlines mitigation investments and the energy economy, climate finance mechanisms and institutional landscape (international, multi-lateral, bi-lateral, and private), as well as the typologies of Climate Finance.

2.1 Introducing Mitigation Investments and the Energy Economy

What is Finance and Investment?

Finance is defined as a transaction of money from money holder who has no need to use money now to user of money who needs to spend money now. A key point in finance is the **time value of money**, which states that purchasing power of one unit of currency can vary over time. Finance aims to price assets based on their **risk level** and their **expected rate of return**.

An **investment** is one of financial transactions. In general, an investment is an asset or item that is purchased with the hope that it will generate income or appreciate in the future. In an economic sense, an investment is the purchase of goods that are not consumed today but are used in the future to create wealth. In finance, an investment is a monetary asset purchased with the idea that the asset will provide income in the future or appreciate and be sold at a higher price. A key point in investment is the **ownership**. As a result of investment transaction, the asset or item is obtained by investor. Thus, investors have a right to manage asset or item by their own will.

What is Climate Finance?

Climate finance refers to local, national or transnational financing, which may be drawn from public, private and alternative sources of financing. Climate finance is critical to addressing climate change because large-scale investments are required to significantly reduce emissions, notably in sectors that emit large quantities of greenhouse gases. Climate finance is equally important for adaptation, for which significant financial resources will be similarly required to allow countries to adapt to the adverse effects and reduce the impacts of climate change.

In accordance with the UNFCCC, developed country Parties (Annex II Parties) are to provide financial resources to assist developing country Parties in implementing the objectives of the UNFCCC. It is important for all governments and stakeholders to understand and assess the financial needs developing countries have so that such countries can undertake activities to address climate change. Governments and all other stakeholders also need to understand the sources of this financing, in other words, how these financial

resources will be mobilized.

Equally significant is the way in which these resources are transferred to and accessed by developing countries. Developing countries need to know that financial resources are predictable, sustainable, and that the channels used allow them to utilize the resources directly without difficulty.

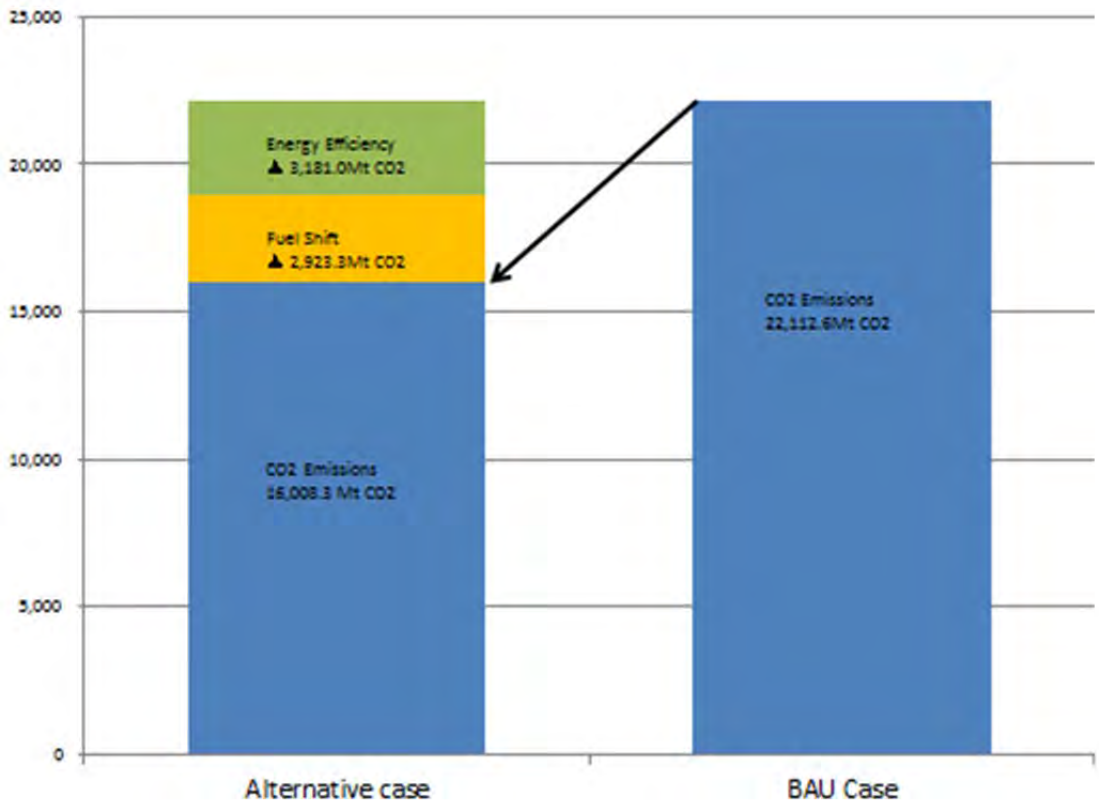
For developed countries, it is important that developing countries are able to demonstrate their ability to effectively receive and utilize the resources. In addition, there needs to be full transparency in the way the resources are used for mitigation and adaptation activities. The effective measurement, reporting and verification of climate finance is key to building trust between Parties to the Convention, and also for external actors.

Mitigation Investments

The CO2 emissions of Asia and the Pacific accounted for about 42.8 % of world CO2 emissions in 2010. However, through 2035, CO2 emissions in Asia and the Pacific will increase rapidly at an annual rate of 2.0 %, compared with the world average growth rate of 1.3 % per year through 2035. Thus, the share of Asia and the Pacific is projected to reach more than half of world CO2 emissions in 2035.

ADB (2013) analyzed the factors affecting CO2 reduction from the BAU case to the alternative case. It shows that energy intensity will account for 52.6 % and CO2 intensity for 47.4 % of the total reduction in CO2 emissions from BAU case to the alternative case. This implies that Asian and the Pacific region needs further energy conservation and fuel shift to less-carbon-intensive energy for further reduction of CO2 emissions (Fig. 2-1).

Figure 2-1. Decomposition components of carbon dioxide emission reduction from business-as-usual (2035) to the alternative case (2035) in Asia and the Pacific.



Source ADB (2013)

Alternative case cannot be realized if effective actions to improve energy efficiency and fuel shift are not taken.

There are several efforts to estimate investment and finance needs for development. 136 Among others, the World Economic Forum (2013) summarized estimates of necessary infrastructure investment calculated by several institutions, i.e. International Energy Agency (IEA) (2012), Food and Agriculture Organization (FAO) (2009), Organisation for Economic Cooperation and Development (OECD) (2006) and OECD (2012), and United Nations Environment Programme (2011) (see Table 2-1).

Table 2-1. Annual estimated investments needed under a business-as-usual and low-carbon scenario (US$ billions per year between 2010 and 2030)

Sector	Business-as-usual scenario investment needs		2C scenario investment needs		Incremental investment required		Sources
	Cumulative 2010-2030	Annual Average	Cumulative 2010-2030	Annual Average	Cumulative 2010-2030	Annual Average	
Power generation	6,933	347	10,136	507	3,203	160	IEA
Power transmission and development	5,450	272	5,021	251	-429	-21	IEA
Energy Total	**12,383**	**619**	**15,157**	**758**	**2,774**	**139**	
Buildings	7,162	358	13,076	654	5,914	296	IEA
Industry	5,100	255	580	290	700	35	IEA
Building & Industry total	**12,262**	**613**	**18,876**	**944**	**6,614**	**331**	
Road	8,000	400	8,000?	400?	-	-	OECD
Rail	5,000	250	5,000?	250?	-	-	OECD
Airports	2,300	115	2,300?	115?	-	-	OECD
Ports	800	40	800?	40?	-	-	OECD
Transport Vehicles	16,908	845	20,640	1,032	3,732	187	IEA
Transport total	**33,008**	**1,650**	**36,740**	**1,837**	**3,732**	**187**	
Water	26,400	1,320	26,400?	1,320?	-	-	OECD
Agriculture	2,500	125	2,500?	125?	-	-	FAO
Tele-communications	12,000	600	12,000?	600?	-	-	OECD
Forestry	1,280	64	2,080	104	800	40	UNEP
Other sectors	unknown	unknown	unknown	unknown	unknown	unknown	
Total Investment	**99,833**	**4,991**	**113,753**	**5,689**	**13,934**	**698**	
	~$100tr	~$5tr	^$114tr	~$5.7tr	~$14tr	~$0.7tr	

Source: Extracted from World Economic Forum (2013)

The WEF (2013) arrived at an investment gap under a business-as-usual scenario (that is, without taking into account climate change) of $100 trillion to accommodate climate change. Responding to an anticipated 2 °C temperature rise will add only $14 trillion, or 14 % to the total gap. The biggest investment challenges, therefore, appear to exist independent of climate change.

In context of Asia, ADB and ADBI 2009 reported that Asia's overall investment requirement for infrastructure between 2010 and 2020 is approximately $8 trillion. While about half the total infrastructure needed is for providing electricity, transportation (mostly roads) covers about 30 % of the total, telecommunications 13 %, with the rest needed for water and sanitation (Table 2-2).

Table 2-2 Asia's Total Infrastructure Investment Needs by Sector, 2010–2020 (in 2008 $ million)

Sector/Subsector	New Capacity	Replacement	Total
Energy (Electricity)	**3,176,437**	**912,202**	**4,088,639**
Telecommunications	**325,353**	**730,304**	**1,055,657**
Mobile phones	181,763	509,151	690,914
Landlines	143,590	221,153	364,743
Transport	**1,761,666**	**704,457**	**2,466,123**
Airports	6,533	4,728	11,260
Ports	50,275	25,416	75,691
Railways	2,692	35,947	38,639
Roads	1,702,166	638,366	2,340,532
Water and Sanitation	**155,493**	**225,797**	**381,290**
Sanitation	107,925	119,573	227,498
Water	47,568	106,224	153,792
Total	**5,418,949**	**2,572,760**	**7,991,709**

$ = United States dollar.
Sources: ADBI (2009); Bhattacharyay (2008).

Source Extracted from ADB and ADBI (2009)

However, these figures show the "Business-as Usual" investment needs and do not account for the "Low Carbon" Scenario. Therefore, we should estimate the amount of incremental investment required. Here, we simply assume it applying coefficient based on the estimation by the WEF (2013). According to the WEF (2013), incremental investment required in Energy sector is 2774 billion US dollar, which is 22.4 % of investment needs at Business-as-usual scenario. In case of transport sector, incremental cost is 11.3 % of Business-as-usual investment needs. If those coefficients are applied in the figures shown in ADB and ADBI 2009, incremental investment needs in Energy sector and transport sector are 915,855 million US Dollar and 246,612 million US Dollars, respectively. That is, 58 billion US dollars are incrementally required annually for low carbon development.

Energy Economy

In 2015, several important conferences were held where important decisions have been made to show the direction of future development, such as the Third Conference on Finance for Development in July, United Nations General Assembly on Post 2015 Development Agenda/Sustainable Development Goals in September, and the 21st Conference of the Parties to the UN Framework Convention on Climate Change (COP21) in December. In the process of preparation on Post 2015 Development Agenda and Sustainable Development Goals, the importance of "Sustainable energy for all" has been highlighted and energy issues were proposed as one of new sustainable development goals, for adoption at the UN General Assembly. The goal and its targets on energy show as follows;

Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all

7:1 By 2030, ensure universal access to affordable, reliable and modern energy services

7:2 By 2030, increase substantially the share of renewable energy in the global energy mix

7:3 By 2030, double the global rate of improvement in energy efficiency

7:a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology

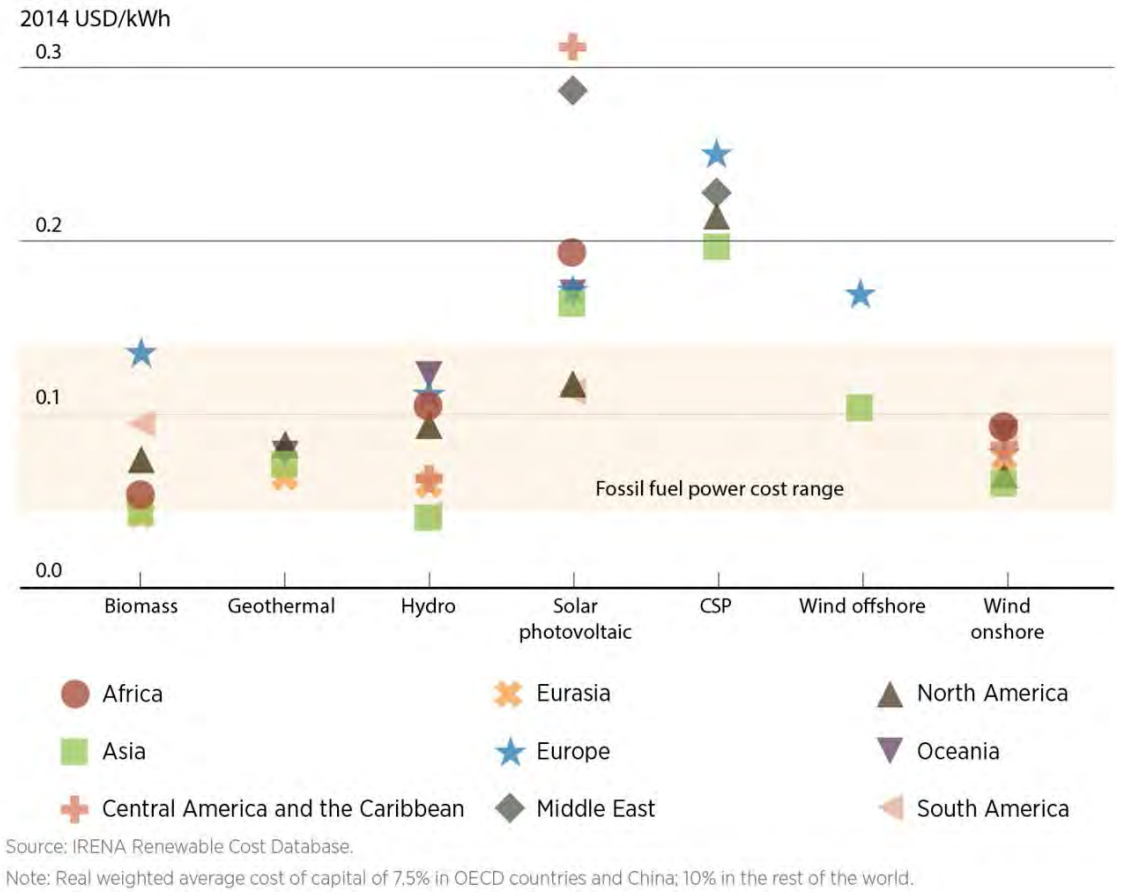
7:b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries and small island developing States and land-locked developing countries, in accordance with their respective programmes of support

(United Nations 2015a)

This goal and targets deems appropriate in the context of Asia and the Pacific Region.

Recently, costs of renewable power generation technologies are declining. IRENA (2015) reported that the large-scale deployment of wind and solar PV since 2000 has seen their installed costs driven down by learning investments at the same time that technology improvements have improved yields, resulting in levelized cost of electricity (LCOE) declines. IRENA (2015) noted that regional, weighted average costs of electricity from biomass for power, geothermal, hydropower and onshore wind are all now in the range, or even span a lower range, than estimated fossil fuel-fired electricity generation costs. Because of striking LCOE reductions, solar PV costs also increasingly fall within that range. Thus, renewable energy technologies become enough competitive to the traditional fossil fuel power generation and those may be realistic options for Asian countries (Fig. 2-2).

Figure 2-2. Weighted average cost of electricity by region for utility-scale renewable technologies, compared with fossil fuel power generation costs, 2013/2014. Source IRENA (2015)



Even though the cost of renewable energy technology declines, mobilization of investment and finance in low carbon development is still one of the key issues for Asian developing countries since there are several barriers to low carbon project.

International Development Finance Club (IDFC) (2014) identify following barriers, such as;

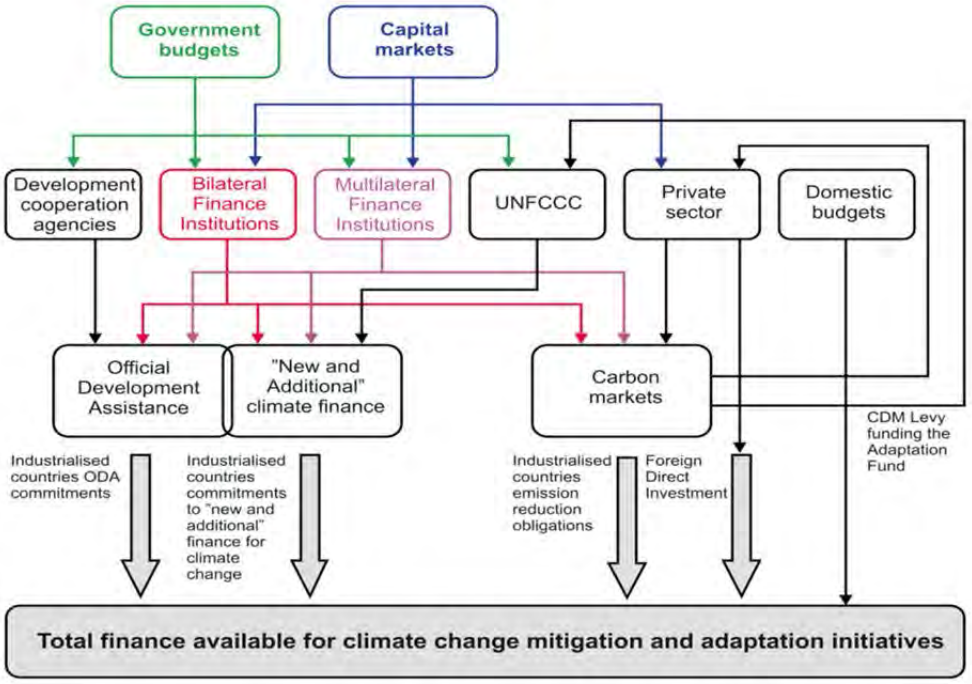
- High upstream costs for project development. Public support may be essential to realize the initial phases of project identification and development that may seem unattractive to private investors.
- High capital costs requiring adequate financial instruments.
- High perceived risks, requiring specific risk mitigation measures—financial or institutional—since standard risk mitigation tools are often unsuitable or unavailable for RE projects. When perceived risk is higher than real risk, public action may be needed to convince value chain actors to change their perception.

- Need to adapt rules and institutional frameworks for RE projects. Operational integration of RE into power grids or other energy systems often requires changes in institutional frameworks, notably to guarantee long term access to resources.
- Smaller size and return that offer lower economies of scale.
- High fossil fuel subsidies prevent RE deployment.

2.2 Climate Finance mechanisms and Institutional Landscape (international, multi-lateral, bi-lateral, private)

There are a variety of financial resources and schemes available for climate change related actions. Figure 2-3 shows over all sources of climate change finance.

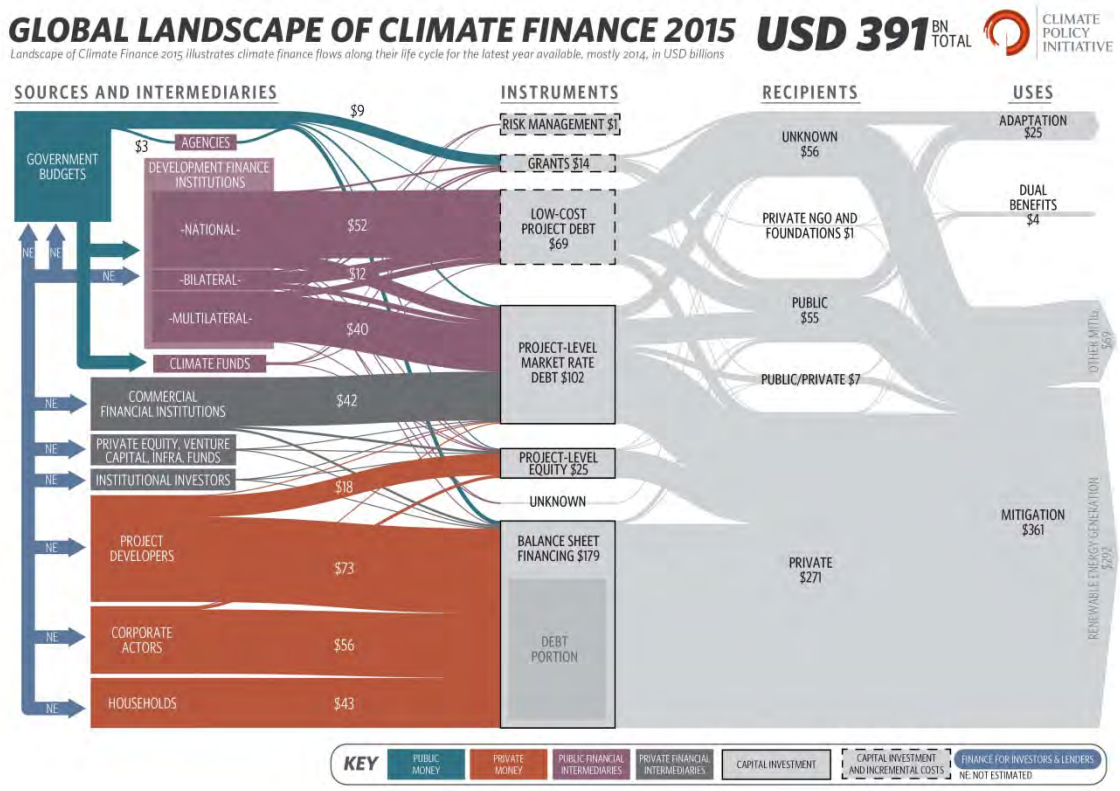
Figure 2-3. Financial flows for climate change mitigation and adaptation in developing countries



Source: Sudo (2015)

Climate Policy Initiative (CPI)(2015) estimates climate change financial flow from a variety sources to a variety of purposes. As shown in Figure 4, CPI(2015) reported that USD391 billion has identified as acclimate change related finance.

Figure 2-4. Global landscape of Climate Finance



Source: CPI(2015)

Table 2-4 summarizes the comparison of characteristics, potential and risks of each finance resources. Each financial source has pros and cons. Among others, domestic finance (both public and private) deems the most stable and low risk financial source.

Table 2-4 Characteristics, potentials and risks of finance

	Characteristics	Potential	Risk
Domestic public finance • Nat'l budget (Nat'l tax) • Municipality budget • Bonds • Domestic DFIs	• Most stable and low risk finance source. • Good for finance in low profit public projects • Contribute to leveraging domestic private finance	• Improved governance and financial system lead to increase of domestic finance flows and FDI.	• Political difficulty in increase of tax revenue • Lack of capacity of appropriate public fiscal management • Risk to crowd-out private finance

	Characteristics	Potential	Risk
International Public Finance • ODA • OOF • Multilaterals	• Stable and low risk finance but low predictability • Limited volume of finance • Need to use efficiently and effectively	• Leveraging private finance	• Risk crowd-out private finance. • Need to appropriate foreign reserve and forex management
Private finance	• Largest finance source. • Contribute to SD by investing in the project where social benefit will be increased while private benefit will be maximized. • Generate employment opportunity and sustainable development impact by expansion of business.	• Increase of private finance flow into developing countries • Increase of finance flows between developing countries	• Unstable due to economic situation and sensitive to risks • Hard to capture the total flow of private finance • Hard to make sure the transparency and accountability due to business confidentiality
Blended finance • PPP • EU Blending mechanism	• Sharing risks and cost by public, private finance will be mobilized and contribute to establish better business environment and market.	• Increase of private sector participation	• Risk of market distortion • Risk of dependency to public

Source: Sudo(Forthcoming)

2.3 Typologies of Climate Finance

2.3.1 Mitigation Finance and CDM

'Mitigation finance' refers to the finance provided for mitigation activities. OECD defines Mitigation Finance, for the purpose to collect ODA data contributing climate change (Rio Marker), as "It contributes to the objective of stabilisation of greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system by promoting efforts to reduce or limit GHG emissions or to enhance GHG sequestration.", and set criteria for eligibility as "The activity contributes to:

a) the mitigation of climate change by limiting anthropogenic emissions of GHGs, including gases regulated by the Montreal Protocol; **or**
b) the protection and/or enhancement of GHG sinks and reservoirs; **or**
c) the integration of climate change concerns with the recipient countries' development objectives through institution building, capacity development, strengthening the regulatory and policy framework, or research; **or**
d) developing countries' efforts to meet their obligations under the Convention. "

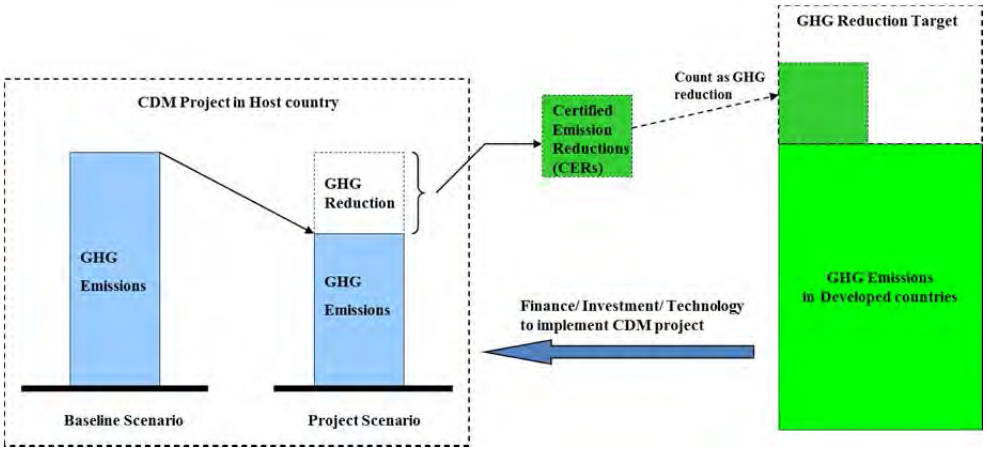
Clean Development Mechanism

Clean Development Mechanism (CDM) is one of the Kyoto Mechanisms along with International Emission Trading and Joint Implementation. The objective of the CDM is

1) to contribute to sustainable development of the host country (developing country); and
2) to assist developed countries to accomplish their GHG reduction target under the Kyoto Protocol.

The concept of CDM is shown in the Figure 2-5. Under the CDM, GHG reduction project will be implemented at the developing country (host country) in collaboration with developed country. Developed country provides investment and finance and technology to implement the project. The CDM project generates at least two types of benefit; development benefit and GHG reduction. Host country will be able to enjoy developmental benefit from CDM, and GHG reduction will be transferred to developed country, in the form of Certified Emission Reductions (CERs), to count as a GHG reduction effort by developed country.

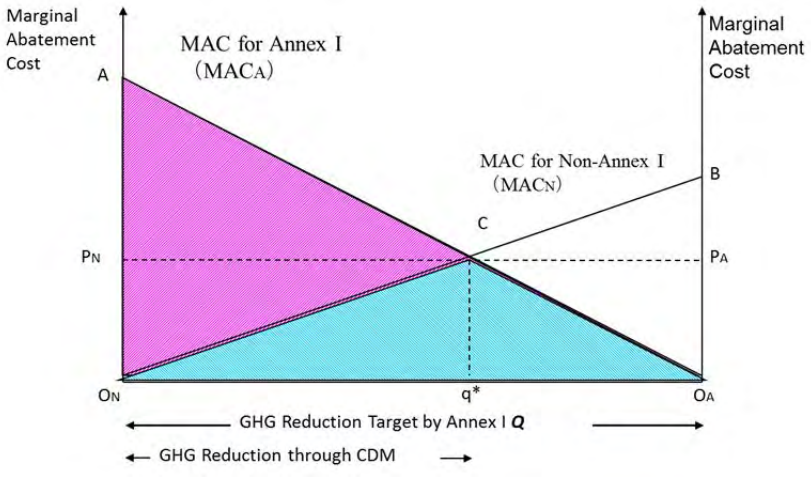
Figure 2-5: Concept of CDM



Source: Sudo

In theory, CDM contributes to the cost reduction for GHG reduction in the global level. Figure 2-6 shows the theoretical concept of the CDM. There are two Marginal Abatement Cost (MAC) curve; one is for developed country and another is for developing country. If developed country needs to reduce GHG emission by her only, total cost for meeting GHG emission reduction target is the area of triangle AO_NO_A. However, there are some cheaper GHG reduction measures/options in Developing countries (Triangle CO_Nq^*). Thus, if developed country implements CDM projects in developing country, developing country can achieve her GHG reduction target at lower cost, while developing country receives technology transfer as well as developmental benefit.

Figure 2-6: Theoretical concept of the CDM



Source: Sudo

However, there are several difficulties and criticism in CDM in practice. One of critical difficulties is how to identify and develop CDM projects. In addition, even if appropriate projects are identified, it takes long time to complete the procedures for registering the project as CDM. As a result of such difficulties, only emerging countries enjoy benefits from CDM.

Cooperative Approaches (Various approaches)

Decision made at COP18 in Cancun said that "*Acknowledges* that **Parties, individually or jointly, may develop and implement various approaches, including opportunities for using markets** and non-markets, to enhance the cost-effectiveness of, and to promote, mitigation actions, bearing in mind different circumstances of developed and developing countries". This idea was incorporated in the Paris Agreement. Paragraph 1, Article 6 of Paris Agreement shows that "Parties recognize that some Parties choose to pursue voluntary cooperation in the implementation of their nationally determined contributions to allow for higher ambition in their mitigation and adaptation actions and to promote sustainable development and environmental integrity." And, in Paragraph 4 of Article 6, Agreement says "A mechanism to contribute to the mitigation of greenhouse gas emissions and support sustainable development is hereby established under the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement for use by Parties on a voluntary basis. It shall be supervised by a body designated by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement, and shall aim:

(a) To promote the mitigation of greenhouse gas emissions while fostering sustainable development;

(b) To incentivize and facilitate participation in the mitigation of greenhouse gas emissions by public and private entities authorized by a Party;

(c) To contribute to the reduction of emission levels in the host Party, which will benefit from mitigation activities resulting in emission reductions that can also be used by another Party to fulfil its nationally determined contribution; and

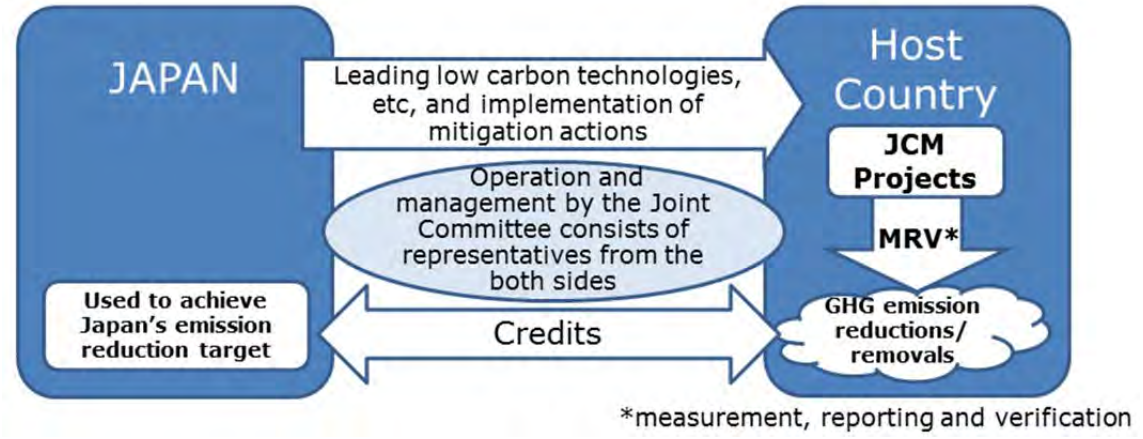
(d) To deliver an overall mitigation in global emissions."

Joint Crediting Mechanism (JCM)

The Joint Crediting Mechanism (JCM) is one of "Cooperative approaches" proposed by Japan. It is a CDM-type mechanism where GHG mitigation activity will be conducted within a bilateral framework. (See Figure 2-7) JCM facilitates diffusion of leading low carbon technologies, products, systems, services, and infrastructure as well as implementation of mitigation actions, and contributes to sustainable development of developing countries.

It appropriately evaluates contributions to GHG emission reductions or removals from Japan in a quantitative manner, by applying measurement, reporting and verification (MRV) methodologies, and uses them to achieve Japan's emission reduction target.

Figure 2-7: Concept of Joint Crediting Mechanism (JCM)



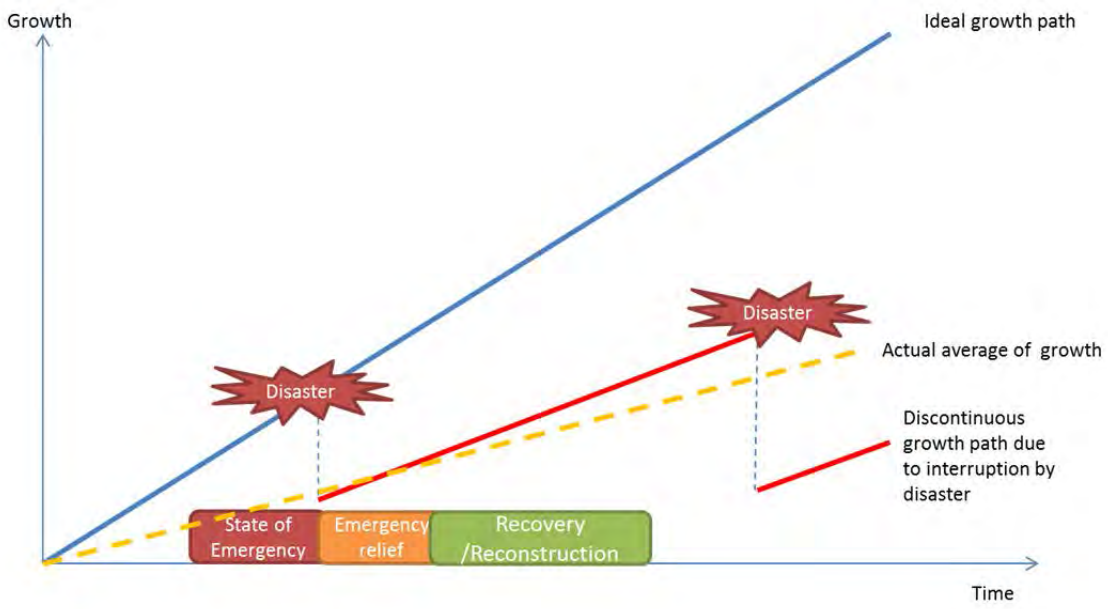
Source: Government of Japan

2.3.2 Adaptation Finance

Adaptation Finance refers to the finance provided for adaptation activities. Adaptation to the adverse effects of climate change is vital in order to respond to the impacts of climate change that are already happening, while at the same time prepare for future impacts.

However, from a view of financiers, adaptation projects deems risky in terms of profitability. Actually, nobody knows when climate related disaster will happen, what type of disaster, and its scale, loss and damage. Such uncertainty will influence for financiers to make investment decision. In addition, once disaster happens, additional cost, such as emergency cost, recovery cost and reconstruction cost, will be needed. Further, due to disaster (or change of climatic condition) may affect to the growth path of the country or company. Therefore, adaptation finance is considered as a sort of insurance for or measures to mitigate future climate change loss and damage and/or additional cost.

Figure 2-8: Adaptation Finance



Source: Sudo

OECD (2011) defined adaptation finance as "It intends to reduce the vulnerability of human or natural systems to the impacts of climate change and climate-related risks, by maintaining or increasing adaptive capacity and resilience. This encompasses a range of activities from information and knowledge generation, to capacity development, planning and the implementation of climate change adaptation actions." And OECD (2011) set criteria for eligibility as;

a) the climate change adaptation objective is explicitly indicated in the activity documentation; and

b) the activity contains specific measures targeting the definition above.

Carrying out a climate change adaptation analysis, either separately or as an integral part of agencies' standard procedures, facilitates this approach.

Most of the Adaptation activities will be carried out as a part of general development activities. Therefore, it seems difficult for donors to recognize the project as an adaptation activity. Therefore, OECD requested donors to explicitly indicate it.

Adaptation Fund

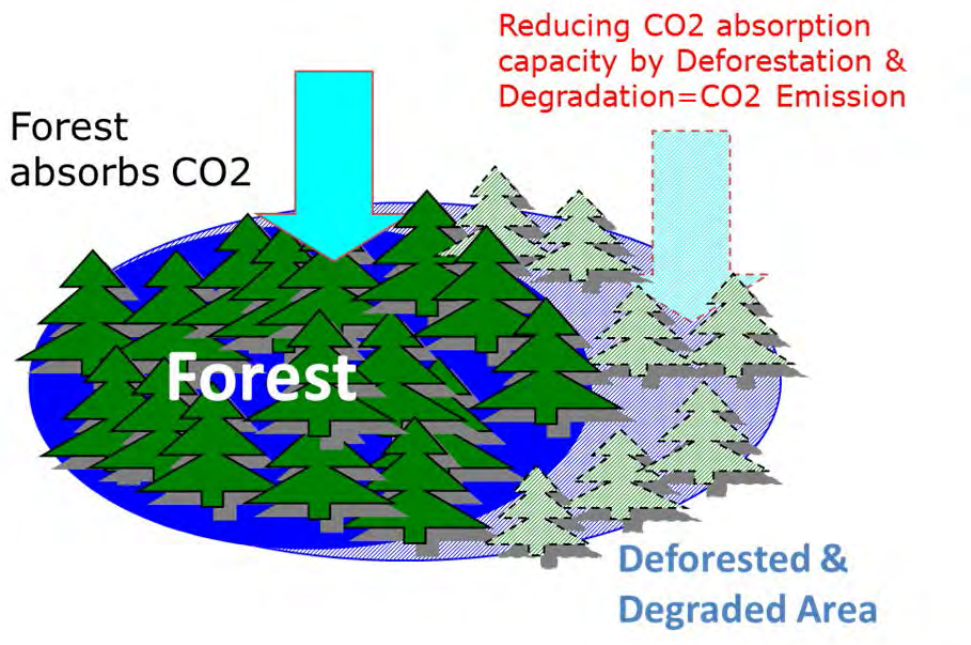
The Adaptation Fund (AF) was established in 2001 to finance concrete adaptation projects and programmes in developing country Parties to the Kyoto Protocol that are particularly vulnerable to the adverse effects of climate change. The Adaptation Fund is financed with a share of proceeds from the clean development mechanism (CDM) project activities and other sources of funding. The share of proceeds amounts to 2 per

cent of certified emission reductions (CERs) issued for a CDM project activity. These funds can either be accessed through an accredited Multilateral Institution, or through an accredited National Implementing Entity (NIE).

2.3.3 REDD+ Finance

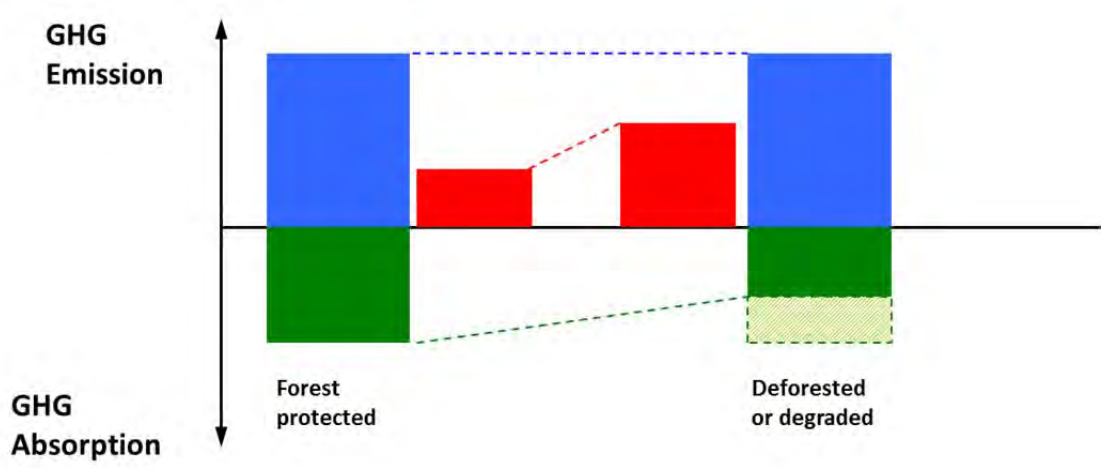
REDD+ Finance refers to the finance provided for the activities on REDD+. REDD+ is an abbreviation of 'Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries'. Therefore, REDD+ finance is, in general, finance in reforestation, aforestation and forest conservation activities. Under the CDM scheme, afforestation and reforestation activities are considered as mitigation activities, and generate carbon credit (AR-CDM). In addition to AR-CDM, forest conservation and sustainable forest management activities are also considered as mitigation activity. Therefore, UNFCCC discuss a possibility to generate carbon credit for such conservation and sustainable forest management activity.

Figure 2-9: Concept of REDD+



Source: Sudo

Figure 2-10: GHG emission and REDD+



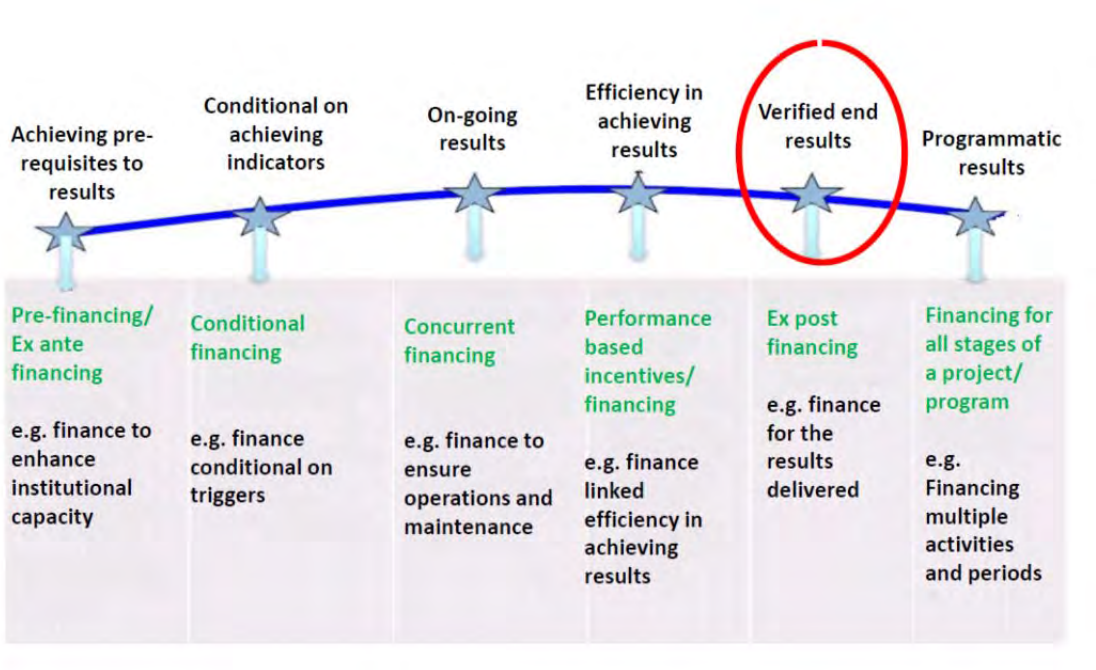
Source: Sudo

In view of financiers, forest will produce timbers as monetary valuable products, but other products such as Non Timber Forest Products (NTFP) and indirect effect of forest such as carbon sequestration, biodiversity and disaster protection effect are not considered as valuable products. Therefore, one of the issues on REDD+ finance is how to incorporate such indirect values in financial appraisal and/or turn such indirect values into monetary value.

2.3.4 Results-Based Finance (RBF)

Results-based Finance (RBF) refers to the finance which disbursement will be made based on the achievement to the expected result. Since RBF will be provided based on the "Results", some indicators for monitoring and evaluation will be set before concluding financial agreement. Once indicators achieve the targets (or trigger), then disbursement will be made. In this sense, this scheme deems similar to the conditional finance and Structured Adjustment Loan in 1980s. (See Figure 2-11)

Figure 2-11: Scheme on RBF



Source: Spors, F. (2014)

2.3.5 Project Types eligible for use of Climate Finance

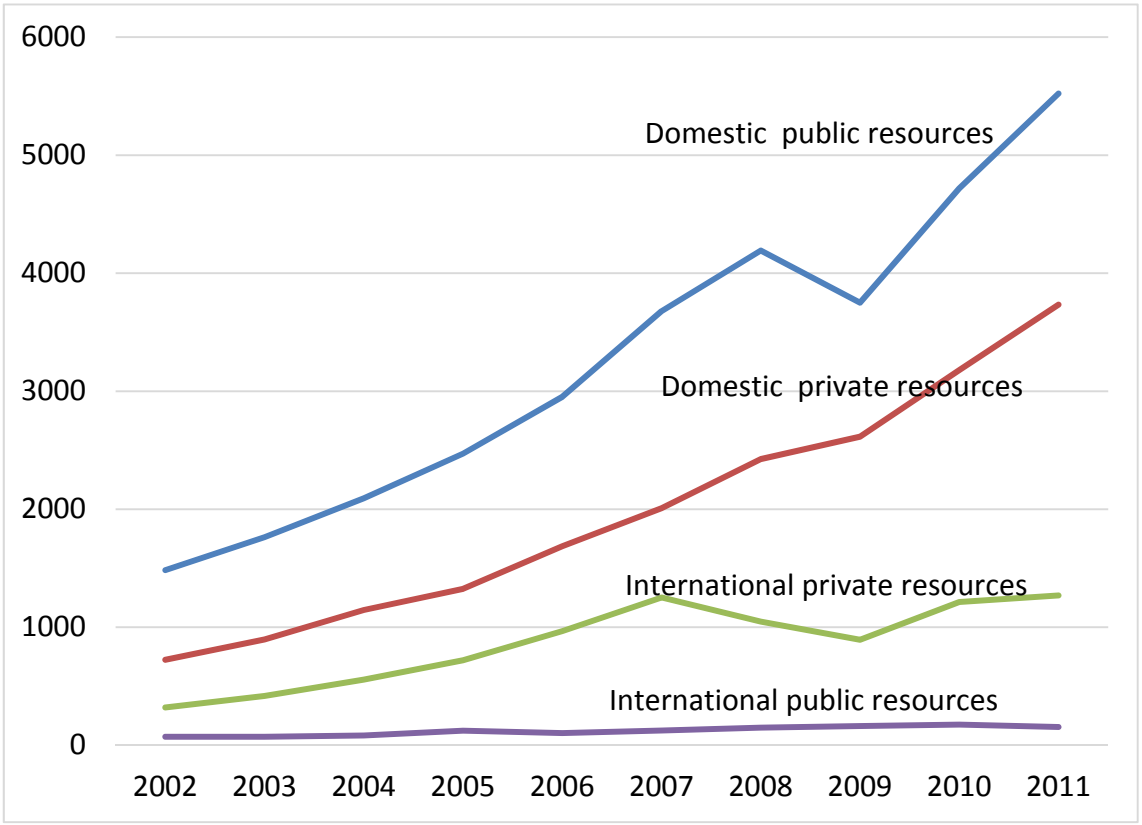
In general, any types of projects which are recognized as climate related activities will be eligible for the use of climate finance, even though it depends on the financial institutions' policy.

2.4 Climate Finance trends in Asia

The Asia-Pacific Region will require billions of dollars to transition to low-carbon growth paths and to adapt to the unavoidable impacts of climate change. Nevertheless, Asian developing countries are in a good position as finance for climate change action is already available from a variety of sources.

Figure 2-12 Trends in finance to developing countries

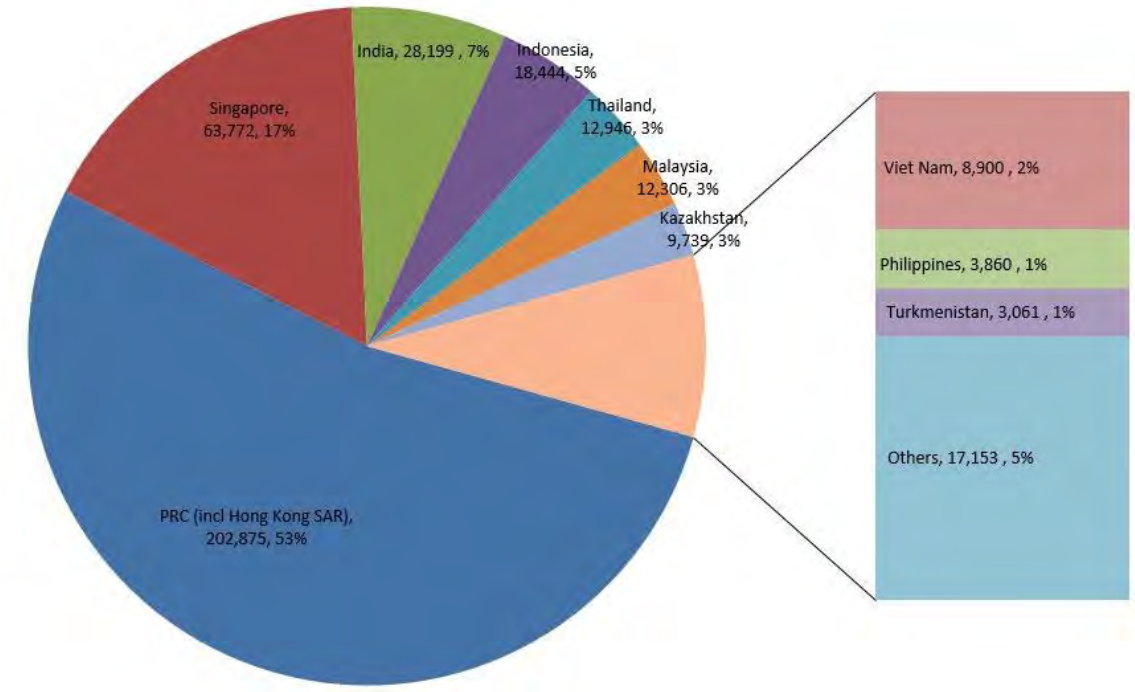
($ billion, 2011 prices), 2002–2011



Source: European Report on Development (2015)

European Report on Development (2015) shows the trends in finance to developing countries (Figure 2-12). It shows finance to developing countries is dramatically increasing. Particularly, domestic resources (both public and private) contribute largely in increase of volume of finance. In contrast, contributions of international resources in increase of volume of finance are stable but relatively limited, even though those international finance resources still play an important role in development in developing countries.

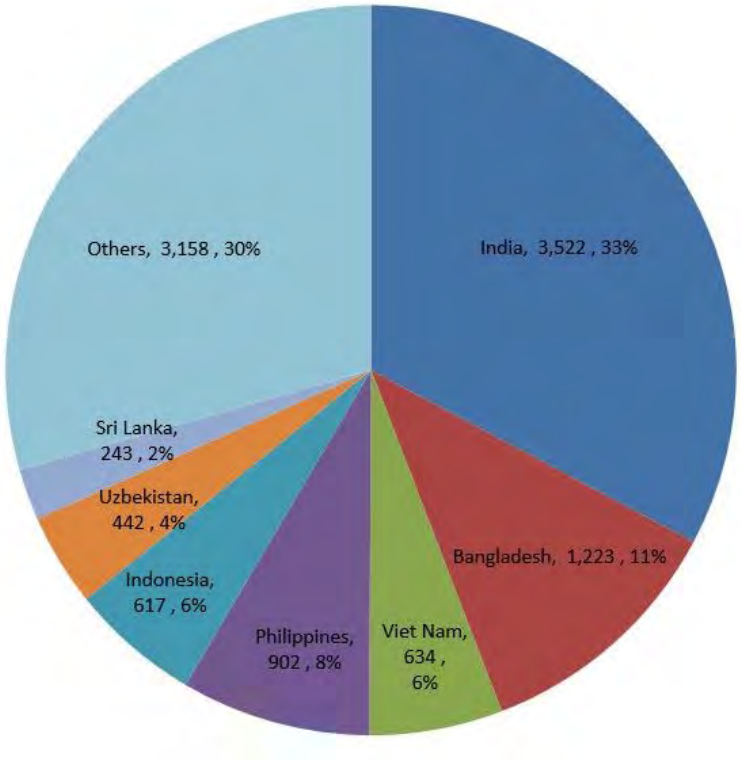
Figure 2-13 Share of Foreign Direct Investment Flows into Asian Developing Countries (2013, $ million)



Source UNCTAD (2015).

Figure 2-13 shows the share of foreign direct investment (FDI) inflows in developing Asian countries in 2013. According to data from United Nations Conference on Trade and Development (UNCTAD) (UNCTAD 2015), $381 billion has been invested in Asian developing countries. Of this, the majority went to the People's Republic of China (PRC) (including Hong Kong, China)—$203 billion. Among developing Asian countries, the top 10 recipient countries were: PRC ($203 billion), Singapore ($64 billion), India ($28 billion), Indonesia ($18 billion), Thailand ($13 billion), Malaysia ($12 billion), Kazakhstan ($10 billion), Viet Nam ($9 billion), The Philippines ($4 billion) and Turkmenistan ($3 billion). These countries share 95% of the FDI inflow in Asia. Sudo (forthcoming) argues that the private sector tends to invest in profitable and low-risk projects, which is why FDI flows into countries where the economic scale is large and the investment environment is well established.

Figure 2-14: Share of Climate Change Official Development Assistance Flow into Asian Developing Countries (2013, $ million)



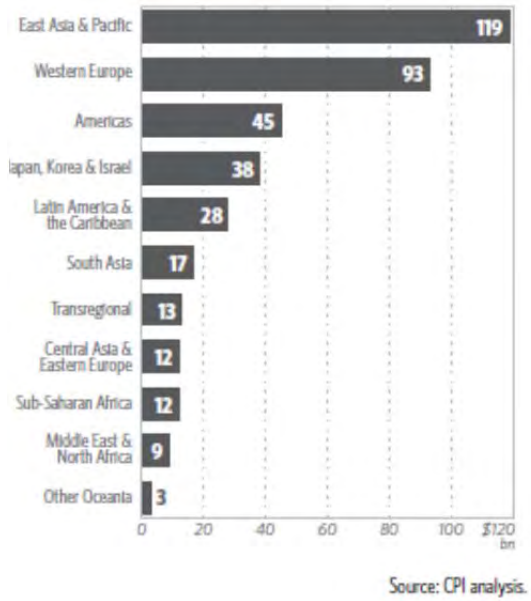
Source: OECD (2015)

ODA is also an important financial source of finance. Figure 2-14 shows the climate change bilateral ODA finance flow in Asia and Pacific countries. According to data from the Organisation for Economic Co-operation and Development (OECD 2015), Asian countries received approximately $11 billion for climate change activities through bilateral ODA in 2013. India, Indonesia, Viet Nam were ranked as the largest recipients of both FDI and climate change-related ODA. However, Uzbekistan, Bangladesh, and Sri Lanka were the leading recipients of climate change ODA (these countries received limited FDI). The volume of ODA is significantly smaller than that of FDI, but it is important for low-income and least developed countries.

Climate Finance Flow in Asia

Among others, East Asia and the Pacific remained the largest destination of climate finance flows, accounting for 31% of the total or USD 119 billion, up by 22% from 2013. China alone accounted for 22% (USD 84 billion) of total finance. (Figure 2-15)

Figure 2-15: Total climate finance breakdown by region, 2014 in USD billion



Source: CPI(2015)

Most of those finances are used for mitigation activities, and very limited finance flows to adaptation and REDD+ activities.

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CHAPTER 3 ACCESSING CLIMATE FINANCING AND MANAGING PROJECTS

What readers can learn in this chapter

This chapter includes brief explanation on the effective project development and management; application processes and project criteria/requirements; working with national climate finance focal points; domestic management of climate finance; and monitoring and evaluation, reporting criteria and MRV.

3.1 Accessing Climate Financing

3.1.1 Effective Project Development and Management

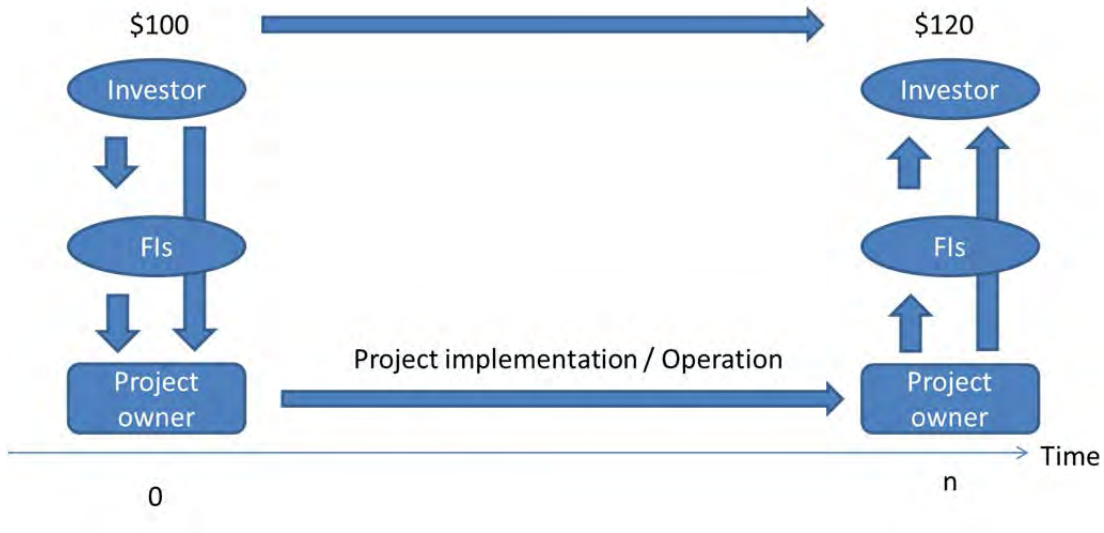
There are a lot of and a variety of financial institution in the world. In this sense, accessing climate finance is not so difficult task. However, receiving financial support is another issue. The financial institutions will see the project through their own view. Therefore, it is helpful to understand how financial institutions and investors consider and make decision on financing.

Behavior of investors and financial institutions

Investors and Financial institutions generally consider how to manage their fund. They have monetary asset which they have no plan to use currently but may be used in future. So, they may consider to invest/finance in financial products (such as savings and deposit), commodities and/or projects. This is explained by the concept of "Time preference". Time preference refers to the preference of asset holders whether they will use their asset now or in future. The decision factor may be varied depending on the condition of asset holder.

Once they decide to use their asset in future, they will consider how to keep their asset until when they need to spend their asset. There are several options for them, but those options may differ depending on the level of **profitability** and **Risks**.

Figure 3-1: Finance flows between different times



Source: Sudo

Figure 3-1 shows the flows of finance over the time. Once investor and/or financiers invest or finance in the project, they may expect receive some revenue in the form of interest payment or dividend. Generally, value of asset will be discounted over the time. Therefore, investors and financial institution need to cover the discounted value of asset. In addition, transaction cost and expected loss due to risks will be added on the discount rate. If financial revenue will exceed the financial cost, investors and financiers will invest or finance in the project. Generally, such profitability will be assessed by Return on Investment (ROI), Return on Asset, and/or Internal Rate of Returns (IRR).

Effective Project Development and Management

Another factor for investment decision is the risks. There are several risks associate with the project as shown in Table 3-1. If some of those risks are exposed, the project will not be realized or generate benefit as expected. Thus, risk assessment and management are the key factor for investors and financiers; otherwise they may lose their asset invested in the project.

Table 3-1: major risks associated with project

Stage	**Country (Sovereign) Risk**	**Project Risk**
Planning & Design	**Political and Administrative Risk** -Policy, Law and Institutional Change -License, Approval **Economic Risk** -Exchange Risk -Transfer Risk -Economic Crisis Risk	**Regulatory Risk** -No Feasibility -Failure/Delay of Approval -Failure/Delay of Finance closure -Stakeholder's objection -Failure of conclusion of contract and agreements
Implementation	-Credit Risk **War & Riot Risk**	**Construction Risk** -Delay of completion -Default of contractor -Stakeholder's objection -Environmental Impact -Force Majeure
Operation		**Operation risk** -Break down, accident -Low production -Default of Suppliers/ Buyers/ Project itself -Force Majeure

In addition, expected output and outcome are also important factor for decision making by investors and financiers. Recently, most of investors and financial institutions concern on the ESG (Environment, Social and Governance) investment. Investors and financiers are also a part of member of the society, so they need

to consider how their investment and finance will lead to degradation of environment or impact on the society. Rather, they are thinking that their investment and finance will generate additional (or indirect) value for the society. This is because investors and financiers need to secure their prudence from the market otherwise they will not be able to raise fund from the market.

Thus, for effective project development and management, risk management and realization of expected outcome by the project are indispensable. Therefore, well-documented project can show not only the risks and expected outcome identified but also the measures on how to mitigate risks and ensure the realization of expected outcomes.

3.1.2 Application processes and project criteria/requirements

Application processes for climate finance varies depending on the rule of each financial institution. Major climate funds such as GCF, GEF and Adaptation Fund request to nominate national focal point. In case of development finance, bilateral donors will frequently communicate with national planning ministry and multilateral financial institutions often communicate with the ministry of finance.

Direct Access

Most of the investors and financial institutions allow recipients to access them directly. Direct access is probably the most ideal way to obtain finance and investment, particularly, if the recipient often communicates with some of financial institutions. In view of financial institutions, it would be no big matter if their clients access to them and request for finance, since finance institutions have already had enough information on their clients and may be familiar with the behaviour of the client. However, if it is the first contact from recipient to the financial institution, financial institutions need to collect and analyse information on the recipient, and decide whether the recipient is appropriate for starting new transaction.

Access through National focal points

Generally, international public finance institutions including international climate funds request to the recipient to communicate through national focal point. In such case, recipients should consult with national focal point when they need to access to the international public finance institutions.

National focal point will be designated by the Government. So, ministry or agency which is serving as national focal point is varied depending on the policy of the government. Due to its nature, national focal

point should know their climate and development policy as well as the characteristics of and procedure for application of finance from the fund.

In view of financial institutions, national focal point is considered as a representative of the country government. Therefore, if national focal point works appropriately, both financial institutions and recipient will be benefitted from national focal point.

Access through Intermediaries / implementing entities

Some of financial institutions are assigned as intermediaries or implementing entities of the fund. Intermediaries should meet the fiduciary standard of the fund. In this sense, Intermediaries/implementing entities will represent the fund, and provide services to their clients as similar to the direct access.

Project criteria and/or requirement

Each fund, financial institutions and investors have their own criteria and/or requirements. Special purpose funds such as climate funds request the recipients to meet the criteria and/or requirements, since purpose of the funds are strictly restricted. On the other hand, other financial institutions such as commercial banks may set very limited criteria and/or requirement.

3.2 Managing Climate Finance Projects

Project management is one of the most important works to realize objectives and expected outcomes of the project. Well-managed project can reduce risks and costs. Therefore, not only project owner but also investors and financial institutions as well as regulatory bodies concern on the better project implementation.

3.2.1 Working with national climate finance focal points

As noted in the previous section, national focal point for climate funds will play an important role to bridge between the funds and recipients of the finance. The national focal point is expected to serve as a window for both funds and recipient.

3.2.2 Domestic management of Climate Finance

Since the project will be implemented within the host country, project should be managed under the domestic rules and conditions. On the other hand, frequent change of policies, vulnerability of markets and legal system will be considered as risks associated with the project. In this sense, stable condition of national circumstances will be essential for better project management.

In addition, when the host country receives international climate finance, international monetary flow will take place. This may affect to the country's policies such as macroeconomic policy, monetary policy, investment policy, employment policy, industrial development policy etc. Therefore, it needs to identify the impact on the country's policy due to inflow of climate finance, and take appropriate policies and measures reflecting such changes.

3.2.3 Monitoring and Evaluation, Reporting Criteria and MRV

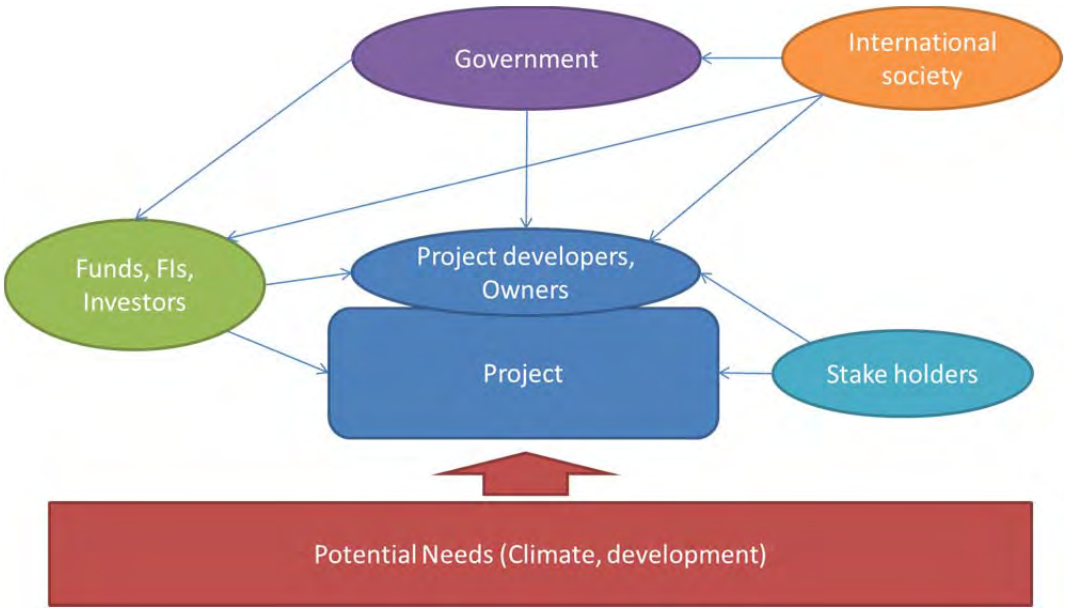
Monitoring and evaluation process is indispensable for every climate funds, investors and financial institutions to check whether the project achieves its objectives, expected outcomes. Based on the monitoring and evaluation, lessons learned will be identified and applied to another projects. Such knowledge will be reflected Financial Institutions' appraisal/due diligence process as well.

In addition, according to the UNFCCC, Non Annex parties are also requested to submit BUR including information on the receipt of finance and technology as well as inventory of GHG.

CHAPTER 4 DEVELOPING SUPPORTIVE INFRASTRUCTURES FOR CLIMATE FINANCE

As discussed, mitigation of risks and improvement of profitability (or making ideal business cases) will promote further investment and finance in climate related activities. To support on this, there are several works to be done by the public.

Figure 4-1: Relations among stakeholders of the project



Source: Sudo

Figure 4-1 shows a relation among stakeholders including the government. Even if the project will be implemented by private sector, the government could play a significant role to mobilize finance from investors and financial institutions.

Assessing domestic needs and priorities for climate finance

Domestic needs are fundamental source of business seeds for project developers, since the project developers will develop project based on the needs of their client in the country. Higher needs and priority to the project means higher demand to the project, that is, higher and stable revenue will be expected. Thus, information on the domestic needs and priority will be benefitted for investors and financiers.

Policy Instruments for Financing Climate Activities

Policy instruments are especially significant in the policy making & implementation process as they are the techniques or means through which states attempt to attain their goals. In view of investors and financial institutions, drastic policy change is recognized as a part of country risks. Thus, strong political will and leadership along with stable policy can mitigate the risks for financiers.

Public development of supportive institutions & infrastructures

Projects including finance in project, in general, will be responsible for a part of system, and project will be implemented based on the key system and infrastructure. For finance, domestic monetary system and banking system will be fundamental infrastructure. For example, volatile exchange rate is considered as one of the risks for investors and financial institutions.

Securing Multi-Stakeholder Cooperation and Expertise in projects

As shown in Figure 1, many of stakeholders should be involved in the project. Some may be affected positive or negative impact from the project. The conflict among stakeholders is also considered as one of risks. Public sector, as one of stakeholders, should secure such a variety of stakeholders in the project. In addition, each country holds some specific expertise in the country, including indigenous knowledge and technologies.

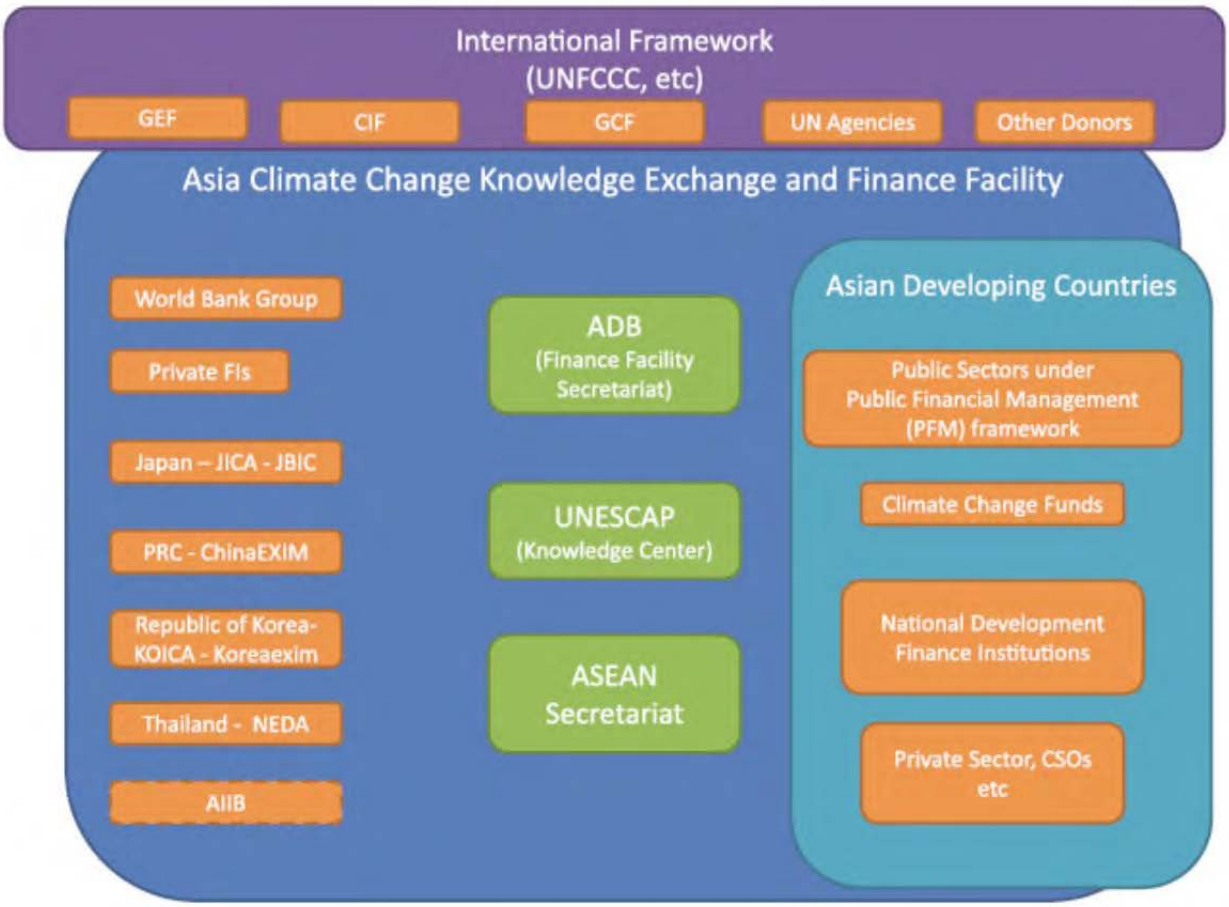
Strategies for enhanced delivery of international support

International society is also recognized as a part of stakeholder of the project. In climate finance, international public donors and private sector investors are also play an important role to support climate related activities. Particularly, international private investors are concerned about the country system is enough compatible to the international standards. Thus, some strategies for enhancing international support and finance should be considered.

Cooperation mechanisms and South-South Collaboration

As noted above, better cooperation among stakeholders is the key for success of climate related activities including fund raising. On international cooperation, developed countries are not the single source of cooperation. In some case, other developing countries may be able to share better lessons learned from their experiences and success. Sudo (2015) and Sudo (Forthcoming) highlights an effectiveness of regional cooperation in climate financing. For example, Figure 4-2 shows an idea of ASEAN regional cooperation framework for effective low carbon development finance in Asia.

Figure 4-2: Potential framework of a low carbon development finance facility in Asia



Source: Sudo (2015)

ANNEX CASE STUDY: GREEN CLIMATE FUND (GCF)

I. Background of Green Climate Fund

The **Green Climate Fund (GCF)** was conceived at COP 15 in Copenhagen, Denmark in 2009, as the main multilateral financing mechanism to support developing countries tackle climate change, as parties pledged to mobilize $100 billion in long-term financing per year by 2020. In 2010, at COP 16 in Cancun, Mexico, Parties, in decision 1/CP.16 established the GCF as the main operating entity of the Financial Mechanism of the Convention under Article 11.

The GCF will support projects, programmes, policies and other activities in developing country Parties. The Fund is governed by the GCF Board. The assets of the GCF will be administered by a trustee only for the purpose of, and in accordance with, the relevant decisions of the GCF Board. The World Bank was invited by the COP to serve as the interim trustee of the GCF, subject to a review three years after operationalization of the Fund. The COP also decided that the GCF was to be designed by the Transitional Committee (TC). At COP 17 held in Durban, the COP adopted decision 3/CP.17, in which Parties welcomed the report of the TC (FCCC/CP/2011/6 and Add.1) and approved the Governing Instrument for the GCF. Parties, at COP 18, endorsed the consensus decision of the GCF Board to select Songdo, Incheon, Republic of Korea as the host of the GCF. At COP 19, Parties welcomed the establishment of the independent GCF secretariat and the selection of the Executive Director of the GCF by the GCF Board.

The Green Climate Fund was given the mandate to make 'an ambitious contribution to the global efforts towards attaining the goals set by the international community to combat climate change'. The Conference of the Parties to the UNFCCC established GCF to promote a paradigm shift towards low emission and climate resilient development pathways in developing countries and help achieve the goal of keeping a global temperature rise under 2 degrees Celsius. GCF is the only stand-alone multilateral financing entity whose sole mandate is to serve the Convention and which aims to deliver equal amounts of funding to adaptation and mitigation.

The Fund strives to ensure it adds value relative to other funds and financial institutions with similar low-emission, climate-resilient development objectives. It provides added value in six key ways:

1. Maximize country ownership
2. Balance between adaptation and mitigation
3. Balanced governance with equal voice for contributors and recipients
4. Diversity of partners
5. Diversity of financial instruments
6. Largest dedicated climate Fund globally

Through these unique approaches, the Fund will set itself apart and catalyse a paradigm shift in the development pathways of its recipient countries. It will put them on a trajectory more compatible with a changing climate, and make them more resilient and responsive to it.

The Green Climate Fund offers a full toolkit of financial instruments to deliver on its mandate, including concessional senior and subordinated loans, equity, guarantees and grants, where needed. These financial tools allow the Fund to tailor its financial support to the project needs of public, private and nongovernmental entities. This is particularly useful for those developing countries in which climate action requires the full flexibility of financial instruments and counterpart risk taking, beyond fiscally-constrained central governments.

II. GCF and Resource Mobilization and Finance Criteria

1 Resource Mobilization

Developing countries need long-term, predictable flows of climate finance to aid their transformation to low-emission and climate resilient economies. Significant climate finance is also needed to build the trust necessary for an ambitious global climate settlement.

To respond to this, industrialized countries have committed to mobilize significant climate financing from a variety of resources. GCF is expected to play a distinctive role in channeling these climate investments. The Fund`s Initial Resource Mobilization period lasts from 2015 to 2018. By the end of 2015, the Fund had raised over USD 10 billion equivalent in pledges from 46 state, region and city governments, including 9 representing developing countries, and finalized over USD 6.6 billion equivalent into agreements. Further contributions are invited on an ongoing basis.

Scale is essential for GCF to deliver on its ambitious mandate, and the Fund expects to draw upon resources from public, private and philanthropic sources. The Fund will (1) continue to have an active outreach to states, regions and city governments to expand its contributor base, (2) consider innovative ways to accept contributions from individuals, and (3) work with the existing network of partners to tap into their network in order to increase the contributor base from all sectors.

2 Finance Criteria

The Fund must ensure that its investments drive a paradigm shift towards low emissions and climate resilience. It considers both mitigation and adaptation as critical parts of the response to climate change, with all eight results areas holding important potential, and will strive to achieve a balance in its portfolio. The goal of the Fund will be to seek the “sweet spots” between national priorities, potential to deliver concrete climate benefits, cost considerations, and opportunities to deliver co-benefits.

The Fund has a particular opportunity to differentiate itself from other climate finance channels by catalysing greater investment in adaptation, particularly from the private sector. According to some figures on climate finance flows show that adaptation funding reaches less than 10% of the total dedicated to mitigation efforts. Adaptation costs, however, are projected to have a significant – and often underestimated - impact on gross domestic product (GDP) output.

GDP will be the highest for countries in Sub-Saharan Africa and small-island developing states (SIDS). These countries are highly vulnerable and affected by adverse climate events. Climate change is projected to cost SIDS 1% of their GDP, five times higher than the average. Africa, with one-seventh of the world's population, is poised to bear nearly 50% of estimated global adaptation costs in health, water supply, and agriculture and forestry. Loss of life and reduction in GDP are also likely to be the highest for Least Developed Countries (LDCs) and SIDS. The poorest people, and poorest countries, are likely to be the most affected by the impacts of climate change.

The role of private investment is another area where the Fund's approach will be differentiated. The Fund is determined to partner with the private sector and harness its implementation capacity, to catalyse investment in the results areas and maximize the impact of the Fund's own investments.

There are many gaps in the current landscape, and some areas that have large potential are not adequately financed through current channels. Adaptation efforts focus largely on water supply and management. The mitigation finance show dominance of financing renewable energy projects, while less funding has been directed towards energy efficiency.

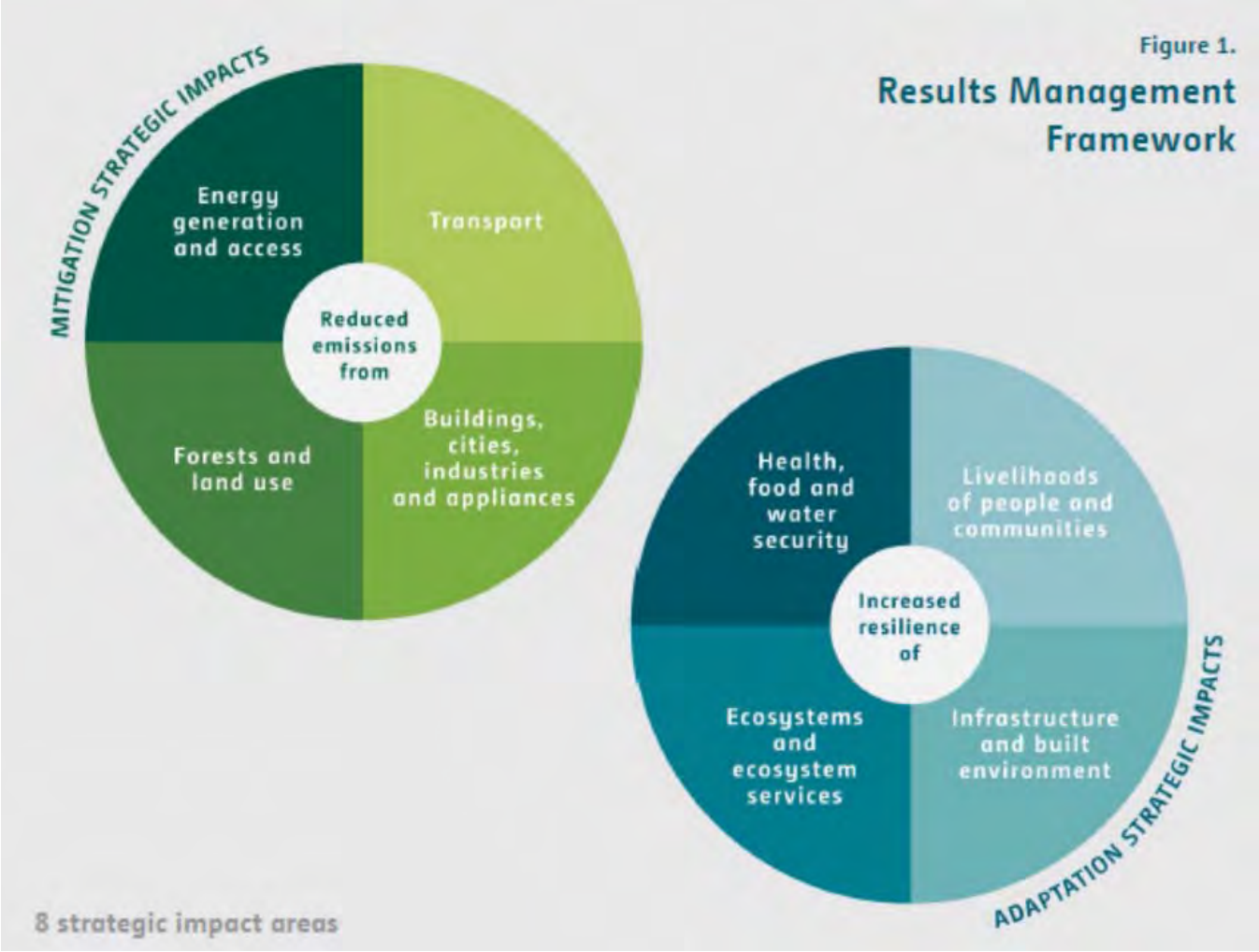
2.1 Result Areas

The eight results areas cover both mitigation and adaptation and provide the reference points that will guide the Fund and its stakeholders to ensure a strategic approach when developing programmes and projects, while respecting the needs and priorities of individual countries.

(a) Energy Generation and Access
(b) Transport
(c) Buildings, Cities, Industries, and Appliances
(e) Enhanced Livelihoods of Vulnerable People and Communities
(f) Food, Water Security, and Health
(h) Infrastructure
(i) Ecosystems and Ecosystem Services

The results areas have been targeted because of their potential to deliver a substantial impact on mitigation and adaptation.

Figure A-1: Result Management Framework



Source: Green Climate Fund. "Elements Issue 01"

2.2 Cross-Cutting Investment Priorities – Working Across the Fund's Results Areas

On the basis of the review of the eight results areas in which the Fund seeks to achieve impact, five high potential entry points emerge as particularly promising areas for the Fund to encourage investment and programming efforts that develop a more integrated approach to mitigation and adaptation impact:

(a) Climate-compatible cities;

(b) Sustainable low-emission, climate-resilient agriculture;

(c) Scaled-up finance for forests and climate change;

(d) Enhanced resilience in SIDS; and

(e) Transformed energy generation and access.

These five potential investment priorities contribute to each of the results areas. For example, efforts to invest in climate compatible cities may deliver impacts related to four different results areas. They can

promote emission reductions from transport as well as buildings, cities, industries, and appliances. They may also support adaptation, particularly by helping to strengthen the resilience of the livelihoods of urban people and communities and urban infrastructure (while also reducing associated emissions).

The five investment priorities cluster the eight results areas, aiming to achieve cross-cutting benefits in an efficient and impactful way. The investment priority areas largely contribute to both mitigation and adaptation, creating entry points for investment that support the balance across mitigation and adaptation sought by the Fund.

In all of the investment priorities, there is a strong link between national and international policies, institutional incentives, and the outcomes that the Fund seeks to help realize. It is difficult to put relative a value on how much potential hinges on strengthening the enabling environment versus mobilizing finances, but it is clear that the Fund needs to take a strategic approach to both issues in its programming decisions. The Fund has the opportunity to provide finance that supports and enables countries to pursue reforms as well as concrete investments. The Fund's readiness programming is already helping to advance this approach.

In addition, the assessment also highlights the need for crosscutting support for innovation and institutional capacity in developing countries, potentially in partnership with innovation centres and business communities. The Fund may also consider providing support for better information on climate risk and impacts in countries, and mechanisms to aggregate this information globally, to better inform and influence national and international investment decisions by both the public and private sectors.

III. Accessing Climate Financing

1 How can countries engage with the Fund?

There are three key steps to engage with the Fund:

(a) Establish and maintain a national designated authority (NDA) or focal point.
(b) Identify and seek accreditation of entities to access resources from the Fund.
(c) Develop projects and programmes to bring forward for funding through accredited entities.

2 NDAs and focal points

2.1 Selecting an NDA or focal point

Selecting a national designated authority or focal point is the first major step in engaging with the Fund. Countries may choose to mandate a focal point while undertaking a process for selecting and identifying an appropriate NDA. Where special circumstances require that a country mandate a focal point, it will fulfil

responsibilities until the NDA is selected. There is also flexibility as to the location, structure, operation and governance of NDAs or focal points. Further, the Fund requires that a legal opinion be provided on the status and authority of the NDA or focal point. A template for this can be provided by the Fund upon request.

The NDA or focal point will serve as the point of communication with the Fund. Its mandate and responsibilities cover a range of functions, which will require it to have the requisite capacities to fulfil these functions.

2.2 Mandate and responsibilities of NDAs

- Provide broad strategic oversight of the Fund's activities in their country.
- Convene relevant public, private and civil society stakeholders to identify priority sectors to be financed by the Fund.
- Communicate nominations / no objection of entities (sub-national, national or regional, public and private) seeking accreditation to the Fund under the 'direct access' track.
- Implement the no-objection procedure on funding proposals submitted to the Fund, to ensure consistency of funding proposals with national climate change plans and priorities.
- Provide leadership on the deployment of readiness and preparatory support funding in the country.

3 Accredited entities and the Fund

The Fund will work through a wide range of entities to channel its resources to projects and programmes. Such entities may be sub-national, national, regional or international; they can be public, private or non-governmental institutions as long as they meet the standards of the Fund. Countries may access the Fund through multiple entities simultaneously. An information pack on the accreditation process and requirements can be found online. To date, a total of 33 entities have been accredited to the Fund following the tenth meeting of the Board in July 2015 (20 approved) and twelfth meeting of the Board in March 2016 (13 approved). These entities include:

1. **Centre de suivi écologique (CSE) from Senegal**, which focuses on combating desertification and protecting coastal areas
2. **Environmental Investment Fund of Namibia (EIF**), which supports projects that ensure sustainable use of natural resources
3. **Ministry of Natural Resources of Rwanda (MINIRENA)**, which focuses on environment, climate change, and natural resources management at the national and local levels
4. **National Bank for Agriculture and Rural Development (NABARD)**, a national financial institution based in India
5. **Fondo de Promoción de las Áreas Naturales Protegidas del Péru (PROFONANPE)** that specializes in funding biodiversity conservation and managing protected areas

6. **Acumen Fund, Inc. (Acumen)**, a social impact investment fund that works on improving the lives of low-income communities in Africa and Asia, especially in healthcare, agriculture and clean energy
7. **Corporación Andina de Fomento (CAF)**, a regional development bank, headquartered in Venezuela
8. **Caribbean Community Climate Change Centre (CCCCC)**, a public organization that coordinate's the Caribbean's response to climate change, headquartered in Belize
9. **The Secretariat of the Pacific Regional Environment Programme (SPREP)**, which focuses on protection and
    3.1 sustainable development of the Pacific region's environment, based in Samoa
10. **Africa Finance Corporation (AFC)**, a public-private institution that provides support for sustainable development of infrastructure in Africa, based in Nigeria
11. **Deutsche Bank Aktiengesellschaft (Deutsche Bank AG)**, an international investment bank, based in Germany
12. **Asian Development Bank (ADB)**, a multilateral development bank, headquartered in the Philippines
13. **Agence Française de Développement (AFD)**, a development finance institute, headquartered in France
14. **Conservation International Foundation (CI)**, a non-profit environmental organization, based in the United States
15. **European Bank for Reconstruction and Development (EBRD)**, a multilateral development bank, headquartered in the United Kingdom
16. **International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA)**, together known as the World Bank, headquartered in the United States
17. **Inter-American Development Bank (IDB)**, a multilateral development bank, headquartered in the United States
18. , a development finance institute, headquartered in Germany
19. **United Nations Development Programme (UNDP)**, headquartered in the United States
20. **United Nations Environment Programme (UNEP)**, headquartered in Kenya
21. **Agency for Agricultural Development of Morocco (ADA)**
22. **Ministry of Finance and Economic Cooperation of the Federal Republic of Ethiopia (MOFEC)**
23. **National Environment Management Authority of Kenya (NEMA**)
24. **Development Bank of Southern Africa (DBSA)**
25. **Crédit Agricole Corporate and Investment Bank (Crédit Agricole CIB)**
26. **HSBC Holdings plc and its subsidiaries (HSBC)**
27. **African Development Bank (AfDB)**
28. **European Investment Bank (EIB)**
29. **International Finance Corporation (IFC)**
30. **Unidad Para el Cambio Rural from Argentina (Unit for Rural Change – UCAR)**
31. **International Union for Conservation of Nature (IUCN)**
32. **World Food Programme (WFP)**
33. **World Meteorological Organization (WMO)**

The Fund encourages accredited entities to make contact in an early stage with the respective NDA or focal

point of a country, when they intend to operate in that country. The Fund can assist in facilitating contact with the accredited entities.

3.1 What will accredited entities do?

Accredited entities may carry out a range of activities, including:

- Developing and submitting funding proposals for projects and programmes;
- Overseeing management and implementation of projects and programmes;
- Deploying a range of financial instruments within their respective capacities (grants, concessional loans, equity and guarantees); and
- Mobilizing private sector capital.

The accreditation process is designed to ensure that accredited entities have the ability to manage the Fund's resources in line with best-practice fiduciary standards for the scale and type of funding sought, as well as the ability to manage environmental and social risks that may arise at the project level.

3.2 How can prospective entities be accredited?

An interested entity will need to submit a completed application through the Fund's Online Accreditation System (OAS), consistent with the Fund's fit-for-purpose accreditation approach. This approach recognizes the role of a wide range of entities, which differ in the scope and nature of their activities, as well as their capacities in advancing the objectives of the Fund. The accreditation approach accommodates this diversity by matching the nature, scale and risk of intended activities to the application of the fiduciary standards and environmental and social safeguards. Sub-national, national, and regional entities, public or private, applying for accreditation will need to submit a nomination letter from an NDA or focal point as a part of their application for accreditation. A template of the nomination letter can be found online.

The application will be assessed for its completeness. Additional information about the application may be requested at any time during the process. Once an application is found to be complete, it will be reviewed by the Fund's Accreditation Panel, and, if found to meet the Fund's accreditation requirements, recommended to the Fund's Board for a decision. Upon approval by the Board, the Fund will enter into legal arrangements with the accredited entity. During the accreditation process, the track record and demonstrated capacity of an applicant entity to manage projects or programmes of different risk categories will be reviewed. The result of the accreditation process will specify:

(a) The intended project size that the accredited entity may undertake: micro (USD 0 - 10 million), small (USD 10 - 50 million), medium (USD 50 - 250 million), large (>USD 250 million);
(b) The fiduciary functions the accredited entity may undertake, which will shape how it operates using the Fund's resources (e.g. grants, loans, guarantees, equity); and

(c) The maximum level of environmental and social risk of its intended projects: Category A (high risk), Category B (medium risk), Category C (low risk).

4 Projects and programmes

The Fund will finance projects and programmes in the public and private sectors that contribute towards achieving at least one of the eight strategic impacts of the Fund. The process for considering and approving proposals, and the criteria by which they will be evaluated, are provided below.

Accredited entities can submit funding proposals to GCF at any time, spontaneously or when there is a call for proposals from the Fund. To ensure country ownership, the Fund's Board will only consider funding proposals that are submitted with a formal letter of no-objection in accordance with the Fund's initial no-objection procedure. The stages in the process are described below (also refer to figure 1):

4.1 Proposal generation

NDAs and focal points and accredited entities may submit spontaneous funding proposals to the Fund, which will be subject to the Fund's approval process. In addition, the Fund may publish regular calls for funding proposals on its website.

4.2 Concept note (voluntary)

An accredited entity or executing entity (i.e. project or programme sponsor) may submit a concept note for feedback and recommendations from GCF, in consultation with the NDA or focal point. The recommendation will clarify whether the concept is endorsed, not endorsed with a possibility of resubmission or rejected.

4.3 Proposal submission

An accredited entity may submit a proposal to GCF in conjunction with the no-objection letter signed by the official representative of the NDA or focal point registered and listed on the Fund's website. At this stage, GCF acknowledges the submission, reviews it for completeness and acknowledges receipt.

In terms of financial instruments, concessional loans as well as guarantees will be available to public and private counterparts accredited to manage such finance. For the public sector, the Fund will use two sets of financial terms and conditions for outgoing loans – high and low concessionality. In addition, financial terms and conditions for guarantees managed will be established on a case-by-case basis for public sector entities. Private sector entities can also be accredited to manage equity investments.

Public sector and non-governmental entities can receive grants without repayment contingencies – i.e. there is no reimbursement required. The use of grants with repayment contingency shall be limited to the private sector and their terms and conditions shall be determined on a case-by-case basis. All non-grant

instruments including loans, guarantees and equity extended to the private sector shall also be determined on a case-by-case basis.

The Fund's financial terms and conditions of grants and concessional loans are outlined in tables A-1 and A-2 below. These terms and conditions of the Fund's instruments will be reviewed on an annual basis.

4.4 Analysis and recommendation

The Fund will carry out due diligence, assess compliance with interim environmental and social safeguards (ESS), gender policy and financial and other relevant policies. In addition, GCF and the Technical Advisory Panel will independently assess the performance of the project or programme against the criteria included in the Fund's investment framework (see figure A-3 below). This will include assessment of the proposal's financial structure and concessionality, as relevant.

Following these assessments, GCF will prepare a package of documents for the Board, which includes the funding recommendation.

4.5 Board decision

The Board will then make decisions to approve or reject the funding proposal, or to provide approval that is conditional on modifications to the project or programme design or subject availability of funding. GCF informs the accredited entity and the NDA or focal point of the decision and next steps, and the Executive Director of the Fund and accredited entity sign the necessary legal agreements between the Fund and accredited entity.

4.6 Legal arrangements

Following the approval of funding for a proposal and signing of necessary legal arrangements, the project or programme moves into the implementation period whereby funds are transferred to the accredited entity against agreed criteria, the Fund's fiduciary standards and ESS are applied, and an external audit report is submitted. Following these steps, the project or programme becomes effective, and the process of monitoring and evaluation commences and continues until the project or programme closes and exits the Fund's portfolio.

Figure A-2: Proposal process

Source: Green Climate Fund. "Elements Issue 01"

Figure A-3: Investment framework

Source: Green Climate Fund. "Elements Issue 01"

Table A-1: Terms and conditions of outgoing grants

Table 1. Terms and conditions of outgoing grants

	Grants
Currency	Major convertible currency
Interest rate	Grants without repayment contingency: no reimbursement required[1] Grants with repayment contingency: terms adapted to the required concessionality of the project or programme
Maturity	
Grace period	

[1] All grants will be subject to an obligation for repayment if the recipient is found to be in material breach of its contractual obligations towards the Fund or involved in a material violation of the Fund's integrity or fiduciary standards, including those on corruption and fraud.

Source: Green Climate Fund. "Elements Issue 01"

Table A-2: Terms and conditions of outgoing concessional loans to the public sector

Table 2. Terms and conditions of outgoing concessional loans to the public sector

	High concessionality	Low concessionality
Currency	Major convertible currency	Major convertible currency
Maturity (years)	40	20
Grace period (years)	10	5
Annual principal repayment years 11–20/6–20 (% of initial principal)	2%	6.70%
Annual principal repayment years 21–40 (% of initial principal)	4%	N/A
Interest	0.00%	0.75%
Service fee (per annum)	0.25%	0.50%
Commitment fee (per annum)	Up to 0.50%	Up to 0.75%

Source: Green Climate Fund. "Elements Issue 01"

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Well Below 2 Degrees

UNITED NATIONS 'S SUSTAINABLE DEVELOPMENT GOALS

13

GOAL 13: TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS

"STABILIZE GREENHOUSE GAS CONCENTRATIONS IN THE ATMOSPHERE AT A LEVEL THAT WOULD PREVENT DANGEROUS ANTHROPOGENIC INTERFERENCE WITH THE CLIMATE SYSTEM"

"ONE VISION, ONE IDENTITY, ONE COMMUNITY"

asean

THE ASEAN COMMUNITY BLUEPRINT

SOCIO-CULTURAL COMMUNITY BLUEPRINT

NATIONAL POLICY

- THE 11TH NATIONAL ECONOMIC AND SOCIAL DEVELOPMENT PLAN (2010-2016)
- THAILAND CLIMATE CHANGE MASTER PLAN (2015-2050)
- MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT STRATEGY (2015-2021)
- THAILAND GREENHOUSE GAS MANAGEMENT ORGANIZATION

CITC IS ESTABLISHED

CLIMATE CHANGE INTERNATIONAL TECHNICAL AND TRAINING CENTER (CITC) IS :

- ESTABLISHED BY THAILAND GREENHOUSE GAS MANAGEMENT ORGANIZATION (TGO)
- A FLAGSHIP PROJECT BY THE MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT, THAILAND
- OFFICIALLY LAUNCHED ON MAY 8, 2014
- SUPPORTED BY JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

TRAINING

VISION

BECOME A LEADING CLIMATE CHANGE TRAINING CENTER IN ASEAN

MISSION

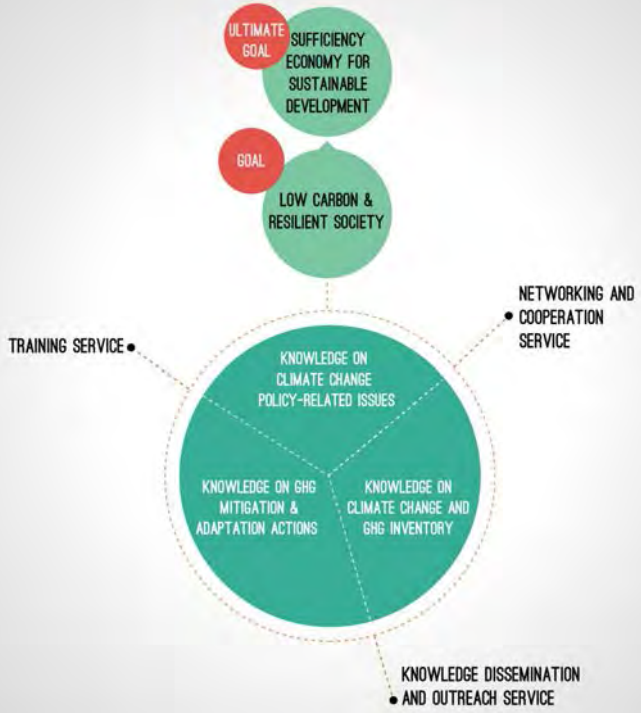
PROVIDE CAPACITY DEVELOPMENT ON CLIMATE CHANGE MITIGATION AND ADAPTATION

PROMOTE CLIMATE CHANGE NETWORKING PLATFORM

PROMOTE KNOWLEDGE DISSEMINATION ON CLIMATE CHANGE MITIGATION AND ADAPTATION

KNOWLEDGE HUB & DISSEMINATION

NETWORKING & COLLABORATION



TARGETS

2015-2016 ACHIEVEMENTS
TRAINING PROGRAM

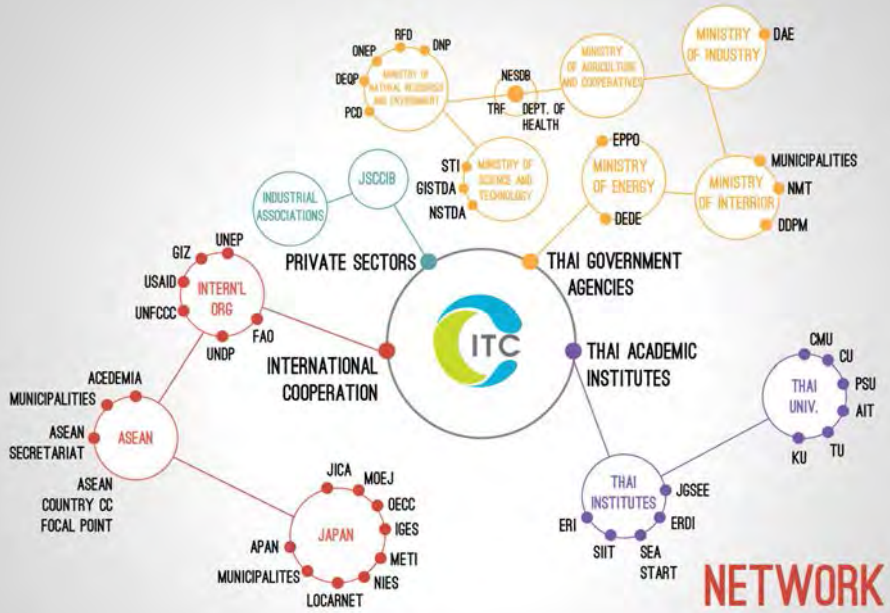
TRAINEES 482

TTT 107

- GREENHOUSE GAS INVENTORY (GHGI)
- LOW CARBON AND RESILIENT SOCIETY DEVELOPMENT (LCRS)
- CLIMATE CHANGE MANAGEMENT FOR SUSTAINABLE DEVELOPMENT (CCSD)
- CLIMATE CHANGE ECONOMICS (CCE)
- MITIGATION MECHANISM (MM)

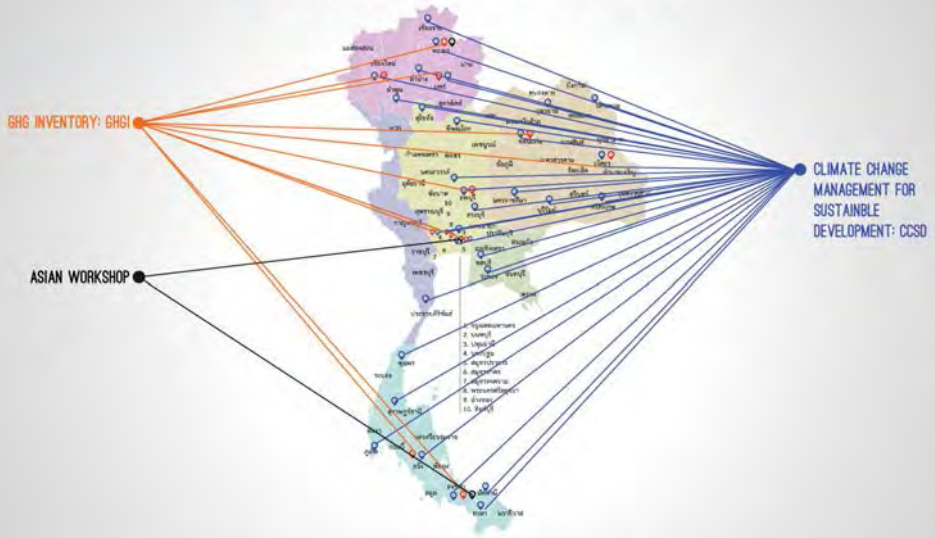
ACHIEVEMENTS - TRAINING PROGRAM
DOMESTIC AND REGIONAL

CENTRAL GOVERNMENTS	LOCAL GOVERNMENTS	ACADEMIC INSTITUTIONS	PRIVATE AGENCIES
54 AGENCIES	39	18	46



NETWORK

CITC ALUMNI NETWORK



CITC NETWORK

KNOWLEDGE DISSEMINATION & OUTREACH

WWW.CITC.IN.TH CLIMATE CHANGE CHANNEL EXHIBITION

KNOWLEDGE DISSEMINATION & OUTREACH

COP 20-21




Climate Change International Technical and Training Center (CITC)
Regional Training on Climate Finance For Southeast Asia

28th - 29th March 2016 in Bangkok, Thailand

OBJECTIVE:

THIS COURSE AIMS TO

- PROVIDE UNDERSTANDING OF CLIMATE FINANCING: TYPES OF CLIMATE MITIGATION AND ADAPTATION PROJECTS
- GAIN SPECIFIC KNOWLEDGE ON HOW TO APPLY, ACCESS, UTILIZE AND PROVIDE ACCOUNTABILITY FOR THE USE OF CLIMATE FINANCE.

EXPECTED TRAINEES:

1) NATIONAL GOVERNMENT OFFICERS
2) FINANCIAL AND INVESTMENT RELATED AGENCIES.

OVERVIEW OF COURSE MODULES:

- CLIMATE CHANGE SCIENCE AND POLICY
- CLIMATE FINANCE - POLICY AND MECHANISMS
- CASE STUDIES OF CLIMATE FINANCE PROJECTS
- ACCESSING CLIMATE FINANCING AND MANAGING PROJECTS
- DEVELOPING SUPPORTIVE INFRASTRUCTURES FOR CLIMATE FINANCE

THANK YOU

MODULE 1

CLIMATE CHANGE
SCIENCE AND POLICY

Regional Training on Climate Finance in Southeast Asian countries

IGES

OUTLINE

1) Climate Change science and the 2°C Target
2) International Climate Negotiations
3) Climate Finance negotiations under the UNFCCC process

CLIMATE CHANGE SCIENCE AND THE 2°C TARGET

Section 1

IGES Institute for Global Environmental Strategies

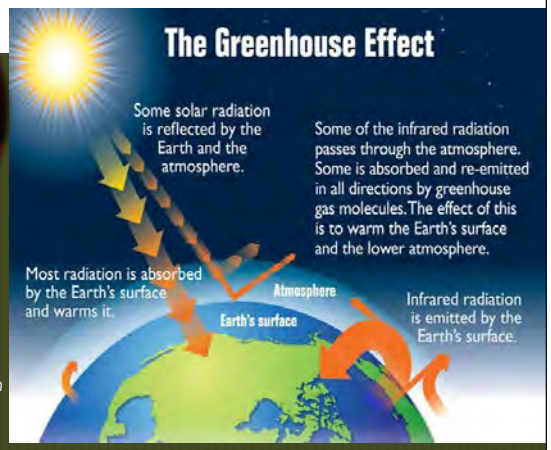
A SIMPLE CLIMATE SCIENCE PRIMER

It all starts with

1) Solar Radiation &

2) The Greenhouse Effect

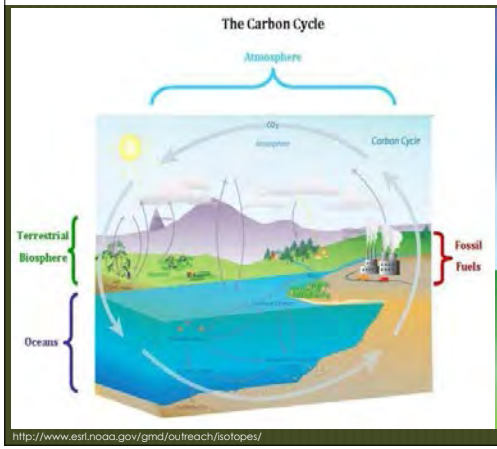
- The Earth's atmosphere is comprised of several gases, especially nitrogen (N2), oxygen (O2), and argon (Ar) **accounting for 99.8% of the atmospheric gases.*
- The atmosphere also includes small amounts of Greenhouse Gases *(Water vapor (H_2O), Carbon dioxide (CO_2), Methane (CH_4), Nitrous oxide (N_2O), Ozone (O_3), and Chlorofluorocarbons (CFCs))* that absorb and emit radiation within the thermal infrared range



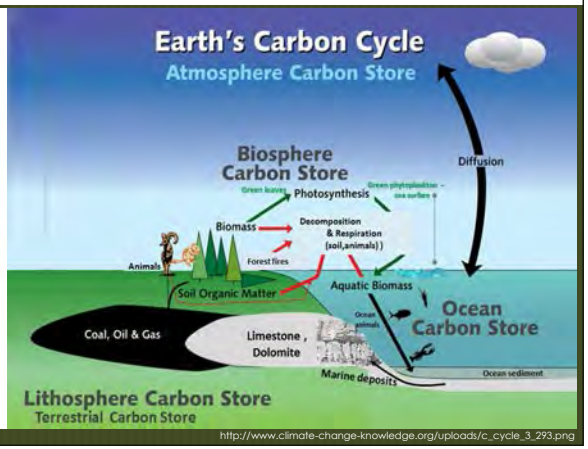
US EPA - "The Greenhouse Effect" in: "Introduction," in: US EPA (December 2012), *Climate Change Indicators in the United States, 2nd edition*, Washington, DC, USA: US EPA, http://www.epa.gov/climatechange/science/indicators/download.html, p.3. EPA 430-R-12-004.

5

THE EARTH'S CARBON CYCLE



http://www.esrl.noaa.gov/gmd/outreach/isotopes/



http://www.climate-change-knowledge.org/uploads/c_cycle_3_293.png

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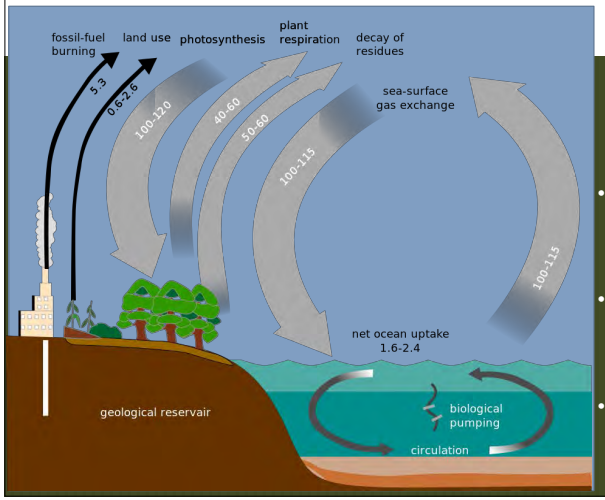
HUMAN DISRUPTION OF THE CARBON CYCLE



http://www.esrl.noaa.gov/gmd/outreach/isotopes/

Atmospheric CO_2 Account		10^{15} grams of carbon per year*
Date	Origin	Balance
annual	Biosphere	−3
annual	Ocean	−3
annual	Fossil Fuel Burning	+8
annual	Deforestation	+1
Annually Reported Atmospheric Balance		+4

*These numbers are approximate and are for the whole globe

- The natural carbon cycle achieves a state of dynamic balance, *i.e. absorbing and emitting an equal amount over time.*
- Human greenhouse gas (GHG) emissions are disrupting this balance, and atmospheric carbon concentrations are steadily increasing.
- Human activities are responsible for the release of over 30 GigaTons (Gt) of CO_2 (or ~9 Gt of Carbon) every year.
  - *From: IPCC WGI Fourth Assessment Report*

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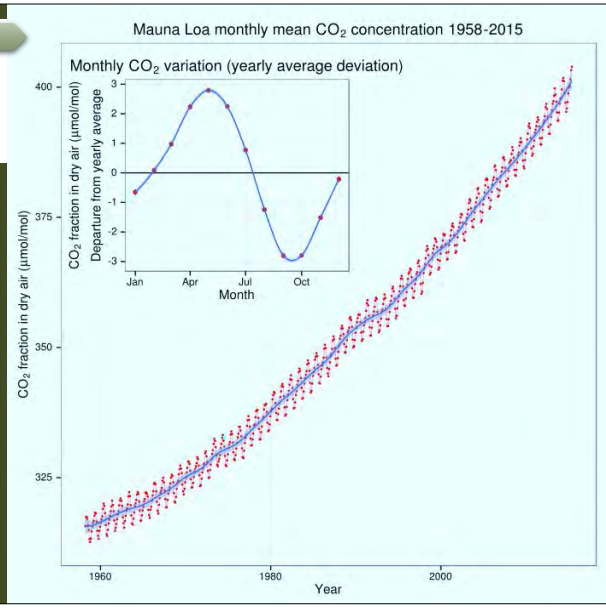

ATMOSPHERIC CO_2 CONCENTRATIONS

From the start of the Industrial Revolution (1760) to now, atmospheric CO_2 concentrations increased from 280 ppm to 400 ppm.

"Mauna Loa CO2 monthly mean concentration" by Delorme - Own work. Data from Dr. Pieter Tans, NOAA/ESRL and Dr. Ralph Keeling, Scripps Institution of Oceanography.

Licensed under CC BY-SA 4.0 via Wikimedia Commons - https://commons.wikimedia.org/wiki/File:Mauna_Loa_CO2_monthly_mean_concentration.svg#/media/File:Mauna_Loa_CO2_monthly_mean_concentration.svg

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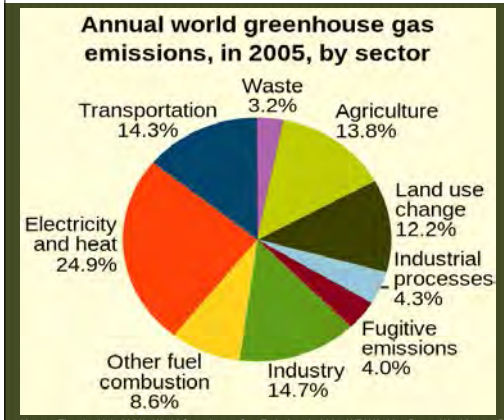
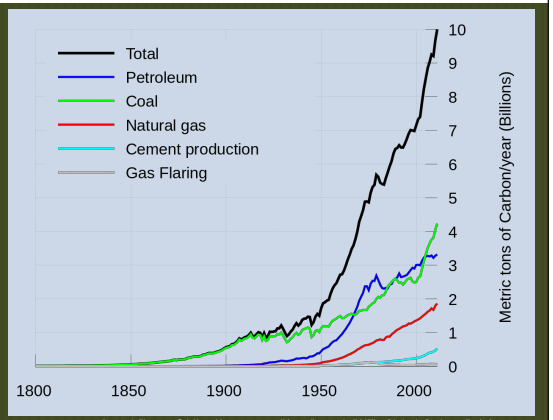
HUMAN CAUSES OF GREENHOUSE GAS EMISSIONS



Herzog, Timothy (July 2009), *World Greenhouse Gas Emissions in 2005. WRI Working Paper*. Washington, DC, USA: World Resources Institute (WRI), http://www.wri.org/publication/navigating-the-numbers, p.2.

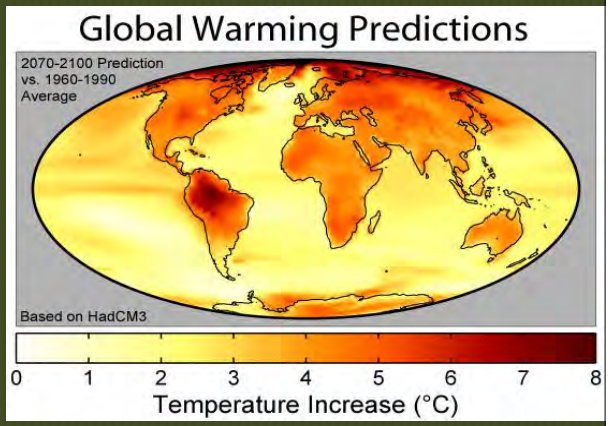


By Mak Thorpe @ https://commons.wikimedia.org/wiki/File:Global_Carbon_Emissions.svg

9

MORE GREENHOUSE GAS MEANS MORE GREENHOUSE EFFECT **AND GLOBAL WARMING**

- Based on the Hadley Centre HadCM3 climate model and the IS92a **("business as usual") projections, an average change of 3.0°C** is predicted for global surface temperatures.
- This model is towards the low end of the Intergovernmental Panel on Climate Change's 1.4-5.8°C predicted climate change from 1990 to 2100



By Robert A. Rohde @ https://commons.wikimedia.org/wiki/File:Global_Warming_Predictions_Map.jpg

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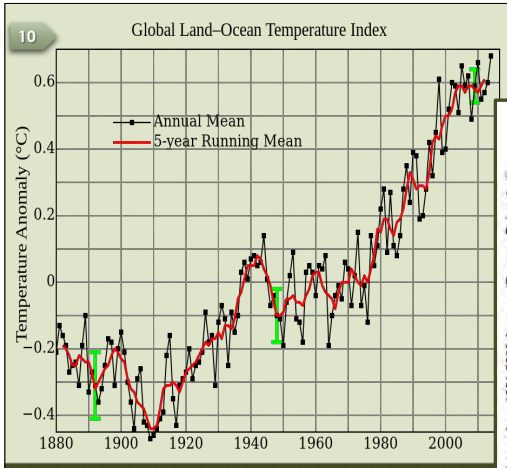
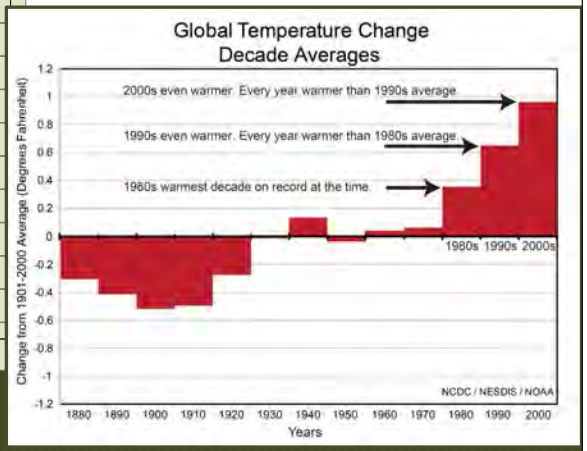


"Global Temperature Anomaly" by NASA Goddard Institute for Space Studies - http://data.giss.nasa.gov/gistemp/graphs/.

Licensed under Public Domain via Wikimedia Commons - https://commons.wikimedia.org/wiki/File:Global_Temperature_Anomaly.svg#/media/File:Global_Temperature_Anomaly.svg

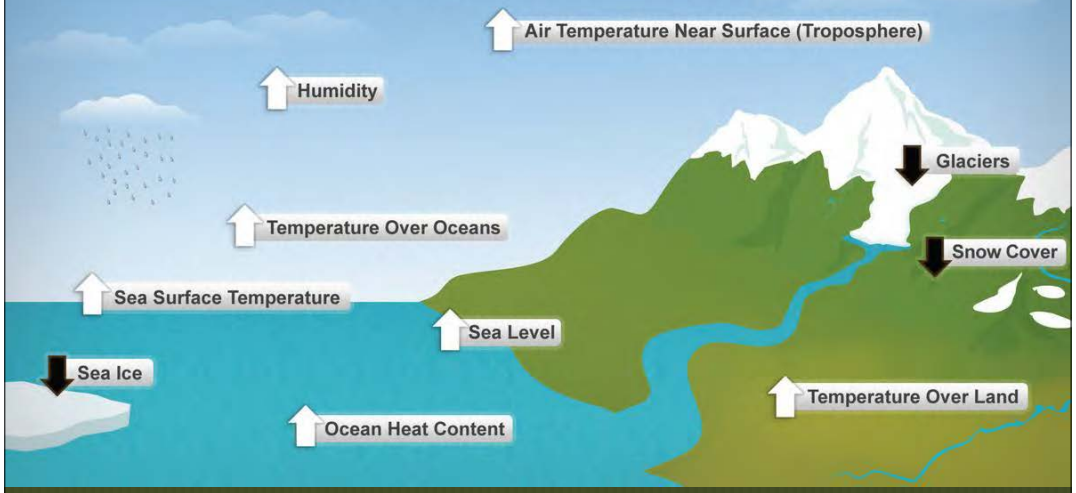
Global Temperature Change



NOAA (July 2010), *State of the Climate in 2009, as appearing in the July 2010 issue (Vol. 91) of the Bulletin of the American Meteorological Society (BAMS). Supplemental and Summary Materials: Report at a Glance: Highlights*, US National Oceanic and Atmospheric Administration (NOAA): National Climatic Data Center, http://www.ncdc.noaa.gov/bams-state-of-the-climate/2009.php, p.5.

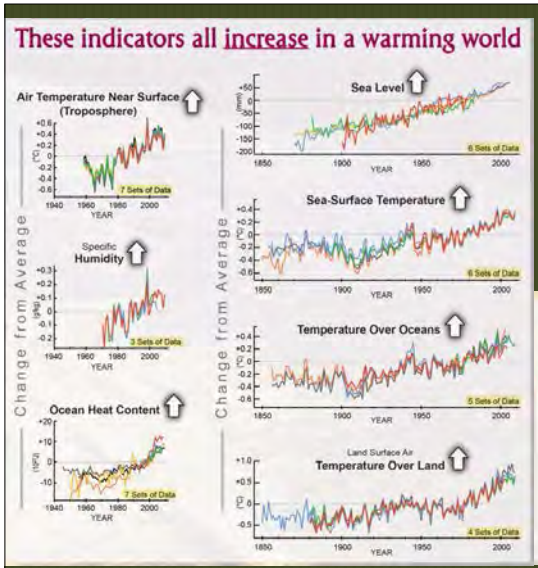
11

Ten Indicators of a Warming World



State of the Climate in 2009: Supplemental and Summary Materials: Report at a Glance: Highlights, US National Oceanic and Atmospheric Administration: National Climatic Data Center, http://www.ncdc.noaa.gov/bams-state-of-the-climate/2009.php, page 2.

These indicators all increase in a warming world



These indicators all decrease in a warming world

State of the Climate in 2009: Supplemental and Summary Materials: Report at a Glance: Highlights, US National Oceanic and Atmospheric Administration: National Climatic Data Center, http://www.ncdc.noaa.gov/bams-state-of-the-climate/2009.php, page 2.

13

THE 2°C MAXIMUM WARMING TARGET

- Governments have agreed to limit CO_2 emissions to halt climatic warming to a maximum of 2°C.
  - But will this be achieved, and will this be enough?
  - The answers are not certain, but the scientific signals are that we are still moving ever closer to a critical tipping point.
- Major Concerns include:
  - The 2°C maximum is already too much.
  - Current trends, unless immediately changed, will take us well past the 2°C maximum .
  - The required actions to meet this target have yet to be enacted.

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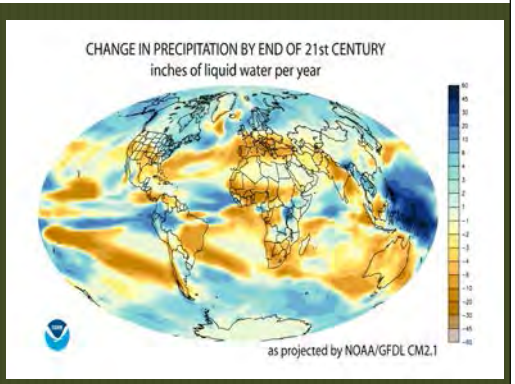
SAFE ATMOSPHERIC CO_2 CONCENTRATION?

- Currently atmospheric CO_2 concentrations are at 400 ppm and **increasing at ~3 ppm/year**.
- The warming effects of carbon dioxide emissions persist in the atmosphere for ~1,000 years.
- **2°C = 450 ppm** → we are not so sure, a 50/50 chance & at current rates we would reach this by ~2030
- The most stringent calls suggest that we have already passed a safe operating limit, and should aim to decrease to 350 ppm and a 1.5°C warming



NOAA Geophysical Fluid Dynamics Laboratory (GFDL)
https://en.wikipedia.org/wiki/Effects_of_global_warming#/media/File:Projected_change_in_annual_average_precipitation_for_the_21st_century,_based_on_the_SRES_A1B_emissions_scenario,_and_simulated_by_the_GFDL_CM2.1_model.png

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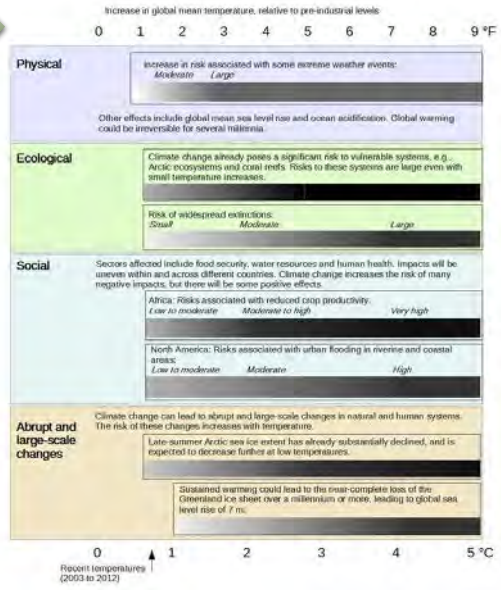

CLIMATE CHANGE IMPACTS & RISKS

- The impacts of climate change include increased temperatures, increases and decreases in precipitation, sea level rise, intensification of extreme weather events, etc.
- These impacts result in numerous geographically specific risks, such as flooding, reductions in crop productivity, shortages in fresh water supply, sea inundation, etc.
- The more vulnerable communities are, the more likely it is that these risks will result in extreme disasters.

16

KEY FINDINGS FROM IPCC AR5 WGIII

MITIGATION OF CLIMATE CHANGE

- To remain below the 2°C maximum warming target, total anthropogenic Carbon emissions must be limited to **790 GtC**
- From 1870 to 2011, human activities have led to the release of **515 GtC**, i.e. consuming 65% of this total Carbon Budget.
- There is only a **275 GtC** Budget remaining if we are to limit warming to below 2°C
- At the current rate, we will have spent the remaining Carbon Budget by 2050

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AMBITIOUS MITIGATION IS AFFORDABLE

- While AR5 WGII stresses the importance of taking strategic adaptation measures to reduce the risks people will face from climate change, WGIII stresses the importance and value of concerted mitigation efforts.
- Ambitious Mitigation efforts would lead to Economic growth reduced by ~ 0.06%
- The estimated costs do not account for the benefits of reduced climate change
- While, unmitigated climate change would create increasing risks to economic growth and potentially create far more negative impacts on growth and development.

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MITIGATION MEASURES

- More efficient use of energy
- Greater use of low-carbon and no-carbon energy
  - Many of these technologies exist today
- Improved carbon sinks
  - Reduced deforestation and improved forest management and planting of new forests
  - Bio-energy with carbon capture and storage
- Lifestyle and behavioural changes

INTERNATIONAL CLIMATE NEGOTIATIONS

Section 2

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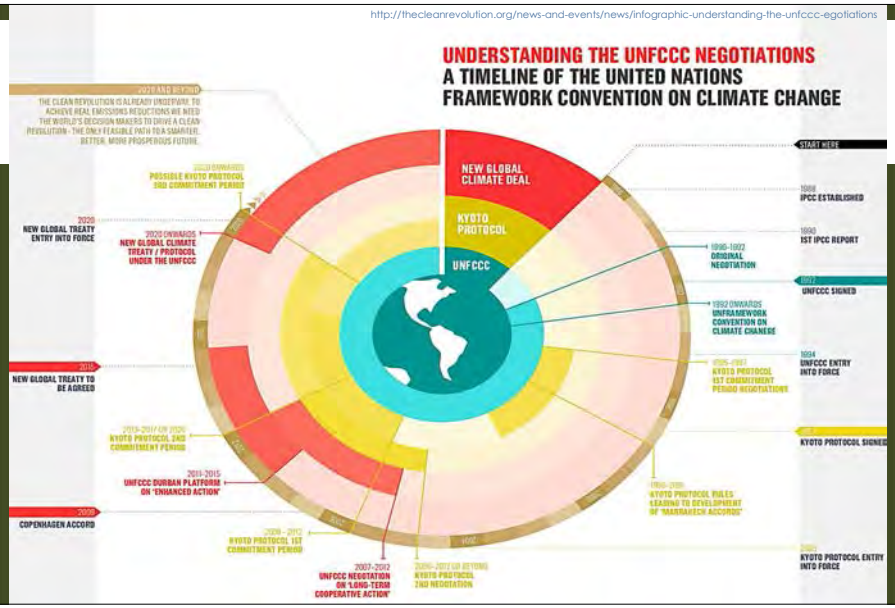
CLIMATE NEGOTIATIONS TIMELINE

- **1988** – The Intergovernmental Panel on Climate Change (IPCC) is established
- **1990** – The 1st IPCC Assessment Report is launched
- **1992** – The United Nations Framework Convention on Climate Change (UNFCCC) is ratified by 154 nations
  - With the objective is to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". UNFCCC Article 2
- **1994** – UNFCCC enters into force
- **1995** – The 2nd IPCC Assessment Report is launched
- **1997** – Kyoto Protocol is adopted at the 3rd Conference of Parties (COP)
  - This includes legally binding emissions reduction targets for developed countries.
  - First Commitment Period – 2008-2012
  - Second Commitment Period – 2012-2020
  - Kyoto Protocol also establishes flexibility mechanisms including: International Emissions Trading (**IET**), the Clean Development Mechanism (**CDM**), and Joint Implementation (**JI**)
- **2001** – The 3rd IPCC Assessment Report is launched
- **2005** – At COP 11, the Kyoto Protocol enters into force & the *Reducing emissions from deforestation and forest degradation* (**REDD**) mechanism is introduced
- **2007** – The 4th IPCC Assessment Report is launched
- **2007** – COP 13 adopts the Bali Road Map towards finalizing a binding agreement at COP 15
  - The Bali Action Plan strengthens efforts for both Mitigation and Adaptation among both developed and developing countries with the launch of: the **Adaptation Fund**, the Nationally Appropriate Mitigation Action (**NAMA**) process, and the National Adaptation Programme of Actions (**NAPA**) process
- **2009** – COP 15 is not able to achieve a new binding agreement, and instead produces the non-binding Copenhagen Accord
- **2010** – COP 16 produces the Cancun Agreements in which parties agree limit future global warming below the **2°C target** & to establish the **Green Climate Fund**
- **2014** – The 5th IPCC Assessment Report is launched
- **2015** – COP 21 adopts the Paris Agreement (by 195 member states) with countries making Nationally Determined Contributions (NDCs) to GHG reductions

21



22

TOP DOWN PERIOD: 1992-2006
(COPs 1-12)

- One of the first efforts under the UNFCCC was to establish National Greenhouse Gas Inventories to track emissions and removals.
- Discussions at COP 1 and 2 led countries to agree that stabilizing at 1990 levels was not enough, and further reductions below 1990 levels were required.
- COP 3 and the Kyoto Protocol (1997) provides the first legally binding emission reduction targets for developed countries (i.e. Annex 1 countries)
- COP 7 and the Marrakech Accords (2001) lays out the rules for meeting the targets set out in the Kyoto Protocol, such as operational rules on Carbon Trading and CDM as well as the compliance regime
- COP 15 (2005), Kyoto Protocol enters into force and the parties agree to extend the protocol beyond 2012 with the aim for deeper emission cuts
  - COP meetings also now include the Meeting of Parties to the Kyoto Protocol, and the Kyoto
- COP 16 (2006) receives criticism for the disconnect between the political process and the scientific imperative, but it also achieves strong improvements for supporting developing countries, CDM and a five-year plan of work on adaptation

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AFTER BALI (COP 13 – 2007): A MORE BOTTOM UP APPROACH

- COP 13 began negotiations on the successor to the Kyoto Protocol, and set out to agree on a road-map, timetable and concrete steps for future negotiations towards reaching an agreement in 2009
- The Bali Road Map set out a two year negotiating process aimed towards finalizing an agreement in Copenhagen at COP 15 – that would strengthen an approach for cooperative actions and include ample opportunities for feedback/inputs from parties.
- The Bali Road Map also defined a set of building blocks for the new agreement: cutting emissions, mitigation, forests, adaptation, technology development and transfer, and finance.
- Neither COP 15 (in Copenhagen) or COP 16 (in Cancun) were able to realize this new agreement for a successor to the Kyoto Protocol, and from COP 17 "The Durban Platform" began a new round of negotiations towards a new agreement finally realised at COP 21 (in Paris, 2015)
- However, the Bali Road Map did lead to the development/advancement of a range of support mechanisms for developing countries on both mitigation and adaptation

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THE BALI ACTION PLAN

1(b)(ii):

- Nationally Appropriate Mitigation Actions (NAMAs) by developing Parties
- In the context of sustainable development,
- Supported and enabled by:

- In a Measurable, Reportable and Verifiable manner (MRV)

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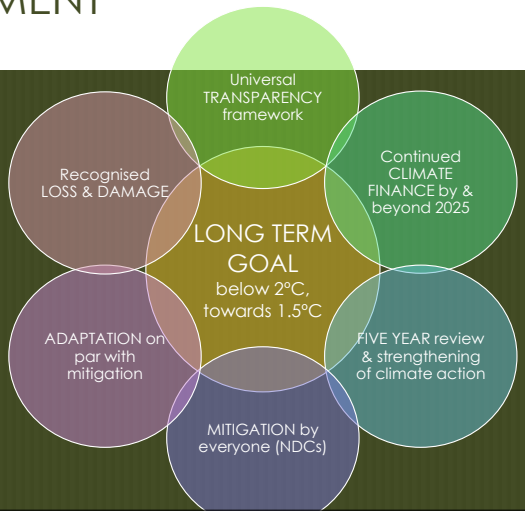
THE PARIS AGREEMENT

Article 2:

a) Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;
b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production;
c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.



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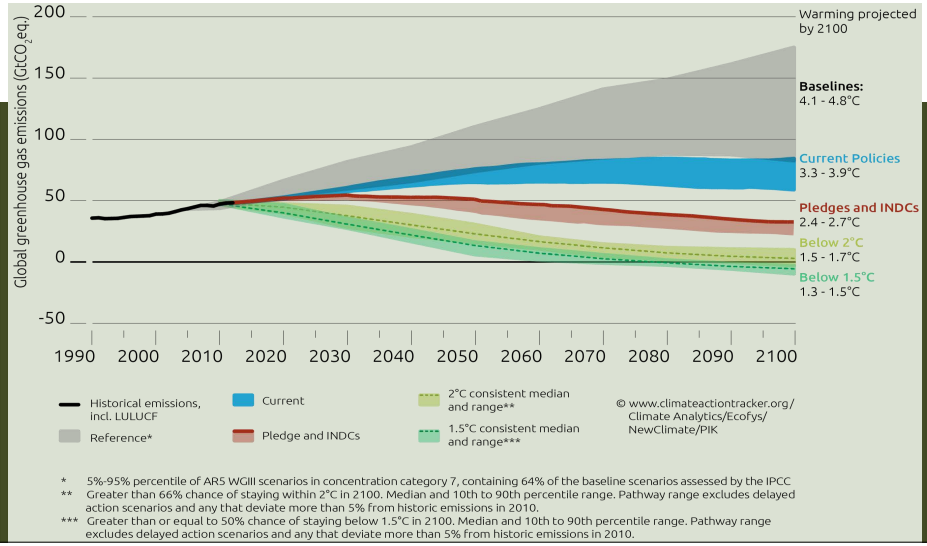
TRACKING THE NATIONALLY DETERMINED CONTRIBUTIONS



* 5%-95% percentile of AR5 WGIII scenarios in concentration category 7, containing 64% of the baseline scenarios assessed by the IPCC
** Greater than 66% chance of staying within 2°C in 2100. Median and 10th to 90th percentile range. Pathway range excludes delayed action scenarios and any that deviate more than 5% from historic emissions in 2010.
*** Greater than or equal to 50% chance of staying below 1.5°C in 2100. Median and 10th to 90th percentile range. Pathway range excludes delayed action scenarios and any that deviate more than 5% from historic emissions in 2010.

CLIMATE FINANCE NEGOTIATIONS UNDER THE UNFCCC PROCESS

Section 3

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HISTORY OF CLIMATE FINANCE NEGOTIATIONS *(PART 1)*

- COP 3 (Kyoto, 1997): Establishes the first flexibility mechanisms including the Clean Development Mechanism (**CDM**)
- COP 7 (Marrakech, 2001): Agreed to establish three funds: 1) climate change fund to support climate measures, 2) fund to support National Adaptation Programs of Action for least-developed countries, and 3) a Kyoto Protocol adaptation fund supported by a CDM levy – *(these points agreed at the resumed COP 6 negotiations in Bonn, but finalised at COP 7)*
- COP 9 (Milan, 2003): Parties finalise agreement on the use of the **Adaptation Fund** for supporting adaptation efforts in developing countries, but also for capacity building through technology transfer.
  - *However the fund was not officially launched until 2007, and funding allocation began in 2010.*
  - *Between 2010-2015, the fund has committed US$331 million in 54 countries*
- COP 11 (Montreal, 2005): Introduces the *Reducing emissions from deforestation and forest degradation* (**REDD**) mechanism as a new flexibility mechanism
- COP 12 (Nairobi, 2006): The procedures and modalities for the Adaptation Fund are agreed

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HISTORY OF CLIMATE FINANCE NEGOTIATIONS *(PART 2)*

- COP 13 (Bali, 2007): The Bali Road Map identifies finance as a key pillar of the future climate agreement, and establishes a set of guiding principles for climate finance:
  - 1) To improve access to predictable and sustainable financial resources; 2) To provide positive incentives; 3) To establish innovative means of funding for adaptation; 4) To Incentivise adaptation actions on the basis of sustainable development policies; 5) To mobilize climate-friendly funding and investment choses; and 6) To provide financial and technical support for capacity-building in the assessment of costs of adaptation in developing countries, to aid in determining their financial needs.
- COP 16 and the Cancun Agreements (2010): Developed countries commit to mobilizing USD 100 Billion per year by 2020 to address the needs of developing countries for meaningful mitigation actions and to establish the **Green Climate Fund**
  - The Standing Committee on Climate Finance was established as part of the UNFCCC
- COP 17 (Durban, 2011): Adopts a Management Framework for the Green Climate Fund
- *At present, around USD 10.2 Billion has been committed to the Green Climate Fund by 42 national governments, and an additional USD 18.4 Million from regional and municipal governments*
- COP 21 (Paris, 2015): Aims to align the existing financial flows with the over

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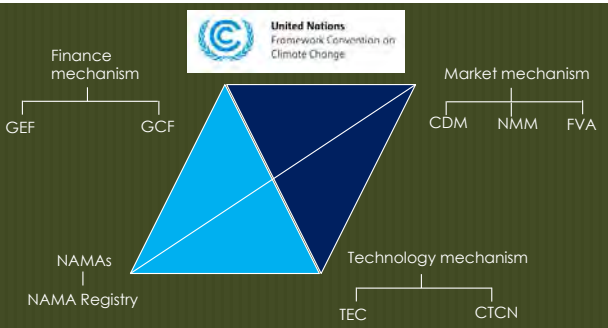
MEANS OF IMPLEMENTATION:

AN INTERDEPENDENT MIX OF FINANCE, TECHNOLOGY, CAPACITY BUILDING AND MARKET MECHANISMS



- Current discussion takes place separately under each mechanism.
- No entity is officially tasked to create synergies among various mechanisms.

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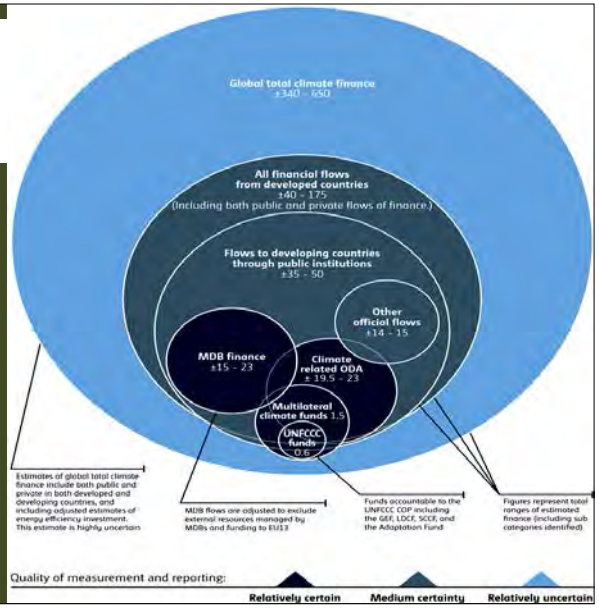
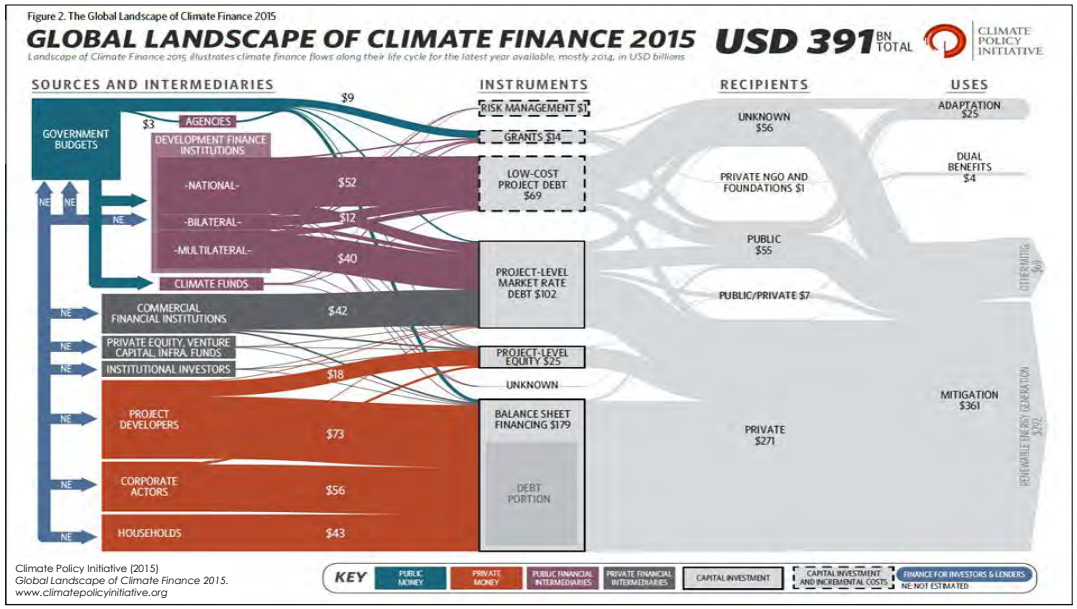
CLIMATE FINANCE FLOWS

(USD BILLION AND ANNUALIZED)

- From 2010-2012, Global climate finance in all countries ranged from USD 340 to USD 650 billion per year
- Between 38-53% of this funding was directed to the Asia-Pacific region
- In 2014, public funding for climate finance accounted for 38% of the total (i.e. USD 148 billion), while private funding accounted for 62% (i.e. USD 243 billion)
  - Private funding was primarily invested into renewable energies



UNFCCC Standing Committee on Finance (2014) *2014 Biennial Assessment and Overview of Climate Finance Flows Report*. Bonn: UNFCCC.
http://unfccc.int/files/cooperation_and_support/financial_mechanism/standing_committee/application/pdf/2014_biennial_assessment_and_overview_of_climate_finance_flows_report_web.pdf



Climate Policy Initiative (2015)
Global Landscape of Climate Finance 2015.
www.climatepolicyinitiative.org

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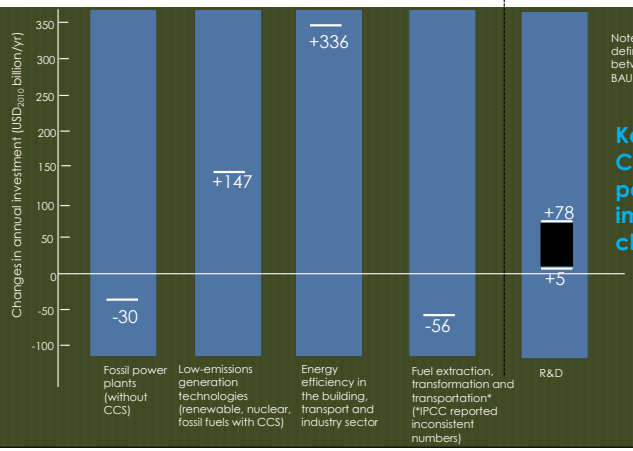
USD 400 BILLION PER YEAR ADDITIONAL INVESTMENT WILL BE REQUIRED BY 2030 TO STAY BELOW 2°C



Note: Additional investment is defined as the difference between policy scenarios and BAU.

Key Message: Changing investment pattern is equally important as scaling up climate finance.

Source: IGES synthesized from IPCC AR5 (2014)

Thank You for your kind attention!

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THE IMPERATIVE FOR ACTION

"We are allowing ourselves to travel a uniquely dangerous path, and we are doing so without an appreciation for the consequences that lie ahead." - Jean-Pierre Gattuso

"This is a moral moment. This is not ultimately about any scientific debate or political dialogue. Ultimately it is about who we are as human beings. It is about our capacity to transcend our own limitations. To rise to this new occasion. To see with our hearts, as well as our heads, the unprecedented response that is now called for. To disenthrall ourselves, to shed the illusions that have been our accomplices in ignoring the warnings that were clearly given, and hearing the ones that are clearly given now." - Al Gore

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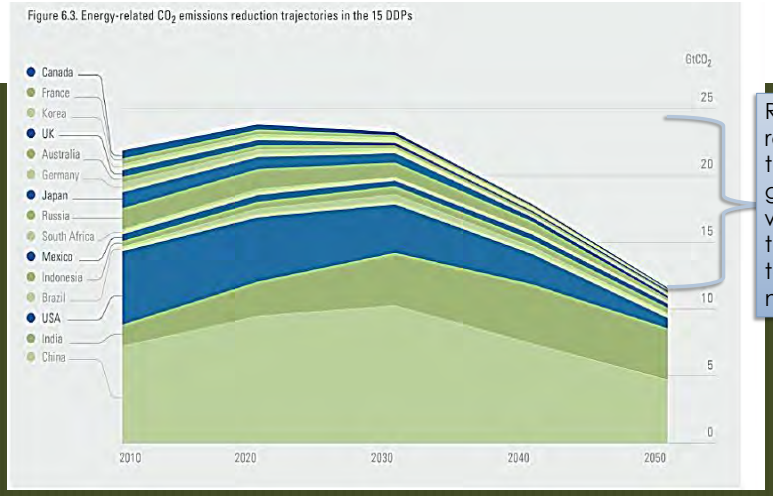
THE URGENCY OF NOW



Required reductions to limit global warming to 2°C target maximum

From the Interim 2014 Report of the Deep Decarbonization Pathways Project

Climate Finance Mechanisms
-Part 1 -

Tomonori SUDO, Ph. D.,
Associate Professor,
Ritsumeikan Asia Pacific University

Regional Training on Climate Finance in Southeast Asian Countries
28-29 March 2016

Contents of this session

- Introducing Mitigation Investments and the Energy Economy
- Climate Finance mechanisms and Institutional Landscape (international, multi-lateral, bi-lateral, private)
- The UNFCCC and the Green Climate Fund (GCF)(by Mr. Sahara)

Introducing Mitigation Investments and the Energy Economy

What is Finance and Investment?

- **Finance** is defined as a transaction of money from money holder who has no need to use money now to user of money who needs to spend money now.
  - A key point in finance is the **time value of money**, which states that purchasing power of one unit of currency can vary over time.
  - Finance aims to price assets based on their **risk level** and their expected **rate of return**.
- **Investment** is one of financial transactions.
  - In general, an investment is an **asset or item** that is purchased with the hope that it will generate income or appreciate in the future.
  - In an economic sense, an investment is the purchase of goods that are not consumed today but are used in the future to create wealth.
  - In finance, an investment is a **monetary asset** purchased with the idea that the asset will provide income in the future or appreciate and be sold at a higher price.
  - A key point in investment is the **ownership**. As a result of investment transaction, the asset or item is obtained by investor. Thus, investors have a right to manage asset or item by their own will.

What is Climate Finance?

- Climate finance refers to local, national or transnational financing, which may be drawn from public, private and alternative sources of financing.
  - Climate finance is critical to addressing climate change because large-scale investments are required to significantly reduce emissions, notably in sectors that emit large quantities of greenhouse gases.
  - Climate finance is equally important for adaptation, for which significant financial resources will be similarly required to allow countries to adapt to the adverse effects and reduce the impacts of climate change.

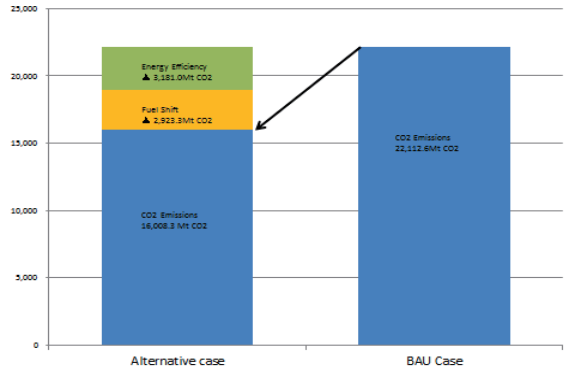
Knowledge gap on Climate Finance?

- In accordance with the UNFCCC, developed country Parties (Annex II Parties) are to provide financial resources to assist developing country Parties in implementing the objectives of the UNFCCC.
  - It is important for all governments and stakeholders to understand and assess the financial needs developing countries have so that such countries can undertake activities to address climate change.
  - Governments and all other stakeholders also need to understand the sources of this financing, in other words, how these financial resources will be mobilized.
- Equally significant is the way in which these resources are transferred to and accessed by developing countries.
  - Developing countries need to know that financial resources are predictable, sustainable, and that the channels used allow them to utilize the resources directly without difficulty.
- For developed countries, it is important that developing countries are able to demonstrate their ability to effectively receive and utilize the resources.
  - In addition, there needs to be full transparency in the way the resources are used for mitigation and adaptation activities. The effective measurement, reporting and verification of climate finance is key to building trust between Parties to the Convention, and also for external actors.

CO2 Emission in Asia

- The CO2 emissions of Asia and the Pacific accounted for about 42.8 % of world CO2 emissions in 2010.
- However, through 2035, CO2 emissions in Asia and the Pacific will increase rapidly at an annual rate of 2.0 %, compared with the world average growth rate of 1.3 % per year through 2035.
- Thus, the share of Asia and the Pacific is projected to reach more than half of world CO2 emissions in 2035.

Decomposition components of carbon dioxide emission reduction from business-as-usual (2035) to the alternative case (2035) in Asia and the Pacific



- ADB (2013) analyzed the factors affecting CO2 reduction from the BAU case to the alternative case.
  - It shows that energy intensity will account for 52.6 % and CO2 intensity for 47.4 % of the total reduction in CO2 emissions from BAU case to the alternative case.
  - This implies that Asian and the Pacific region needs further energy conservation and fuel shift to less-carbon-intensive energy for further reduction of CO2 emissions

Annual estimated investments needed under a business-as-usual and low-carbon scenario (US$ billions per year between 2010 and 2030)

	Business-as-usual scenario investment needs		2C scenario investment needs		Incremental investment required		
Sector	Cumulative 2010-2030	Annual Average	Cumulative 2010-2030	Annual Average	Cumulative 2010-2030	Annual Average	Sources
Power generation	6,933	347	10,136	507	3,203	160	IEA
Power transmission and development	5,450	272	5,021	251	-429	-21	IEA
Energy Total	**12,383**	**619**	**15,157**	**758**	**2,774**	**139**	
Buildings	7,162	358	13,076	654	5,914	296	IEA
Industry	5,100	255	580	290	700	35	IEA
Building & Industry total	**12,262**	**613**	**18,876**	**944**	**6,614**	**331**	
Road	8,000	400	8,000?	400?	-	-	OECD
Rail	5,000	250	5,000?	250?	-	-	OECD
Airports	2,300	115	2,300?	115?	-	-	OECD
Ports	800	40	800?	40?	-	-	OECD
Transport Vehicles	16,908	845	20,640	1,032	3,732	187	IEA
Transport total	**33,008**	**1,650**	**36,740**	**1,837**	**3,732**	**187**	
Water	26,400	1,320	26,400?	1,320?	-	-	OECD
Agriculture	2,500	125	2,500?	125?	-	-	FAO
Tele-communications	12,000	600	12,000?	600?	-	-	OECD
Forestry	1,280	64	2,080	104	800	40	UNEP
Other sectors	unknown	unknown	unknown	unknown	unknown	unknown	
Total Investment	**99,833**	**4,991**	**113,753**	**5,689**	**13,934**	**698**	
	~$100tr	~$5tr	^$114tr	~$5.7tr	~$14tr	~$0.7tr	

- An investment gap under a business-as-usual scenario: $100 trillion
- Responding to an anticipated 2 °C temperature rise will add only $14 trillion, or 14 % to the total gap.

Asia's Total Infrastructure Investment Needs by Sector, 2010–2020

Million USD

Sector/Subsector	New Capacity	Replacement	Total
Energy (Electricity)	**3,176,437**	**912,202**	**4,088,639**
Telecommunications	**325,353**	**730,304**	**1,055,657**
Mobile phones	181,763	509,151	690,914
Landlines	143,590	221,153	364,743
Transport	**1,761,666**	**704,457**	**2,466,123**
Airports	6,533	4,728	11,260
Ports	50,275	25,416	75,691
Railways	2,692	35,947	38,639
Roads	1,702,166	638,366	2,340,532
Water and Sanitation	**155,493**	**225,797**	**381,290**
Sanitation	107,925	119,573	227,498
Water	47,568	106,224	153,792
Total	**5,418,949**	**2,572,760**	**7,991,709**

$ = United States dollar.
Sources: ADBI (2009); Bhattacharyay (2008).

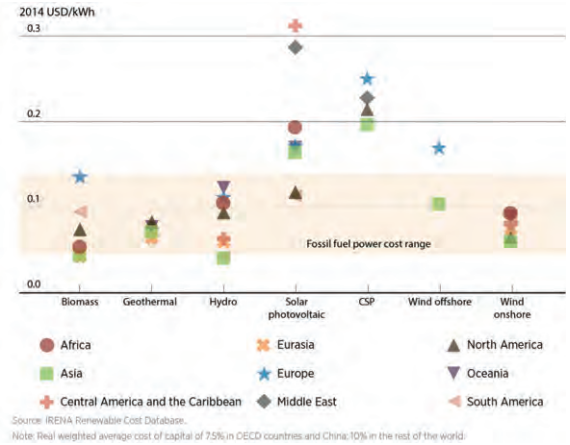
- According to the WEF (2013), incremental investment required in Energy sector is 2774 billion US dollar, which is 22.4 % of investment needs at Business-as-usual scenario. In case of transport sector, incremental cost is 11.3 % of Business-as-usual investment needs.
- If those coefficients are applied in the figures shown in ADB and ADBI 2009, incremental investment needs in Energy sector and transport sector are **915,855 million US Dollar** and **246,612 million US Dollars**, respectively. That is, 58 billion US dollars are incrementally required annually for low carbon development.

Energy Economy

- 2030 Development Agenda
  - Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all
    - 7:1 By 2030, ensure universal access to affordable, reliable and modern energy services
    - 7:2 By 2030, increase substantially the share of renewable energy in the global energy mix
    - 7:3 By 2030, double the global rate of improvement in energy efficiency
    - 7:a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and **promote investment** in energy infrastructure and clean energy technology
    - 7:b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries and small island developing States and land-locked developing countries, in accordance with their respective programmes of support

(United Nations 2015a)

Weighted average cost of electricity by region for utility-scale renewable technologies, compared with fossil fuel power generation costs, 2013/2014.



Cost of Many of RE technologies are enough competitive to Fossil fuel power in Asia.

- Even though the cost of renewable energy technology declines, mobilization of investment and finance in low carbon development is still one of the key issues for Asian developing countries

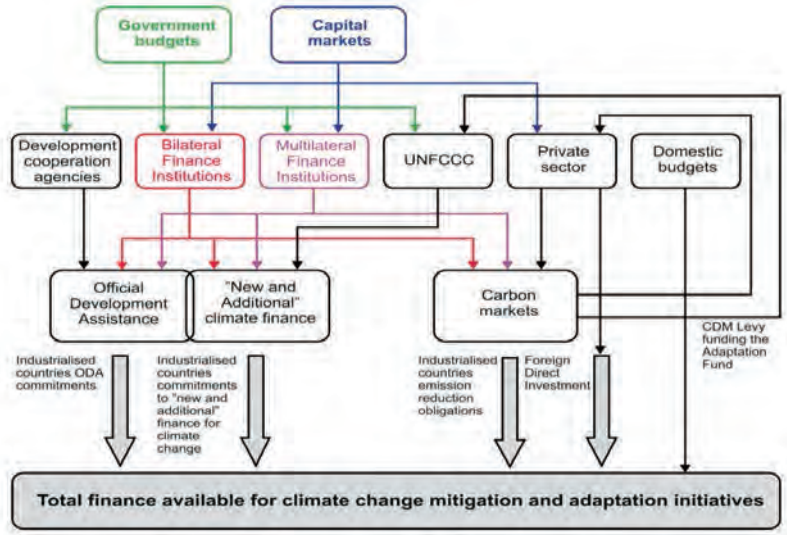
Barriers to promote RE

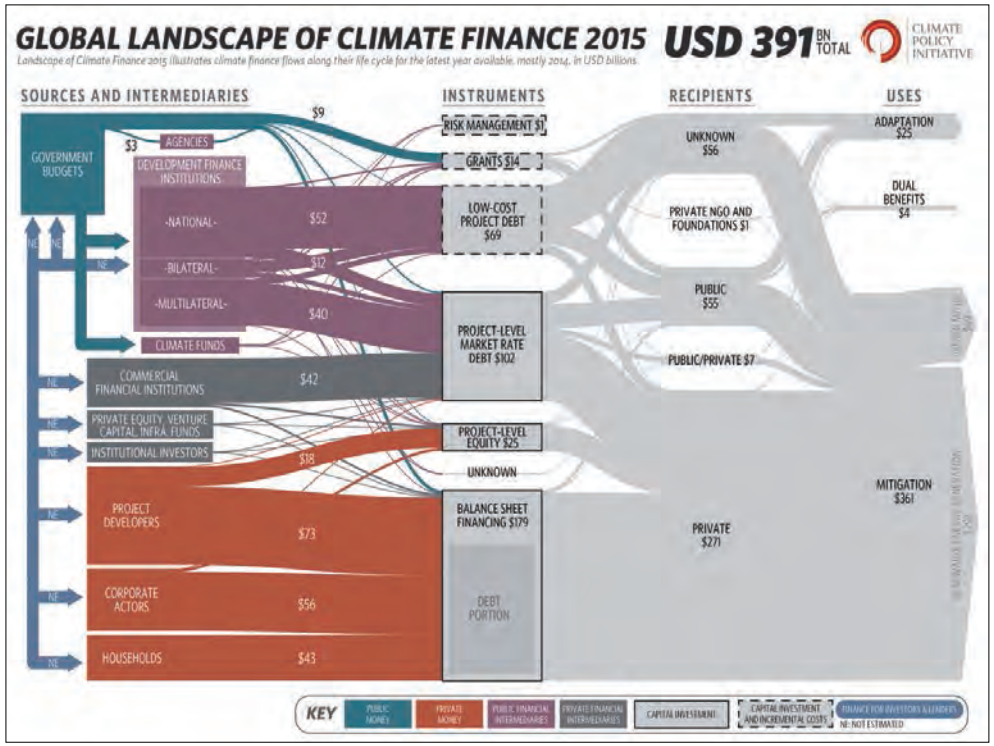
- High upstream costs for project development. Public support may be essential to realize the initial phases of project identification and development that may seem unattractive to private investors.
- High capital costs requiring adequate financial instruments.
- High perceived risks, requiring specific risk mitigation measures—financial or institutional—since standard risk mitigation tools are often unsuitable or unavailable for RE projects. When perceived risk is higher than real risk, public action may be needed to convince value chain actors to change their perception.
- Need to adapt rules and institutional frameworks for RE projects. Operational integration of RE into power grids or other energy systems often requires changes in institutional frameworks, notably to guarantee long term access to resources.
- Smaller size and return that offer lower economies of scale.
- High fossil fuel subsidies prevent RE deployment.

(IDFC 2015)

Climate Finance mechanisms and Institutional Landscape (international, multi-lateral, bi-lateral, private)

Financial flows for climate change mitigation and adaptation in developing countries





Characteristics, potentials and risks of finance

	Characteristics	Potential	Risk
Domestic public finance ・Nat'l budget(Nat'l tax) ・Municipality budget ・Bonds ・Domestic DFIs	• Most stable and low risk finance source. • Good for finance in low profit public projects • Contribute to leveraging domestic private finance	• Improved governance and financial system lead to increase of domestic finance flows and FDI.	• Political difficulty in increase of tax revenue • Lack of capacity of appropriate public fiscal management • Risk to crowd-out private finance
International Public Finance ・ODA ・OOF ・Multilaterals	• Stable and low risk finance but low predictability • Limited volume of finance • Need to use efficiently and effectively	• Leveraging private finance	• Risk to crowd-out private finance. • Need to appropriate foreign reserve and forex management
Private finance	• Largest finance source. • Contribute to SD by investing in the project where social benefit will be increased while private benefit will be maximized. • Generate employment opportunity and sustainable development impact by expansion of business.。	• Increase of private finance flow into developing countries • Increase of finance flows between developing countries	• Unstable due to economic situation and sensitive to risks • Hard to capture the total flow of private finance • Hard to make sure the transparency and accountability due to business confidentiality
Blended finance ・PPP ・EU Blending mechanism	• Sharing risks and cost by public, private finance will be mobilized and contribute to establish better business environment and market.	• Increase of private sector participation	• Risk of market distortion • Risk of dependency to public

Climate Finance Mechanism: Green Climate Fund

Juichiro Sahara

Session2 Module 2

March 2016 | Bangkok, Thailand

The Green Climate Fund

- **Operating entity of the financial mechanism** of the United Nations Framework Convention on Climate Change (UNFCCC)
- Centrepiece of long-term finance under UNFCCC
- Fund's headquarters in Songdo, Republic of Korea

GCF : Timeline

- ✓ 2009 The general concept for GCF proposed at COP15 in Copenhagen
- ✓ 2010 GCF is formally established during COP16 in Cancun
- ✓ 2011 GCF`s Governing Instrument adopted at COP17 in Durban, South Africa
- ✓ 2013 GCF`s Executive Director is appointed, and the headquarter was established in Songdo, Korea
- ✓ 2014 Successful Initial Resource Mobilization of over USD 10 billion equivalent
- ✓ 2015 The first funding decisions (8 projects, USD 168 million) are made

Objectives of GCF

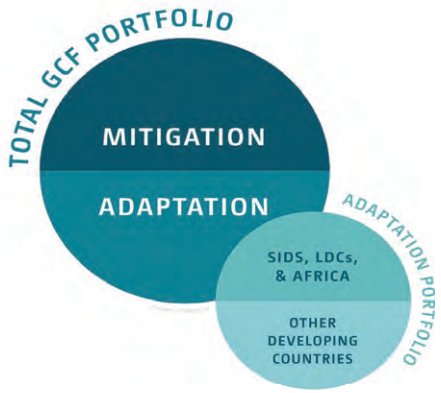
- ✓ The Fund will contribute to the achievement of the ultimate objective of the UNFCCC.
- ✓ The Fund will promote the paradigm shift towards low-emission and climate-resilient development pathways by providing support to developing countries to limit or reduce their greenhouse gas emissions and to adapt to the impacts of climate change
- ✓ GCF is the only stand-alone multilateral financing entity whose sole mandate is to serve the Convention

Added Value of GCF

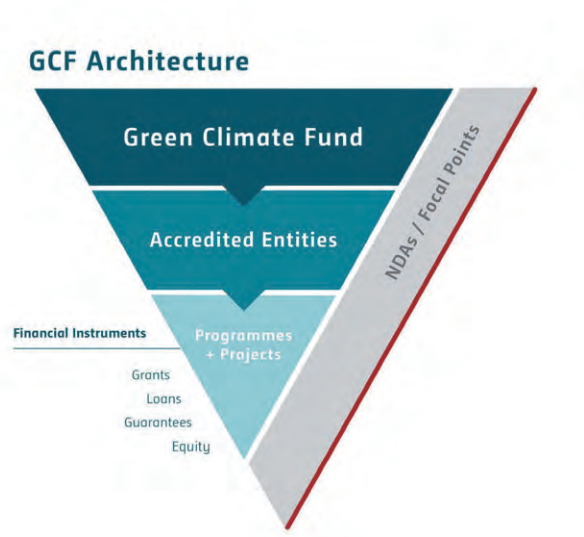
- Maximize country ownership
- Balance between adaptation and mitigation
- Balanced governance with equal voice for contributors and recipients
- Diversity of partners
- Diversity of financial instruments
- Largest dedicated climate Fund globally

Allocation Framework

- Geographic balance
- Significant allocation to Private Sector Facility
- Sufficient resources for readiness activities



The Fund and its Partners



A Diverse Network of Partners

Morocco · Ministry of Natural Resources of Rwanda · Ethiopia · Kenya · Argentina

33 entities accredited to date

As of March 2016


GREEN
CLIMATE
FUND

Climate Finance Mechanisms -Part 2 -

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Regional Training on Climate Finance in Southeast Asian Countries
28-29 March 2016

Contents of this session

- Typologies of Climate Finance:
  - Mitigation Finance and CDM
  - Adaptation Finance
  - REDD+ Finance
  - Results-Based Finance (RBF)
  - Project Types eligible for use of Climate Finance
- Climate Finance trends in Asia
- Green Climate Fund: Resource mobilization and climate finance (by Mr. Sahara)

Typologies of Climate Finance

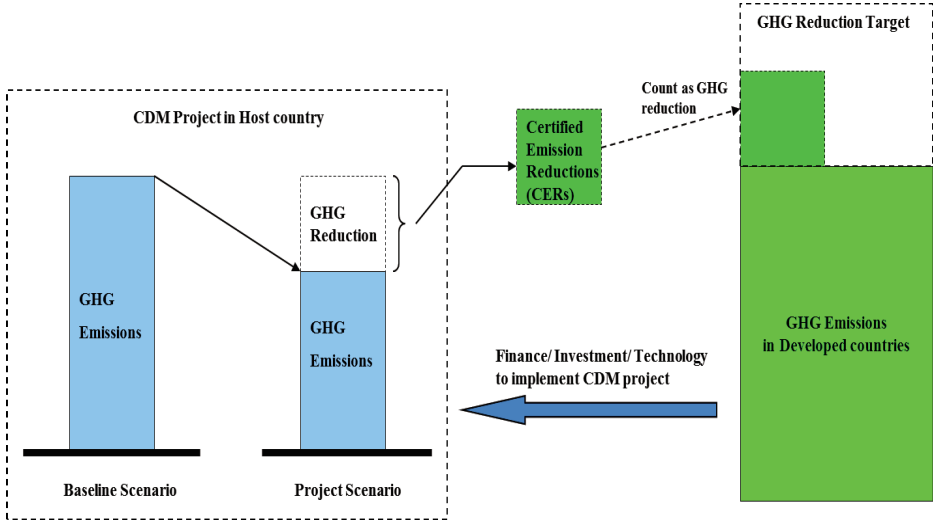
Mitigation Finance

- **'Mitigation finance' refers to the finance provided for mitigation activities.**
- OECD defines Mitigation Finance, for the purpose to collect ODA data contributing climate change (Rio Marker), as
  - "It contributes to the objective of stabilisation of greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system by promoting efforts to reduce or limit GHG emissions or to enhance GHG sequestration."
  - criteria for eligibility as "The activity contributes to
    - a) the mitigation of climate change by limiting anthropogenic emissions of GHGs, including gases regulated by the Montreal Protocol; **or**
    - b) the protection and/or enhancement of GHG sinks and reservoirs; **or**
    - c) the integration of climate change concerns with the recipient countries' development objectives through institution building, capacity development, strengthening the regulatory and policy framework, or research; **or**
    - d) developing countries' efforts to meet their obligations under the Convention. "

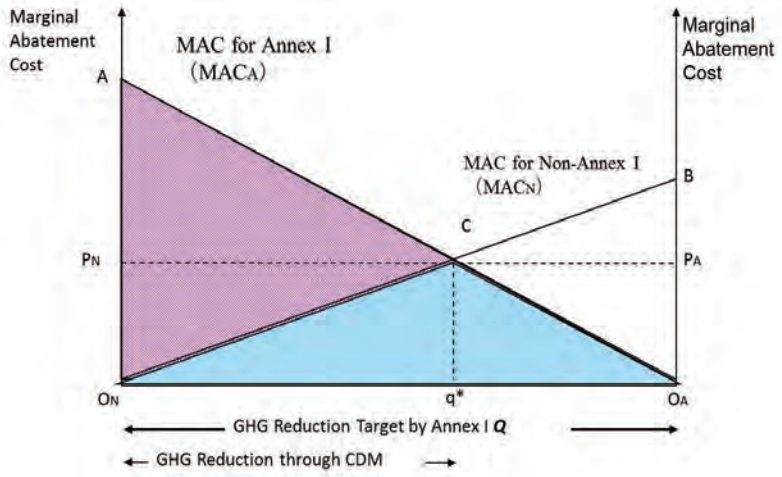
Clean Development Mechanism (CDM)

- Clean Development Mechanism (CDM) is one of the Kyoto Mechanisms along with International Emission Trading and Joint Implementation.
- The objective of the CDM is
  - 1) to contribute to sustainable development of the host country (developing country); and
  - 2) to assist developed countries to accomplish their GHG reduction target under the Kyoto Protocol.

Concept of CDM



Theoretical concept of the CDM



Cooperative Approaches (Various approaches)

- Decision made at COP18 in Cancun said

"Acknowledges that Parties, individually or jointly, may develop and implement **various approaches**, including opportunities for using markets and non-markets, to enhance the cost-effectiveness of, and to promote, mitigation actions, bearing in mind different circumstances of developed and developing countries"

- This idea was incorporated in the Paris Agreement. Paragraph 1, Article 6 of Paris Agreement shows

"Parties recognize that **some Parties choose to pursue voluntary cooperation** in the implementation of their nationally determined contributions to allow for higher ambition in their mitigation and adaptation actions and to promote sustainable development and environmental integrity."

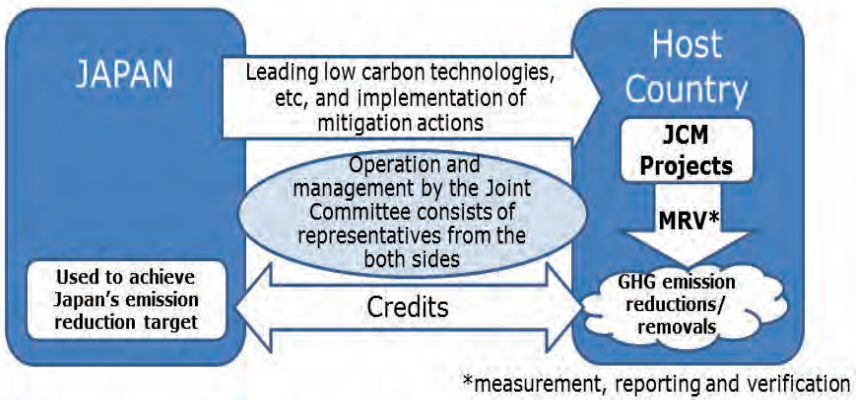
Cooperative Approaches (Various approaches)

- Paragraph 4 of Article 6, Agreement says

"**A mechanism to contribute to the mitigation of greenhouse gas emissions and support sustainable development is hereby established** under the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement for use by Parties on a voluntary basis. It shall be supervised by a body designated by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement, and shall aim:

- (a) To promote the mitigation of greenhouse gas emissions while fostering sustainable development;
- (b) To incentivize and facilitate participation in the mitigation of greenhouse gas emissions by public and private entities authorized by a Party;
- (c) To contribute to the reduction of emission levels in the host Party, which will benefit from mitigation activities resulting in emission reductions that can also be used by another Party to fulfil its nationally determined contribution; and
- (d) To deliver an overall mitigation in global emissions."

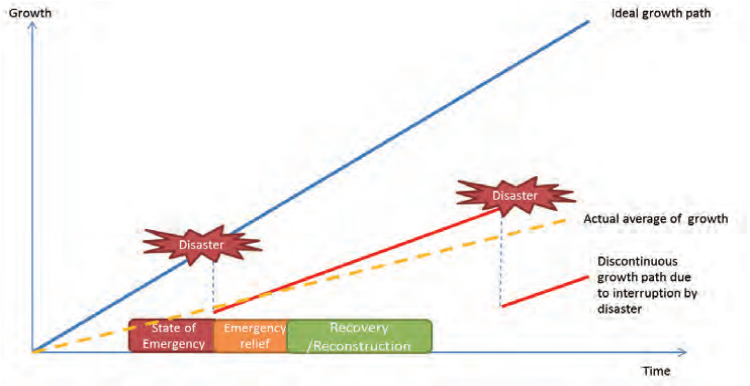
Joint Crediting Mechanism (JCM)



Adaptation Finance

- **Adaptation Finance refers to the finance provided for adaptation activities.**
  - Adaptation to the adverse effects of climate change is vital in order to respond to the impacts of climate change that are already happening, while at the same time prepare for future impacts.
  - However, in view of financiers, adaptation projects deems risky in terms of profitability.
    - Nobody knows when climate related disaster will happen, what type of disaster, and its scale, loss and damage. Such uncertainty will influence for financiers to make investment decision.

Adaptation Finance



- Once disaster happens, additional cost, such as emergency cost, recovery cost and reconstruction cost, will be needed.
- Further, due to disaster (or change of climatic condition) may affect to the growth path of the country or company.
- Therefore, adaptation finance is considered as a sort of insurance for or measures to mitigate future climate change loss and damage and/or additional cost.

Adaptation Finance

- OECD defined adaptation finance as

"It intends to reduce the vulnerability of human or natural systems to the impacts of climate change and climate-related risks, by maintaining or increasing adaptive capacity and resilience. This encompasses a range of activities from information and knowledge generation, to capacity development, planning and the implementation of climate change adaptation actions."

- And OECD set criteria for eligibility as;
  - a) the climate change adaptation objective is explicitly indicated in the activity documentation; **and**
  - b) the activity contains specific measures targeting the definition above.
  - Carrying out a climate change adaptation analysis, either separately or as an integral part of agencies' standard procedures, facilitates this approach.

- Most of the Adaptation activities will be carried out as a part of general development activities. Therefore, it seems difficult for donors to recognize the project as an adaptation activity. Therefore, OECD requested donors to explicitly indicate it.

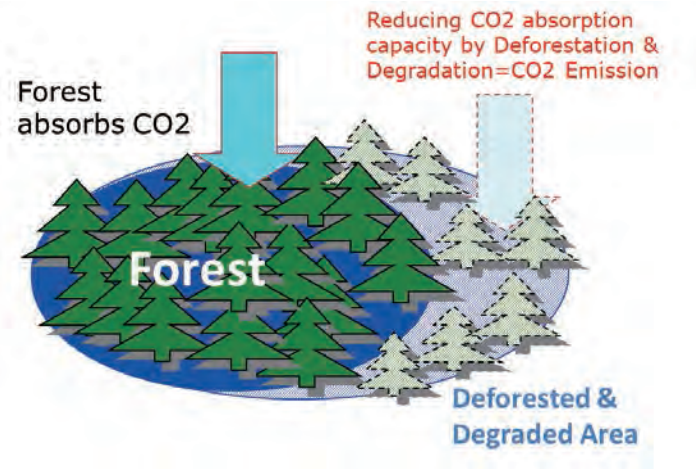
Adaptation Fund

- The Adaptation Fund (AF) was established in 2001 to finance concrete adaptation projects and programmes in developing country Parties to the Kyoto Protocol that are particularly vulnerable to the adverse effects of climate change.
- The Adaptation Fund is financed with a share of proceeds from the CDM project activities and other sources of funding.
  - The share of proceeds amounts to 2 per cent of certified emission reductions (CERs) issued for a CDM project activity.
- These funds can either be accessed through an accredited Multilateral Institution, or through an accredited National Implementing Entity (NIE).

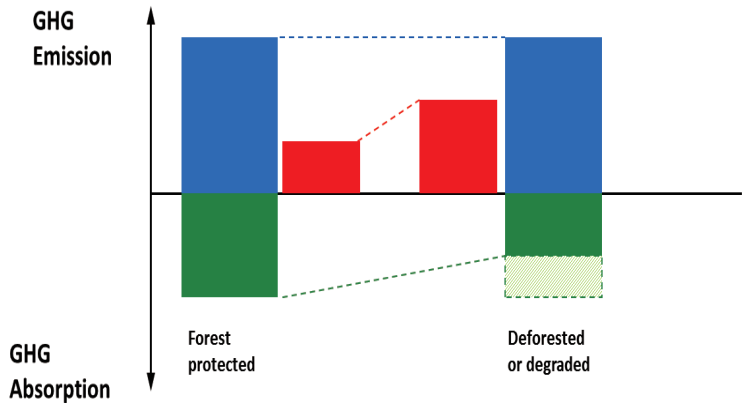
REDD+ Finance

- **REDD+ Finance refers to the finance provided for the activities on REDD+.**
- REDD+ is an abbreviation of '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'.

Concept of REDD+



GHG emission and REDD+

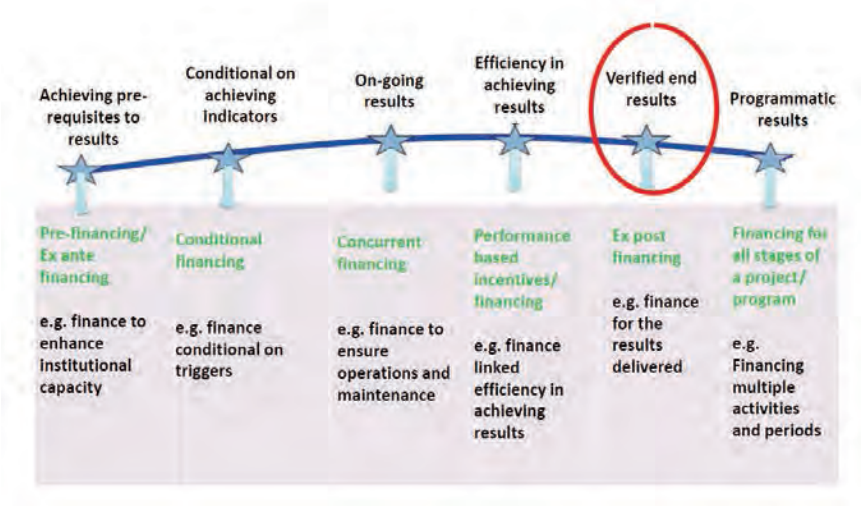


- In view of financiers, forest will produce timbers as monetary valuable products, but other products such as Non Timber Forest Products (NTFP) and indirect effect of forest such as carbon sequestration, biodiversity and disaster protection effect are not considered as valuable products.
- Therefore, one of the issues on REDD+ finance is how to incorporate such indirect values in financial appraisal and/or turn such indirect values into monetary value.

Results-based Finance (RBF)

- **Results-based Finance (RBF) refers to the finance which disbursement will be made based on the achievement to the expected result.**
  - Since RBF will be provided based on the "Results", some indicators for monitoring and evaluation will be set before concluding financial agreement.
  - Once indicators achieve the targets (or trigger), then disbursement will be made. In this sense, this scheme deems similar to the conditional finance and Structured Adjustment Loan in 1980s.

Scheme on RBF



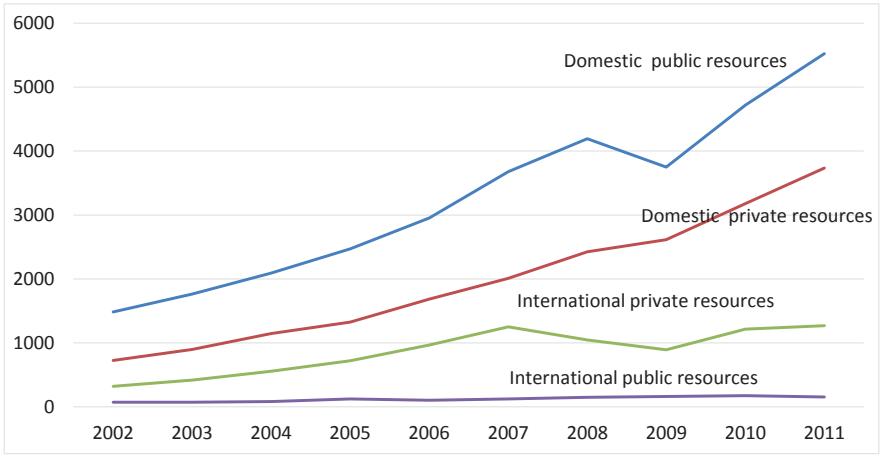
Project Types eligible for use of Climate Finance

- In general, any types of projects which are recognized as climate related activities will be eligible for the use of climate finance!
- But note that it depends on the financial institutions' policy.

Climate Finance trends in Asia

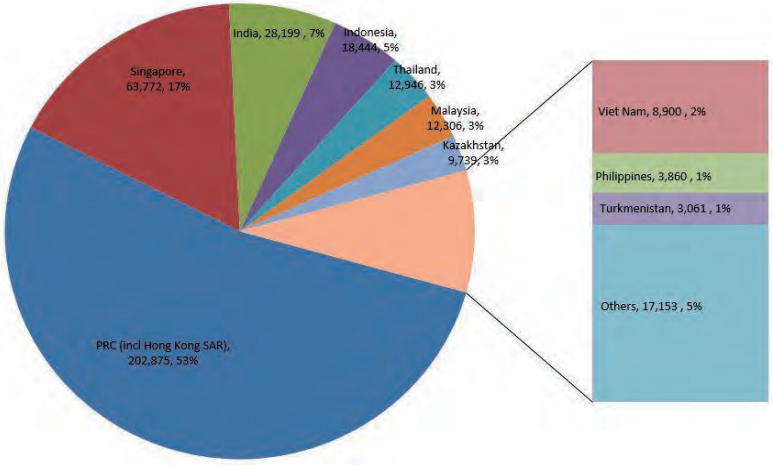
Trends in finance to developing countries

($ billion, 2011 prices), 2002–2011



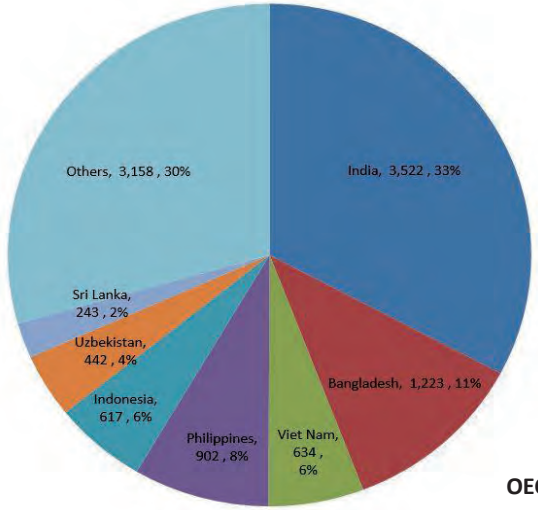
Sources: IMF, OECD, WDI, etc.

Share of Foreign Direct Investment Flows into Asian Developing Countries (2013, $ million)



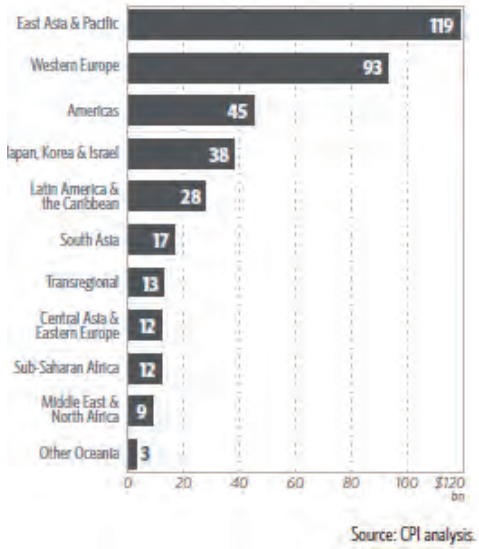
UNCTAD (2015)

Share of Climate Change Official Development Assistance Flow into Asian Developing Countries (2013, $ million)



OECD (2015)

Total climate finance breakdown by region, 2014 in USD billion



Source: CPI analysis.

- East Asia and the Pacific remained the largest destination of climate finance flows, accounting for 31% of the total or USD 119 billion, up by 22% from 2013.
- China alone accounted for 22% (USD 84 billion) of total finance.

GREEN CLIMATE FUND

Climate Finance Mechanism: Green Climate Fund

Juichiro Sahara

Session 3 Module 2

March 2016 | Bangkok, Thailand

Resource Mobilization

- Long term, predictable flow of climate finance

  →transformation to low emission and climate resilient economies
- Need for significant climate finance

  →build trust for ambitious global climate settlement

Resource Mobilization of GCF

Initial Resource Mobilization (IRM) 1

- IRM Pledging: GCF will maintain flexibility to receive additional contributions on an ongoing basis throughout the IRM period;
- IRM Period: The IRM exercise would secure financing for the 2015-2018 programming period;
- Trigger for Formal Replenishment Process: Once GCF's cumulative funding approvals exceed 60 per cent of the total contributions received during the IRM, GCF will initiate a formal replenishment process.

Initial Resource Mobilization (IRM) 2

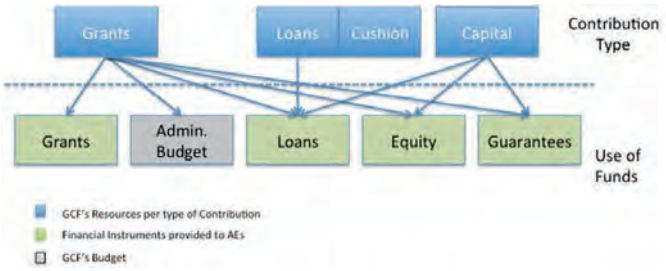
Source of Funding

- Developed country Parties to the Convention
- Other sources, public and private, including alternative sources (non-parties to the Convention, public and private entities and philanthropic foundations, among others).

Initial Resource Mobilization (IRM) 3

Types of Contributions

- Grants from public and private sources
- Paid-in capital contributions from public sources
- Concessional loans (cushion) from public sources



IRM: Progress

- **Pledges**: By the end of 2015, over USD 10 billion equivalent from 46 state, region and city governments, including 9 developing countries
- **Agreements**: Finalized over USD 6.6 billion equivalent into agreements. http://www.greenclimate.fund/contributions/pledge-tracker
- **Commitment Authority**

Table 1. Total commitment authority as of 31 December 2015

Millions of United States dollars

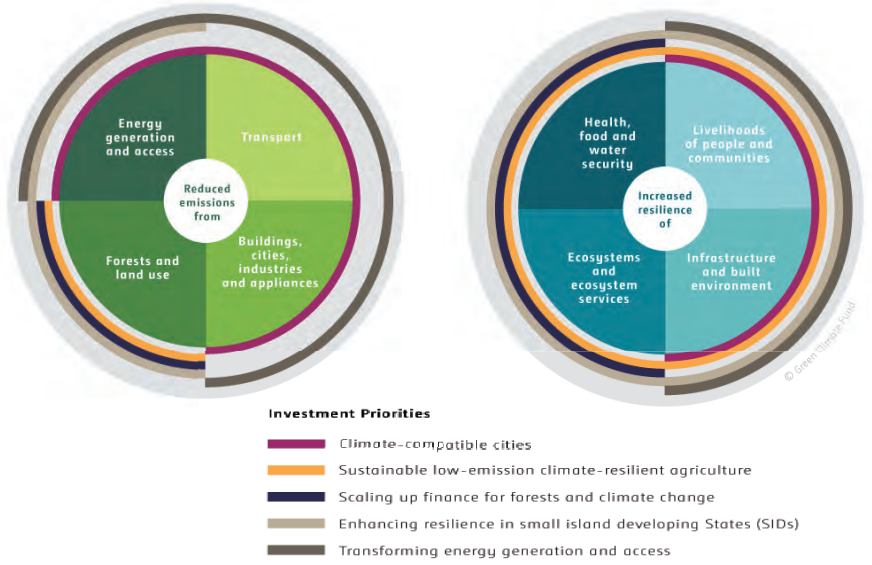
	Cash	Promissory Notes (PNs)[a]	Funding Decisions	Total
Commitment Authority	669	1,213	255	1,627

[a] Amount is in United States dollar equivalent based on Interim Trustee`s Green Climate Fund Trust Fund Report as of 31 December 2015.

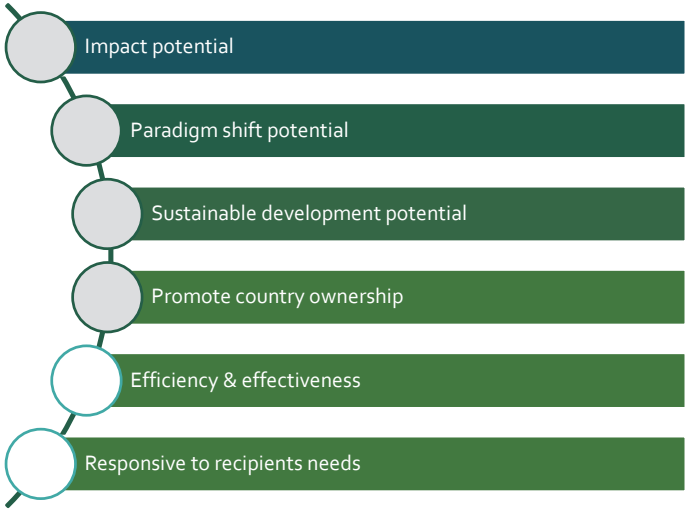
What kind of projects / programmes are we looking for?

Can be public or private sector projects/programmes that have one or more impacts in these 8 result areas:

Potential Investment Priorities: Clustering Expected Results



The Fund's Six High-level Investment Criteria



GREEN CLIMATE FUND

MODULE 3

CLIMATE FINANCE CASE STUDIES

Regional Training on Climate Finance in Southeast Asian countries

CASES

1) Zambia Climate Finance: Strengthening water security
2) Guyana REDD+ Investment Fund: Climate Finance for Low-Deforestation and Low-Carbon Development
3) Rajasthan, India: Climate finance for concentrated solar power

CASE 1

ZAMBIA CLIMATE FINANCE

A Challenge for Strengthening Water Security

Based on: Savage, M. et al. (June 2015) *Climate Finance and Water Security: Zambia case study.* Oxford: Oxford Policy Management.
**Case commissioned by WaterAid*
http://www.wateraid.org/~/media/Publications/Climate-change-and-water-security--synthesis-report.pdf?la=en

Addressing the Climate Change and Water Security Nexus

- The expected changes to rainfall patterns in Zambia will result in more prolonged dry periods, as well as more intense rainfall during the wet season.
  - *This has already been apparent over the last two decades through the increase in the frequency, intensity and magnitude of both droughts and floods.*
- Zambia is vulnerable to these climate change impacts because:
  - *95% of agriculture is rain fed;*
  - *The lack of water storage and the lack of adequate systems to cope with droughts and floods;*
  - *Reduced ability to generate hydro-electric power;*
  - *High cost of damages to infrastructure from flooding (estimated at a loss of USD 13.8 billion in GDP over the past three decades);*
  - *Loss of drinking water.*

Climate Policy in Zambia

- The Sixth National Development Plan has mainstreamed climate change as a national development policy (i.e. not merely an environmental consideration).
- The Disaster Management Act also includes references to climate change.
- Drafts of both a National Climate Change Policy (NCCP) and a National Climate Change Response Strategy (NCCRS) have been drafted, but are yet to be adopted.
  - *The NCCRS aims for climate proofing of vulnerable economic sectors (including agriculture, tourism, infrastructure, health, forestry, water, and energy)*
  - *It also outlines a number of possible projects and programmes for achieving a low carbon development pathway that mainstreams both adaptation and mitigation into these sectors.*
- The Interim Inter-Ministerial Climate Change Secretariat was established in 2012 to serve in the absence of these above permanent institutional arrangements.
  - *The main budget has come through the Pilot Program for Climate Resilience, funded by the Climate Investment Funds (implemented by the Multilateral Development Banks).*
- There is no formal climate finance structure in the country.

Accessed Funds

Fund	Amount	Key Aspects	Observations
Climate Investment Funds / Pilot Program for Climate Resilience (PPCR)	US $86m approved & US $7m disbursed (3 different components)	Support to institutional coordination arrangements; MoUs with sub-national and intra-ministerial units	Need to achieve broader buy-in and sustainability; IIMCCS closely associated and funded primarily by the PPCR
Global Environmental Facility (GEF)	US $8m approved & disbursed (3 projects)		Funding predominantly for electricity.
Least Developed Countries Fund (LDCF)	US $18m approved & US $4m disbursed (5 projects)	Diverse implementing partners; supported NAPA development	Limited support for coordination arrangements.

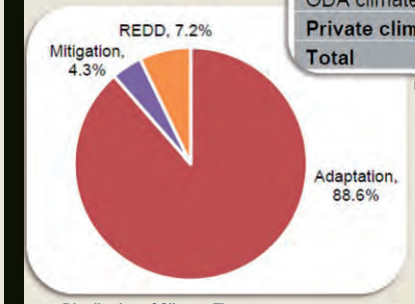
From Case document: pp.10

Inflows and Distribution of Climate Finance

Public and Private Climate Inflows (USD million)

	2009	2010	2011	Total	%
Public / international climate finance	**112**	**88**	**86**	**287**	11.1
Dedicated climate finance	3	10		13	0.5
ODA climate finance	109	78	86	274	10.6
Private climate finance	**561**	**1,100**	**645**	**2,306**	88.9
Total	**673**	**1,188**	**731**	**2,593**	100.0

From Case document: pp.11



Distribution of Climate Finance

Specific Funders include:
- The Pilot Program for Climate Resilience
- The Least Developed Countries Fund
- The GEF Trust Fund (GEF 4)
- UN-REDD
- Germany's International Climate Initiative
- Japan's Fast Start Finance

Climate Finance Projects in Zambia

- There are 12 reported climate finance projects in Zambia.
  - *1 project is related to Water Supply, Sanitation and Hygiene (WASH) and 1 project is related to Water Security Activities. These two projects account for 3% (or USD 3.5 million) of the total approved climate finance to date.*
  - *4 projects are indirectly related to water security, including the PPCR projects for strengthening climate resilience and reforestation/conservation which may provide water-related co-benefits. These account for 77% (or USD 80.9 million).*
  - *6 other projects are not related to water security and include: expansion of the electricity network; strengthening of early warning systems; and development of national policy. These account for 20% (or USD 20.9 million).*
- The projects in the first two categories are generally regional targeted and locally piloted, while the projects in the last category are generally national-level activities.
- Additionally, the World Bank is funding a National Water Resources Development Project to improve (i) water resources management, (ii) water resources development, and (iii) institutional support, and it is worth USD 50 million but is not accredited as a climate finance project.

Project Example: The national roll-out of the Sustainable Operation Maintenance Programme (SOMAP3)

Funder	Japan International Cooperation Agency (JICA)
Focus	Adaptation
Financial instrument	Grant
Project cost	USD 30,000
Approval/closing year	2011 / 2016

- The Japanese government has been supporting the construction of water supply facilities in Zambia since the 1980s.
- In 2005, they initiated a project to effective Operation and Maintenance systems to ensure sustainable water supplies in rural areas.
- The first phase of SOMAP was piloted in two districts, and during phase 2 it was implemented in four additional districts.
- Phase 3 of this programme aims to support the expansion of SOMAP to all 54 districts in the country through the implementation of the national Operation and Maintenance guidelines prepared during the previous phases of this programme.

Project Example: Adaptation to the effects of drought and climate change in agro-ecological zones 1 and 2

Funder	Least Developed Countries Fund (LDCF)
Focus	Adaptation
Financial instrument	Grant
Project cost	USD 13 million
Approval/closing year	2006 / 2015

- Through integrating adaptation activities in agricultural planning at national, district, and community levels, this project aims to reduce the vulnerability of communities to the impacts of climate change.
- This project focuses on achieving four outcomes:
  1. Climate change risks integrated into critical decision making processes for agricultural management at the local, sub-national and national levels;
  2. Agricultural productivity in the pilot sites made resilient to the anticipated impacts of climate change;
  3. National fiscal, regulatory and development policy revised to promote adaptation responses in the agricultural sector;
  4. Lessons-learned and knowledge management component developed.

**note: each of these outcomes are elaborated based on a set of associated project outputs*

Case Study Conclusions

- Water in Zambia is both a strategic energy resource and vital aspects of the countries rain fed agriculture system, but climate change will put the security of water resources at risk.
- However water security does not appear currently to be a priority area of focus in the country's climate finance projects.
- Institutional and policy frameworks in the country remain weak *(although drafted, major policies remain unapproved)*, and there is no formal structure for climate finance in the country.
- The existing climate change projects and programmes in the country have been supported by international agencies and development partners, while there remains in-country capacity needs for developing climate change adaptation and mitigation ideas into tangible and investable projects.

Source: Savage, M. et al. (June 2015) *Climate Finance and Water Security: Zambia case study.* Oxford: Oxford Policy Management. http://www.wateraid.org/~/media/Publications/Climate-change-and-water-security–synthesis-report.pdf?la=en

CASE 3

GUYANA REDD+ INVESTMENT FUND

Climate Finance for Low-Deforestation and Low-Carbon Development

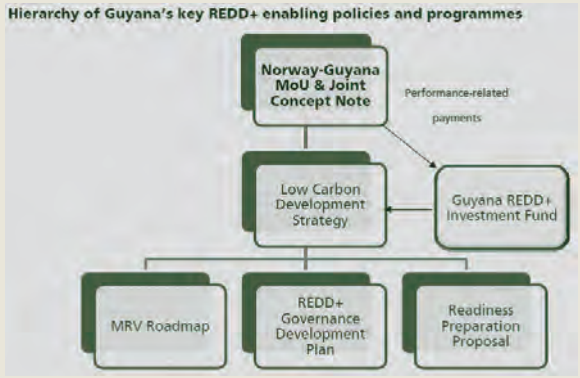
Based on: Frankfurt School – UNEP Collaborating Centre for Climate & Sustainable Energy Finance (2012) *Case Study: The Guyana REDD-plus Investment Fund (GRIF).* Frankfurt: UNEP Collaborating Centre for Climate & Sustainable Energy Finance http://fs-unep-centre.org/sites/default/files/publications/grifcasestudy2012final.pdf

Norway and Guyana join forces for REDD+

- In 2009, the governments of the two countries agree to work together to demonstrate " relevant, replicable model for how REDD+ can align the development objectives of forest countries with the world's need to combat climate change".
- The Guyana REDD-Plus Investment Fund (GRIF) was established as a public finance mechanism in alignment with the country's Low Carbon Development Strategy (LCDS).
- The LCDS establishes the main framework and direction of the climate finance projects and activities in Guyana.
- Along with the LCDS, the country is strongly guided by its existing national climate change policies, and are jointly headed by the Office of the President and the Office of Climate Change.

A Framework for Performance-Based Financial Support

- Norway and Guyana agreed to a framework for performance-based financial support of up to USD 250 million over five years.
- This was to support REDD+ activities put forth in the LCDS and later formalised in the REDD+ Governance Development Plan



From Case document: pp. 9

Three Pillars for Long-Term Economic Growth with Low-carbon, Low-deforestation Development

- Avoiding Deforestation: By capitalizing on the REDD+ mechanism, Guyana can avoid cumulative forest-based emissions of over 1.5 GTs of CO2 by 2020 that would have otherwise been produced through economic use of the forest.
- Low Carbon Development: REDD+ payments gained through avoided deforestation can be used by Guyana for sustainable economic growth and additional climate change initiatives.
- Adapting to Climate Change: REDD+ payments can be used to assist in promoting climate resilience by investing in priority climate adaptation infrastructure and measures e.g. flood control or early warning systems for extreme weather events.

From Case document: pp. 10

Guyana's REDD-Plus Investment Fund

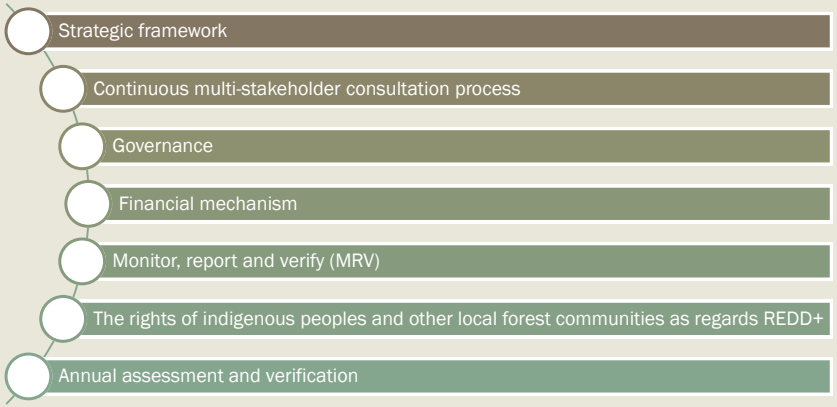
- The fund is established for financing activities identified under the country's Low Carbon Development Strategy.
- Norway is providing USD 250 million to fund in performance-based payments over a five year period.
- Independent verification of Guyana's deforestation and forest degradation rates, as well as their progress on implementing REDD+ activities, is required.
- The GRIF represents the first fund to be implemented in a National REDD+ strategy globally.
- Governance: The fund is managed by a secretariat and oversight/decision making is given to a steering committee. The Inter-American Development Bank, UNDP and the World Bank serve as partners for reviewing the activities conducted under this fund; and the World Banks's International Development Association serves as the trustee of GRIF through financial intermediary services.
- The Government of Guyana (and other entities) serve as the implementing entities.

Phased approach to REDD+ under GRIF

- A phased approach is developed that recognises the need for long-term funding beyond Norway's initial support.
- Four main funding categories are identified:
  - *Carbon markets,*
  - *Market-linked mechanisms,*
  - *Voluntary funding mechanisms,*
  - *The UNFCCC-mandated global model for REDD+*

  ** To carry out the global efforts for REDD+ it is recognised that additional private capital will need to be leveraged.*
- Over a four phased approach:
  - *Phase 1 (2009): Launching LCDS and establishing MRV system;*
  - *Phase 2 (2010-2015): Transitional period – investing in capacity building, human capital and efforts to build a low-carbon economy;*
  - *Phase 3 (2013-2020): Continued payments to avoid deforestations will be invested in low-carbon economy, capacity building, and climate change adaptation;*
  - *Phase 4 (beyond 2020): Full-scaled REDD+ mechanism should provide incentives at the economic value to the nation of Guyana's forests and account for periodic increasing value of the forests.*

Enabling Indicators
for measuring interim performance



From Case document: pp. 21

GRIF Project Portfolio *(as of June 2012)*

- Amaila Falls Hydropower Project
- Institutional Strengthening in support of Guyana agencies implementing LCDS projects
- Amerindian Development Fund Project
- Amerindian Land Titling Project
- Micro and Small Enterprise and Building Alternative Livelihoods for Vulnerable Groups Project
- Cunha Canal Rehabilitation Project

Project Example:
Amaila Falls Hydropower Project

- Flagship LCDS initiative to provide 165 MW electricity generation through hydropower (~90% of the country's domestic power needs).
  - *This will offset the country's current dependence on imported fossil fuel and a energy system based currently on a 85% petroleum / 15% biomass mix;*
  - *This will also reduce the very high end-user electricity tariffs in the country.*
- It is hoped that the project will encourage economic growth, regional competiveness, and both private sector and foreign direct investment by providing reliable generation of clean energy.
- The total costs of over USD 700 million represent the single largest investment in Guyana to date.
  - *Debt financing is being provided by the China Development Bank and the Inter-American Development Bank & Equity Financing is being provided by the Government of Guyana and the Sithe Global Group at a 70:30 debt/equity ratio*
- Guyana Power and Light will operate the project for 20 year, after which the facilities will revert to the Government of Guyana at no cost. During this 20-year period, the project is expected to yield USD 2 billion in profits.

Case Study Conclusions

- The existing government policies create an important groundwork for the effective establishment of national climate finance funds.
- The use of a formal cooperation agreement between the two countries enabled an innovative and forward-thinking model of performance-based financing for REDD+ activities.
- The mechanism for performance-based payments must be transparent, rules-based and must include a strong system of forest governance, accountability and enforcement.
  - *This must also provide for multi-stakeholder consultations, civil society engagement and inclusion of indigenous and vulnerable communities.*
- An internationally recognised system of measuring, reporting and verification (MRVS) is crucial.
- Finance mechanisms and funds can be designed towards receiving different source and types of funding from a diversity of sources.
- *The challenge for any REDD+ programme is to provide incentives for alternative economic activities to timber and mineral extraction.*

Source: Frankfurt School – UNEP Collaborating Centre for Climate & Sustainable Energy Finance (2012) *Case Study: The Guyana REDD-plus Investment Fund (GRIF).* Frankfurt: UNEP Collaborating Centre for Climate & Sustainable Energy Finance
http://fs-unep-centre.org/sites/default/files/publications/grifcasestudy2012final.pdf

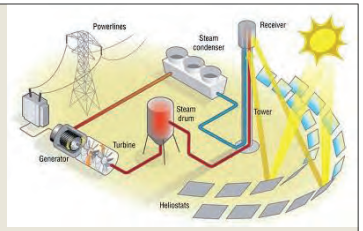
CASE 3

RAJASTHAN, INDIA

Climate Finance for Concentrated Solar Power

Based on: Stadelmann, M. et al. (March 2014) *The Role of Public Finance in CSP – Case study: Rajasthan Sun Technique, India*. San Francisco: Climate Policy Initiative. ** case prepared for the San Giorgio Group and financially supported by the Climate Investment Funds*
http://climatepolicyinitiative.org/wp-content/uploads/2014/01/SGG-Brief-The-Role-of-Public-Finance-in-CSP-Background-and-Approach-to-Measure-its-Effectiveness.pdf

Concentrated Solar Power



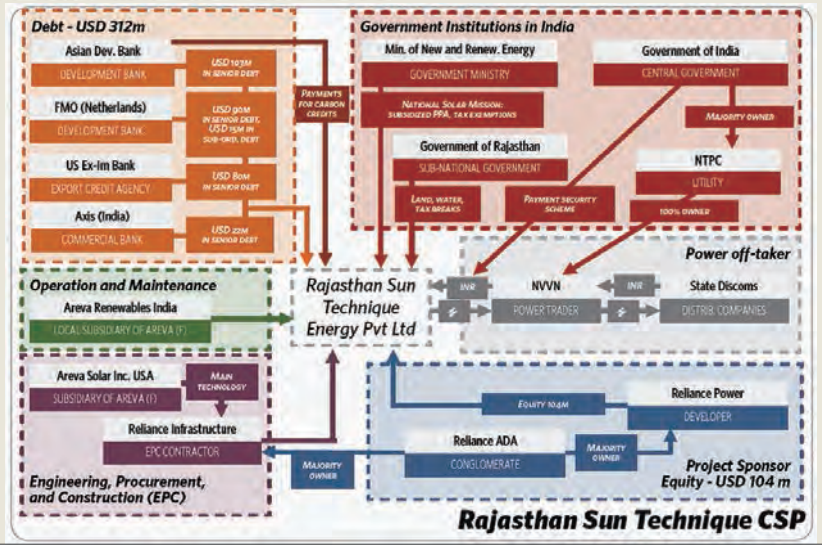
- Using mirrors to concentrate a large area of sunlight, or solar thermal energy, into a small area.
- Electricity is produced by converting the heat from this thermal energy into steam (or other forms of heat engines) to drive a turbine.
- Newer practices are also able to capture and store this heat in fluidized silica sand, thus allowing the thermal storage and heat transfer to be used for electricity generation over a 24 hour period.

- Over the past ten years the power generation from this technology has grown by a factor of 12, from 354 MW_p in 2005 to 4,400 MW_p in 2014

The 100 MW Rajasthan Sun Technique CSP plant

- In March 2015, the new CSP plant was dedicated and is expected to generate 250 GWh of clean energy annually, ~the equivalent to consumption of 230,000 households.
- This plant is the largest linear Fresnel CSP plant in the world, and the largest CSP plant currently in India.
- It contributes towards India's Jawaharlal Nehru **National Solar Mission** (part of the National Action Plan on Climate Change) which aims to increase India's solar electric generation capacity to 100 GW by 2022 (original target was 20 GW when mission was inaugurated in 2010, but increased to the 100 GW target in 2015).
  - *This also takes into account the expanded need of an additional 75 GM of new power generation capacity in the country before the end of the decade, and if this was generated under the current energy mix which is heavily dependent on coal (61% of total capacity) then this would result in a 17% increase of India's total CO_2 emissions*
- The National Solar Mission is supporting both the use of PV and CSP technologies.
  - *While PV is also implemented with the support of state level policies, CSP has been driven mainly by the National Solar Mission*
- The project also benefits from a subsidized power purchase agreement (PPA) and payment security scheme to ensure its financial viability.

Project Stakeholders



From Case document: pp. 4

Project Investment

** Amounts shown in millions*

SOURCE	FINANCING TYPE	AMOUNT *	AMOUNT * IN USD	SHARE
Debt				
US Ex-Im Bank	Export Credit Loan	USD 80	80	19%
ADB	Senior Loan	USD 103	103	25%
FMO	Senior Loan	USD 90	90	22%
FMO	Subordinated Loan	USD 15	15	4%
Axis Bank	Senior Loan	INR 1,140	22	5%
Equity				
Reliance Power	Equity	INR 5,500	104	25%
Total Project Cost			414	

From Case document: pp. 7

Ensuring Local Benefit

- The tender for this project included specific local content requirements, including the guarantee that a minimum of 30% of the project value would be sourced in the country.
- Through many innovative efforts, it is estimated that 60% of the projects value has been sourced from within the country.
  - *Infrastructure and Project Management has been completely localized.*
  - *Materials, including cement and steel, have been locally sourced.*
  - *The assembly of the solar receivers on site was supported by the training of a highly skilled local workforce.*
  - *These aspects will further support the country in developing a competitive solar industry.*
- Financially, the project benefits from the national government's coupling of the price of expensive solar power with the price of cheap coal power produced by public entities, and thus selling the combined energy package to distribution companies at a market price.
- In return, the project should generate around USD 170 million in tax revenues over its lifetime.

Ways to Address Risks for Future CSP Projects

- Efforts to improve the supporting polies under the National Solar Mission could better ensure the financial strength and implementation of additional projects.
  - *As currently, they are heavily dependent on the strong financial support from private actors and on long-tenor public debt.*
- Incentivize the inclusion of storage in new CSP projects as this would benefit the national power system and is a key advantage of CSP.
- Foreign exchange risk can cause sever limitations for development, and efforts for hedging this exchange risk (e.g. by denominating power tariffs in hard currency and providing lending in local currency) can improve future project feasibility. Additional efforts can be taken to support local financing and lending from national commercial banks.
- Scaling up CSP deployment will support cost reductions, while the promotion of local manufacturing will strengthening the in-country capacity for building a competitive solar industry.

Case Study Conclusions

- Four Important Enabling Elements:
  1) *The subsidized power purchase agreement (PPA) and the payment security scheme – which closed the viability gap and reduced the risks.*
  2) *The longer maturity rate of international debt improved the overall project economics.*
  3) *Comprehensive warranties by the technology provider reduced potential technology risks for both the developer and the investors.*
  4) *An experienced and financial strong private developer was able to mobilise the overall project and to also take on a project with low equity returns to become a first-mover in this new market.*

Source: Stadelmann, M. et al. (March 2014) *The Role of Public Finance in CSP – Case study: Rajasthan Sun Technique, India*. San Francisco: Climate Policy Initiative. http://climatepolicyinitiative.org/wp-content/uploads/2014/01/SGG-Brief-The-Role-of-Public-Finance-in-CSP-Background-and-Approach-to-Measure-its-Effectiveness.pdf

Thank You

for your kind attention!

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Accessing Climate Finance

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Regional Training on Climate Finance in Southeast Asian Countries
28-29 March 2016

Contents of this session

- Effective Project Development and Management
- Application processes and project criteria/requirements
- Case of Green Climate Fund (by Mr. Sahara)

Effective Project Development and Management

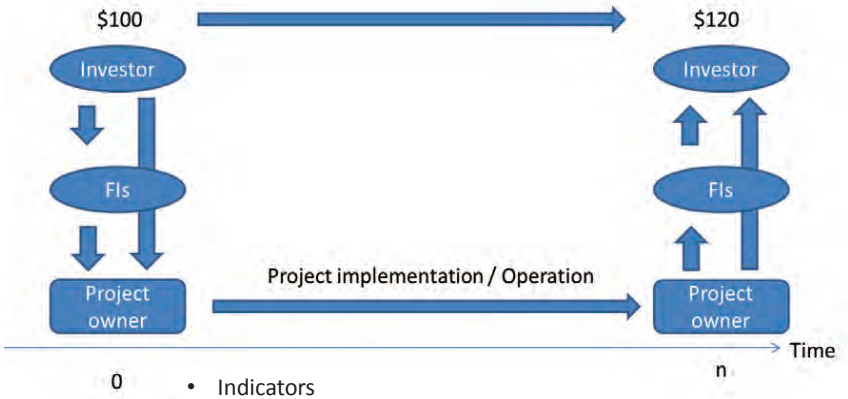
Accessing climate finance

- There are a lot of and a variety of financial institution in the world. In this sense, accessing climate finance is not so difficult task.
- However, receiving financial support is another issue. The financial institutions will see the project through their own view.
- Therefore, it is helpful to understand how financial institutions and investors consider and make decision on financing.

What is major issues for Investors?

- Investors and Financial institutions generally consider how to manage their fund. They have monetary asset which they have no plan to use currently but may be used in future. So, they may consider to invest/finance in financial products (such as savings and deposit), commodities and/or projects.
- This is explained by the concept of "**Time preference**". Time preference refers to the preference of asset holders whether they will use their asset now or in future. The decision factor may be varied depending on the condition of asset holder.
- Once they decide to use their asset in future, they will consider how to keep their asset until when they need to spend their asset. There are several options for them, but those options may differ depending on the level of **profitability** and **Risks**.

Finance flows between different times



- Indicators
  - Net Present Value (NPV)
  - Return on Investment (ROI)
  - Return on Asset
  - Internal Rate of Returns (IRR) etc

Major risks associated with project

Stage	Country (Sovereign) Risk	Project Risk
Planning & Design	**Political and Administrative Risk** -Policy, Law and Institutional Change -License, Approval **Economic Risk** -Exchange Risk -Transfer Risk	**Regulatory Risk** -No Feasibility -Failure/Delay of Approval -Failure/Delay of Finance closure -Stakeholder's objection -Failure of conclusion of contract and agreements
Implementation	-Economic Crisis Risk -Credit Risk **War & Riot Risk**	**Construction Risk** -Delay of completion -Default of contractor -Stakeholder's objection -Environmental Impact -Force Majeure
Operation		**Operation risk** -Break down, accident -Low production -Default of Suppliers/ Buyers/ Project itself -Force Majeure

Key factors for investment decision making

- Expected **output and outcome** are also important factor for decision making by investors and financiers.
  - Recently, most of investors and financial institutions concern on the ESG (Environment, Social and Governance) investment.
  - Rather, they think their investment and finance will generate additional (or indirect) value for the society.
  - This is because investors and financiers need to secure their prudence from the market otherwise they will not be able to raise fund from the market.
- Thus, for effective project development and management, risk management and realization of expected outcome by the project are indispensable.
- Therefore, well-documented project can show not only the risks and expected outcome identified but also the measures on **how to mitigate risks and ensure the realization of expected outcomes**.

Application processes and project criteria/requirements

Application Processes

- Application processes for climate finance varies depending on the rule of each financial institutions.
- Major climate funds such as GCF, GEF and Adaptation Fund request to nominate **national focal point**.
- In case of development finance, bilateral donors will frequently communicate with national planning ministry and multilateral financial institutions often communicate with the ministry of finance.

Direct Access

- Most of the investors and financial institutions allow recipients to access them directly.
- Direct access is probably the most ideal way to obtain finance and investment, particularly, if the recipient often communicates with some of financial institutions.
- In view of financial institutions, it would be no big matter if their clients access to them and request for finance, since finance institutions have already had **enough information** on their clients and may be familiar with the behavior of the client.
- However, if it is the first contact from recipient to the financial institution, financial institutions need to collect and analyze information on the recipient, and decide whether the recipient is appropriate for starting new transaction.

Access through National focal points

- Generally, international public finance institutions including international climate funds request to the recipient to communicate through **national focal point**. In such case, recipients should consult with national focal point when they need to access to the international public finance institutions.
- National focal point will be designated by the Government. So, ministry or agency which is serving as national focal point is varied depending on the policy of the government. Due to its nature, national focal point should know their climate and development policy as well as the characteristics of and procedure for application of finance from the fund.
- In view of financial institutions, national focal point is considered as a representative of the country government. Therefore, if national focal point works appropriately, both financial institutions and recipient will be benefitted from national focal point.

Access through Intermediaries / implementing entities

- Some of financial institutions are assigned as intermediaries or implementing entities of the fund. Intermediaries should **meet the fiduciary standard** of the fund.
- In this sense, Intermediaries/implementing entities will **represent the fund**, and provide services to their clients as similar to the direct access.

Project criteria and/or requirement

- Each fund, financial institutions and investors have their own criteria and/or requirements.
- Special purpose funds such as climate funds request the recipients to meet the criteria and/or requirements, since purpose of the funds are strictly restricted.
- On the other hand, other financial institutions such as commercial banks may set very small number of criteria and/or requirement.

GREEN CLIMATE FUND

Accessing Climate Financing: Green Climate Fund

Juichiro Sahara

Session 6 Module 4

March 2016 | Bangkok, Thailand

GREEN CLIMATE FUND

Engaging with GCF

- Establish and Maintain a national designated authority (NDA) or focal point
- Identify and seek accreditation of entities to access resources from the Fund
- Develop projects and programmes to bring forward for funding through accredited entities

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NDAs and Focal Points

- Selecting an NDA or focal point
- Mandate and responsibilities of NDAs
  - Provide broad strategic oversight of GCF's activities in their country
  - Convene public, private and civil society stakeholders to identify priority sectors to be financed by the Fund.
  - Communicate nominations / no objection of entities seeking accreditation to GCF under the 'direct access' track.
  - Implement the no-objection procedure on funding proposals submitted to GCF
  - Provide leadership on the deployment of readiness and preparatory support funding in the country.

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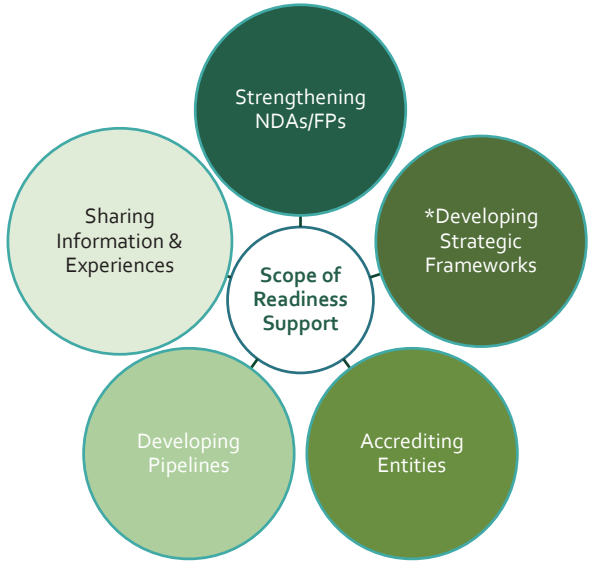
Scope of Readiness Activities



*** The readiness programme supports countries in identifying strategic investment priorities and preparing or strengthening low-emission development strategies or plans, NAMAs, NAPs, and NAPAs.**

Accreditation Entities (AEs)

33 entities accredited to date

As of March 2016

Role of AEs

- Developing and submitting funding proposals for projects and programmes
- Overseeing management and implementation of projects and programmes
- Deploying a range of financial instruments within their respective capacities (grants, concessional loans, equity and guarantees)
- Mobilizing private sector capital

Accreditation Framework – Who can apply for accreditation?

- **All entities**, including international, regional, national and subnational and public and private entities, can apply for accreditation through one of two modes of access:
- **Direct access track**: for regional, national and sub-national entities.
  - NDA nomination required
  - Entities may be eligible to receive readiness and preparatory support on accreditation
- **International access track**: for international entities, including United Nations agencies, multilateral development banks, international financial institutions and regional institutions

Accreditation Process

Accreditation Requirements – Fiduciary Standards and ESS*

Basic Fiduciary Standards

- Key administrative and financial capacities
- Transparency and accountability

Specialized Fiduciary Standards

- Project management
- Grant award and/or funding allocation mechanisms
- On-lending and/or blending

Environmental and Social Safeguards (ESS)

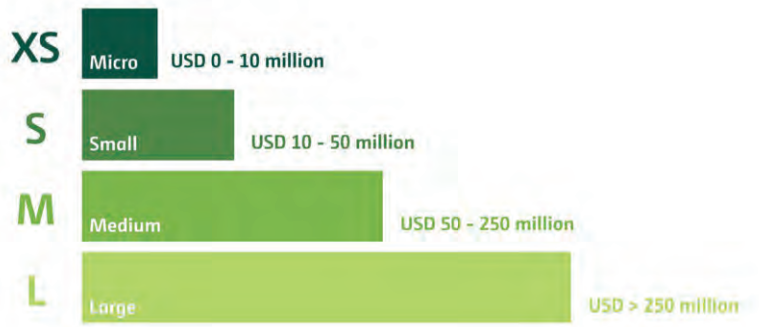
Institutional ESMS policy-level:
✓**Performance Standard (PS) 1:** Assessment and management of relevant PS1-8 environmental and social risks and impacts through an environmental and social management (ESMS)

Project-level:
- ✓ **PS2**: Labor and working conditions
- ✓ **PS3**: Resource efficiency and pollution prevention
- ✓ **PS4**: Community health, safety & security
- ✓ **PS5**: Land acquisition & involuntary resettlement
- ✓ **PS6**: Biodiversity conservation & sustainable management of living natural resources
- ✓ **PS7**: Indigenous peoples
- ✓ **PS8**: Cultural heritage

* For more details, refer to the initial guiding accreditation framework, fiduciary standards, and ESS.

Size of Project / Activity within a Programme

Total Projected Costs*



* At the time of application, irrespective of the portion that is funded by the Fund and, if applicable, other sources, for an individual project or activity within a programme.

Funding for Projects / Programmes

- After accreditation, an accredited entity can submit project and programme proposals for funding.
- Funding proposals will be evaluated against the Fund's investment criteria.
- Accredited entities are encouraged to inform NDAs or focal point when they intend to operate in their countries

* Fund also accepts spontaneous proposal submissions received from NDAs, IEs and intermediaries

Projects and Programmes 1

GCF has approved USD 168 million of GCF funding for projects and programmes worth USD 624 million

1. Building Resilience of Wetlands in the Province of Datem del Marañón in Peru: Profananpe (GCF funding: USD 6.2 million)
2. Scaling Up the Use of Modernized Climate Information and Early Warning Systems in Malawi: UNDP (GCF funding: USD 12.3 million)
3. Increasing the Resilience of Ecosystems and Communities through the Restoration of the Productive Bases of Salinized Lands, in Senegal: CSE (GCF funding: USD 7.6 million)
4. Climate Resilient Infrastructure Mainstreaming in Bangladesh: KfW (GCF funding: USD 40 million)

Projects and Programmes 2

5. KawiSafi Ventures Fund in Eastern Africa: Acumen (GCF funding: USD 25 million)
6. Energy Efficiency Green Bond in Latin America and the Caribbean: IDB (GCF allocation: USD 217 million)
7. Supporting Vulnerable Communities to Manage Climate Change Induced Water Shortages in Maldives: UNDP (GCF funding: 23.6 million)
8. Urban Water Supply and Wastewater Management in Fiji: ADB (GCF funding: USD 31 million)

PSF Summary Sheet

What is the PSF?	• A facility that catalyzes private sector engagement in climate-sensitive projects and investments in developing countries
Why was the PSF created?	• To mainstream the private sector into climate change mitigation and adaptation
How does the PSF work?	• Ensures private sector needs are incorporated into country climate change priorities and strategies • Works through intermediaries to finance climate change projects and programmes • Receives spontaneous proposals and responses to RFPs by intermediaries looking to channel GCF resources
What types of instruments will the PSF use?	• Grants, concessional loans, equity, guarantees and others when appropriate
Which geographies and activities does the PSF cover?	• All developing country Parties to the United Nations Framework Convention on Climate Change • Clean energy, transportation, logistics, construction/building, manufacturing, forestry & land use, health, water, food & agriculture, etc. • Large, medium, small, and micro enterprises, projects and programmes

The following Private Sector financial intermediaries should consider accreditation:

□ Publically listed banks regulated by Central Banks and rated by a major risk rating agency;

□ Private Equity houses and Investment firms with more than US$100 million in assets under management;

□ Regulated insurances companies.

□ Others

PSF Summary Sheet

What types of interventions will the PSF make?	• Funding climate risk assessment models and tools used in decision-making • Long-term debt; liquidity backstops and refinancing; concessional loans to assist in absorbing high up-front capital expenditure requirements • Equity required to develop a project to full bankability • Guarantees to bear specific risk and make possible the crowding in of financiers that would have otherwise not invested • Insight into government priorities, policies and strategies • Platform to share knowledge, technology, opportunities and market intelligence
How can the private sector access the PSF?	• Financial intermediaries that meet the GCF's fiduciary standards and environmental and social safeguard requirements apply to become accredited and channel GCF resources • Accredited Intermediaries present funding proposals to the GCF, either spontaneously or as a response to an RFP

The following Private Sector financial intermediaries should consider accreditation:

□ Publically listed banks regulated by Central Banks and rated by a major risk rating agency;

□ Private Equity houses and Investment firms with more than US$100 million in assets under management;

□ Regulated insurances companies.

□ Others

GREEN CLIMATE FUND

Managing Climate Finance Projects

Tomonori SUDO, Ph. D.,
Associate Professor,
Ritsumeikan Asia Pacific University

Regional Training on Climate Finance in Southeast Asian Countries
28-29 March 2016

Contents of this session

- Working with national climate finance focal points
- Domestic management of Climate Finance
- Monitoring and Evaluation, Reporting Criteria and MRV
- Case of Green Climate Fund (by Mr. Sahara)

Managing Climate Finance Projects

- Project management is one of the most important works to realize objectives and expected outcomes of the project.
- Well-managed project can **reduce risks and costs**. Therefore, not only project owner but also investors and financial institutions as well as regulatory bodies concern on the better project implementation.

Working with national climate finance focal points

- National focal point for climate funds will play an important role to bridge between the funds and recipients of the finance.
- The national focal point is expected to serve as a window for both funds and recipient.

Domestic management of Climate Finance

- Since the project will be implemented in the host country, project should be managed under the domestic rules and conditions.
- On the other hand, **frequent change of policies, vulnerability of markets and legal system will be considered as risks** associated with the project. In this sense, stable condition of national circumstances will be essential for better project management.
- When the host country receives international climate finance, international monetary flow will take place. This may affect to the country's policies such as macroeconomic policy, monetary policy, investment policy, employment policy, industrial development policy etc.
- Therefore, it needs to identify the impact on the country's policy due to inflow of climate finance, and take appropriate policies and measures reflecting such changes.

Monitoring and Evaluation, Reporting Criteria and MRV

- Monitoring and evaluation process is indispensable for every climate funds, investors and financial institutions to check whether the project achieves its objectives, expected outcomes.
- Based on the monitoring and evaluation, lessons learned will be identified and those will be applied to another projects. Such knowledge will be reflected Financial Institutions' **appraisal/due diligence** process as well.
- In addition, according to the UNFCCC, Non Annex parties are also requested to submit **biennial update reports (BUR)** including information on the receipt of finance and technology as well as inventory of GHG.

Scope of BUR

(FCCC/CP/2011/9/Add.1 Annex III)

- 2. The scope of biennial update reports is to provide an update to the most recently submitted national communication in the following areas:
  - (a) Information on national circumstances and institutional arrangements relevant to the preparation of the national communications on a continuous basis;
  - (b) The national inventory of anthropogenic emissions by sources and removal by sinks of all greenhouse gases (GHGs) not controlled by the Montreal Protocol, including a national inventory report;
  - (c) Information on mitigation actions and their effects, including associated methodologies and assumptions;
  - (d) Constraints and gaps, and related financial, technical and capacity needs, including a description of support needed and received;
  - (e) Information on the level of support received to enable the preparation and submission of biennial update reports;
  - (f) Information on domestic measurement reporting and verification;
  - (g) Any other information that the non-Annex I Party considers relevant to the achievement of the objective of the Convention and suitable for inclusion in its biennial update report.

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Managing Climate Finance Projects: Green Climate Fund

Juichiro Sahara

Session7 Module 4

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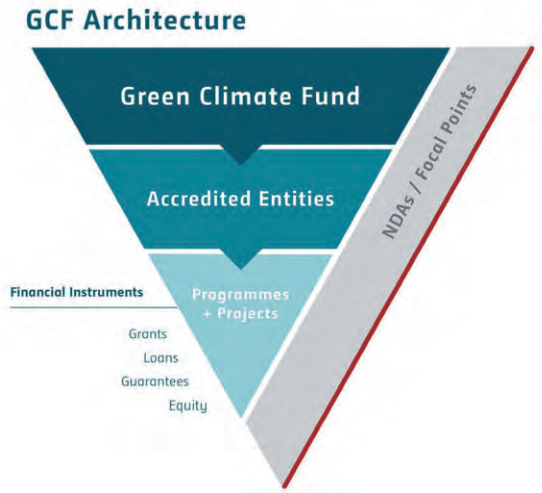
GREEN CLIMATE FUND

The Fund and its Partners



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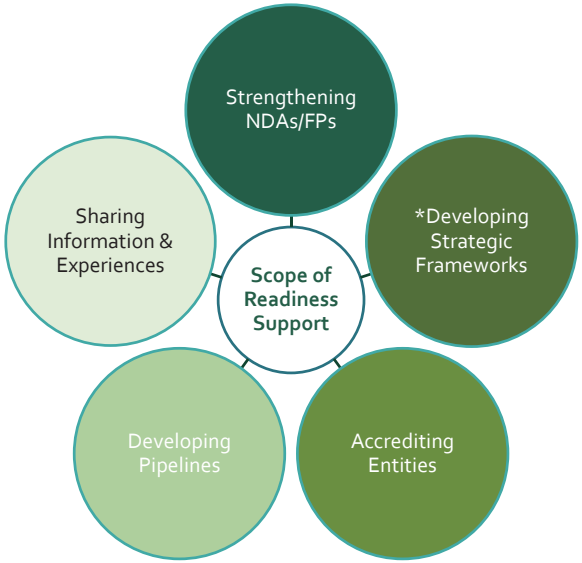
Scope of Readiness Activities

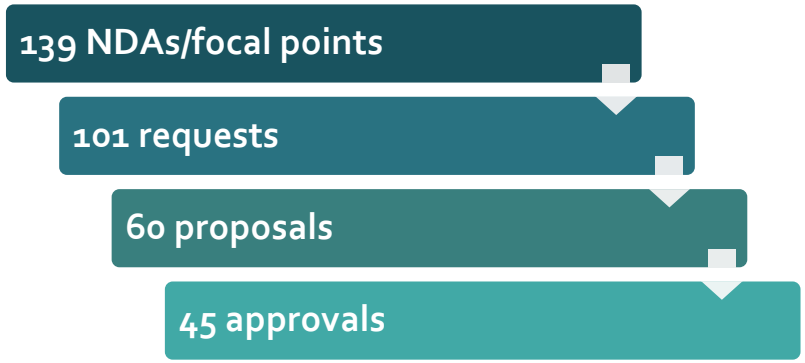


*** The readiness programme supports countries in identifying strategic investment priorities and preparing or strengthening low-emission development strategies or plans, NAMAs, NAPs, and NAPAs.**

GREEN CLIMATE FUND

Readiness requests & approvals

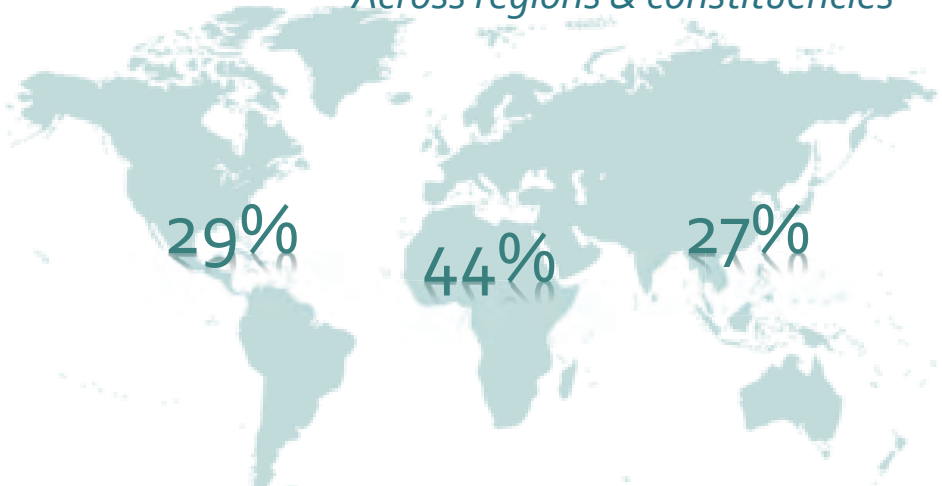
Number of countries



USD 11.2 million in approvals

Readiness proposals approved

Across regions & constituencies



67% SIDS, LDCs & African States

Support for NDAs/focal points

Activity area 1+2

17 countries accessing directly

13 agreements signed

Disbursements to 4 countries

Support to NDAs/focal points

Case of Rwanda

Approved	Disbursed	Duration
USD 300,000	USD 120,000	12 months

Outcomes & outputs expected

- Country programme developed
- Stakeholder coordination held
- No-objection procedure established

Support to direct access entities

Activity area 3

15 entities nominated by 12 countries

In-kind support to 51 entities nominated by 36 countries

Support to direct access entities
Case of a Central American entity

Nominated by	Amount spent	Duration
Honduras	USD 42,000	6 months

Outputs delivered

- Assessed fiduciary and ESS standards
- Developed action plan to address gaps

Outcomes achieved

- Application submitted
- Stage I review under way

Support for pipeline development
Activity area 4

Country	Delivery Partner	Amount Requested	Duration
Vanuatu	SPREP	USD 137,000	5 months

Purpose

- Determine climate information services needs

Proposed activities

- Analysis of other CIS projects
- Consultation with stakeholders
- Design assessment framework & baseline

Knowledge sharing
Activity area 5

- 4 regional workshops
- 1 training session for entities
- 4 NDA/focal point visits
- Information products

GREEN CLIMATE FUND

Developing Supportive Infrastructures for Climate Finance

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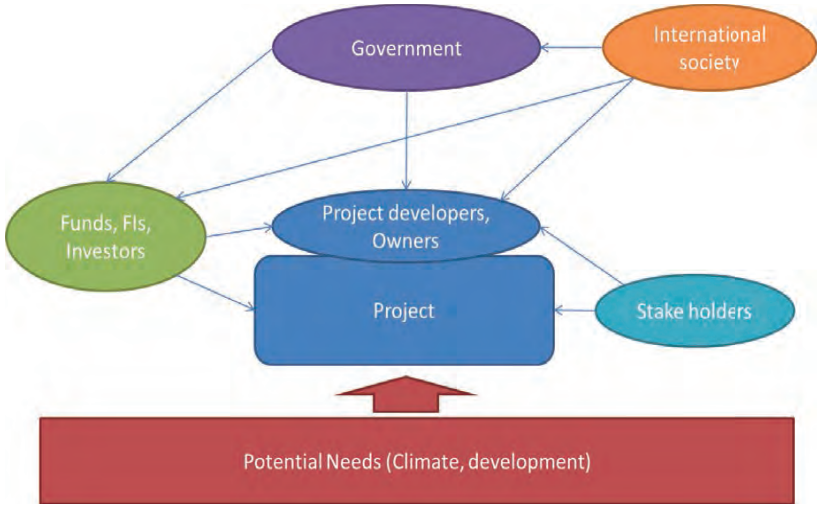
Regional Training on Climate Finance in Southeast Asian Countries
28-29 March 2016

Contents of this session

- Assessing domestic needs and priorities for climate finance
- Policy Instruments for Financing Climate Activities
- Public development of supportive institutions & infrastructures
- Securing Multi-Stakeholder Cooperation and Expertise in projects
- Strategies for enhanced delivery of international support
- Cooperation mechanisms and South-South Collaboration

Relations among stakeholders of the project



Assessing domestic needs and priorities for climate finance

- Domestic needs are fundamental source of business seeds for project developers, since the project developers will develop project based on the needs of their client in the country.
- Higher needs and priority to the project means higher demand to the project, that is, higher and stable revenue will be expected.
- Thus, information on the domestic needs and priority will be benefitted for investors and financiers.

Policy Instruments for Financing Climate Activities

- Policy instruments are especially significant in the policy making & implementation process as they are the techniques or means through which states attempt to attain their goals.
- In view of investors and financial institutions, drastic policy change is recognized as a part of country risks. Thus, **strong political will and leadership along with stable policy** can mitigate the risks for financiers.

Public development of supportive institutions & infrastructures

- Projects including finance in project, in general, will be responsible for a part of system, and project will be implemented based on the key system and infrastructure.
- For finance, domestic **monetary system and banking system** will be fundamental infrastructure. For example, volatile exchange rate is considered as one of the risks for investors and financial institutions.

Securing Multi-Stakeholder Cooperation and Expertise in projects

- Many of stakeholders should be involved in the project. Some may be affected positive or negative impact from the project.
- The conflict among stakeholders is also considered as one of risks.
- Public sector, as one of stakeholders, should secure such a variety of stakeholders in the project.
- In addition, each country holds some specific expertise in the country, **including indigenous knowledge and technologies**.

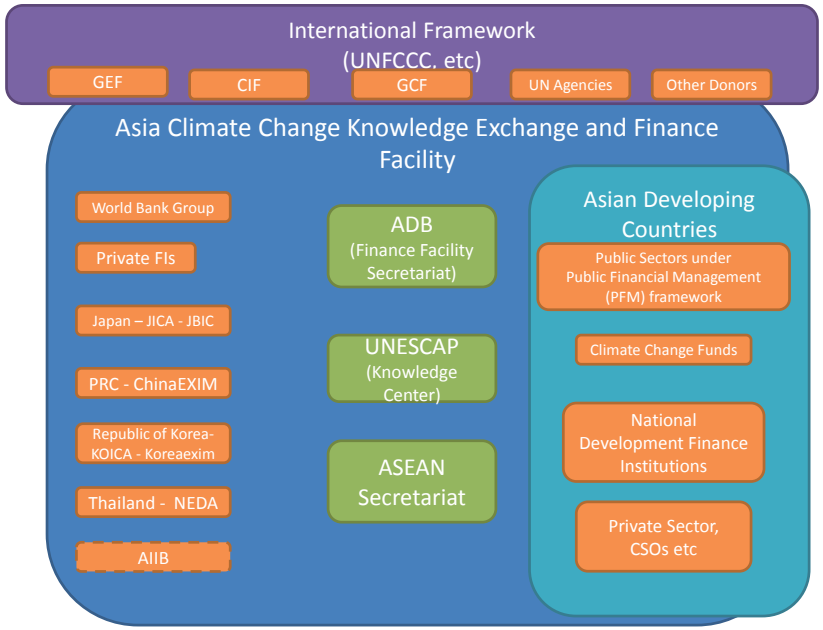
Strategies for enhanced delivery of international support

- International society is also recognized as a part of stakeholder of the project.
- In climate finance, international public donors and private sector investors are also play an important role to support climate related activities.
- International private investors are concerned about the country system is enough compatible to the international standards.
- Thus, some strategies for enhancing international support and finance should be considered.

Cooperation mechanisms and South-South Collaboration

- Better cooperation among stakeholders is the key for success of climate related activities including fund raising.
- On international cooperation, developed countries are not the single source of cooperation. In some case, other developing countries may be able to share better lessons learned from their experiences and success. Sudo (2015) and Sudo (Forthcoming) highlights an effectiveness of regional cooperation in climate financing. For example, Figure 2 shows an idea of ASEAN regional cooperation framework for effective low carbon development finance in Asia.

Idea on ASEAN regional cooperation framework for effective low carbon development finance in Asia



	Country risks	Project risks	Profitability
Assessing domestic needs and priorities for climate finance			
Policy Instruments for Financing Climate Activities			
Public development of supportive institutions & infrastructures			
Securing Multi-Stakeholder Cooperation and Expertise in projects			
Strategies for enhanced delivery of international support			
Cooperation mechanisms and South-South Collaboration			