

Climate Change and Clean Development Mechanism (CDM)

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CLIMATE CHANGE/GLOBAL WARMING

- **The Green House Effect**

Some gases naturally exist in the atmosphere, the so called Greenhouse Gases (GHGs) that form a blanket surrounding the earth and keeps the earth warmer. This is called Greenhouse Effect.

- **The Enhanced Greenhouse Effect**

Human activities (fossil fuel burning, depletion of sinks like forests etc.) has been increasing the concentration of GHGs in the atmosphere and is leading to rise in temperatures. This is called Enhanced Greenhouse Effect.

- **Global Warming/Climate Change**

Rise in temperatures of earth and other associated climatic changes as caused by the Enhanced Green House Effect is called “Global Warming” and in broader term “Climate Change”.

Scientific Evidence of Climate Change/Global Warming

The 4th Assessment Report of IPCC (2007) indicate that

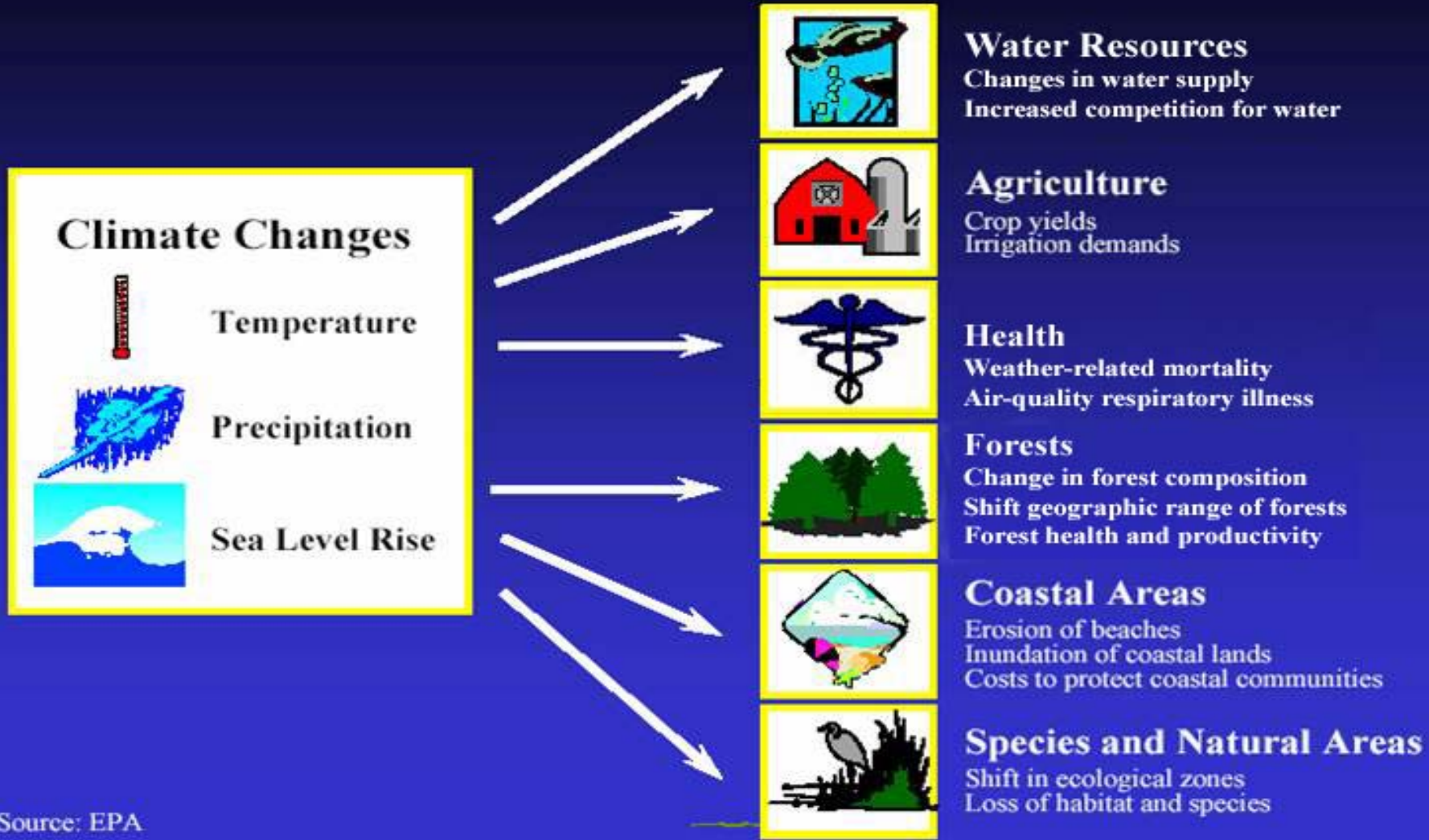
Global temperature rises of 2 – 4.5 0C are almost inevitable due to increased concentration of green house gases as caused by human activities (fossil fuel use, land use changes etc.).

The above global warming (or in broader term Climate Change) is expected to have serious consequences for:

- Agricultural production
- Biodiversity
- Heath
- Sea Level rise

Poor will be most affected by the Climate Change.

Potential Climate Change Impacts



International Response

The United Nations Framework Convention of Climate Change (UNFCCC)

Adopted in June 1992 by over 180 countries at the “Earth Summit” in Rio de Janeiro, Brazil.

The Convention was signed by 154 states (including Pakistan) and entered into force on 21st March, 1994.

UNFCCC is a non-binding legal framework:

- Aims at stabilization of GHG concentration in the atmosphere at safe level.
- To balance out the response along mitigation and adaptation measures

Principles of UNFCCC

Based on the principle of common but differentiated roles

On one hand it recognises the

Primary Responsibility of Developed Countries for higher emissions, and therefore,

Asks Developed Countries to take a Leading Role

On other hand it establishes

Social and Economic Development as the Rightful Priority of the Developing Countries, and

The need to assist developing countries that are vulnerable to climate change

The Kyoto Protocol of UNFCCC

Adopted in Kyoto, Japan in 1997 and ratified in February 2005
(Pakistan signed the Protocol on 11th January, 2005)

The Kyoto Protocol: Aims to reduce GHG emissions by 2012 and distinguish two types of countries:

Annex-I countries: With binding emission targets (industrialised countries):

Western and Eastern Europe, Canada, Japan, New Zealand, Russia, Ukraine etc.

Non-Annex I countries: With voluntary participation (developing countries):

China, India, Pakistan, South Africa, Philippines, Uruguay, Brazil, and other developing countries.

The Kyoto Protocol Mitigation Options

Source oriented measures

- Energy conservation and efficiency improvement
- Fossil fuel switching
- Renewable energy

Sink enhancement measures

- Capture and disposal of CO₂ (under discussion)
- Enhancement of forest sinks (limited options)

The Kyoto Protocol Targets

Under the KP the Annex- I countries have been given binding targets: i.e. to reduce their combined GHG emission by 5.2 percent below their 1990's level, between the period 2008- 2012.

USA	-7%
EU	-8%
Japan	-6%
Russian Federation	0%
all developed countries	-5.2%

Mechanisms Under the Kyoto Protocol

The Kyoto Protocol introduces three market based flexible mechanisms for the emissions reduction:

- Joint Implementation (JI),
- Activities Implemented Jointly (AIJ), and
- Clean Development Mechanism (CDM).

Clean Development Mechanism (CDM)

CDM is a market based instrument under the Kyoto Protocol of UNFCCC:

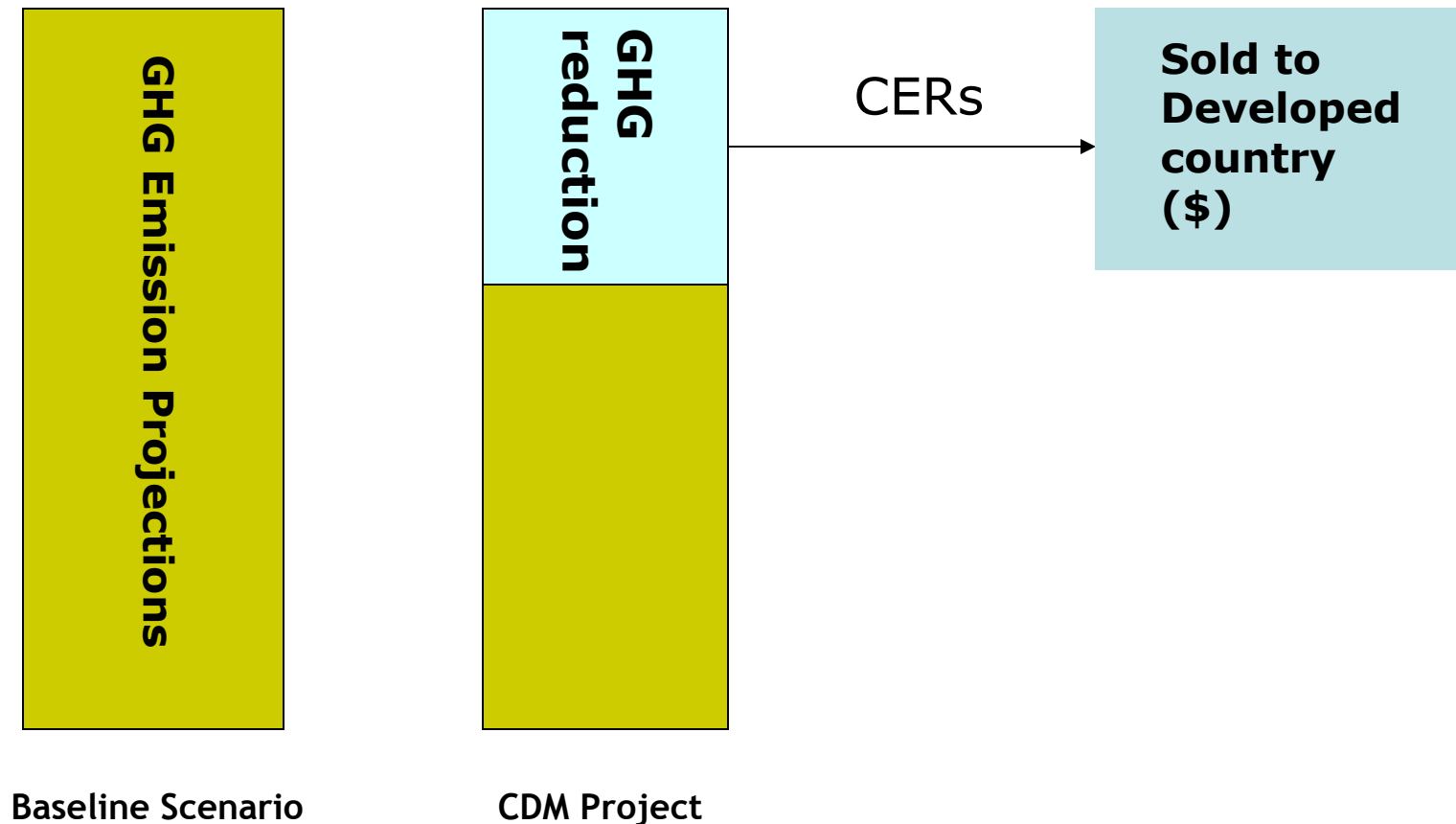
Assists developing countries in sustainable development while at the same time contributing to the ultimate objective of the Convention.

Developed countries to support project activities that reduce GHG emissions in the developing countries in return for Certified Emission Reductions (CERs)/ Carbon Credits.

The CERs generated by such project activities can be used by developed countries as credits to meet their emissions targets under the Protocol.

Concept of CERs/ Carbon Credits

Developing Country (host)



Carbon Finance

'Carbon Finance' is the term used for carbon credits helping in the finance GHG reduction projects

Areas addressed by Kyoto Protocol

The KPs emissions targets cover the six main GHGs:

Name	Formula	GWP (CO ₂ eq.)
1. Carbon- dioxide	(CO ₂)	1
2. Methane	(CH ₄)	21
3. Nitrous oxide	(N ₂ O)	310
5. Per- fluorocarbons	(PFCs)	92,00
4. Hydro- fluorocarbons	(HFCs)	11,700
6. Sulphur hexafluoride	(SF ₆)	23,900

Sinks (carbon sequestration)

Partners in a CDM Project

Project Proponents

Any party, either industry etc who develops or implements a CDM project is a project proponent.

- CDM projects can be unilateral ~
(owner prepares, invests and implements the project)
- bilateral ~
(owner implements the project but involves an advisor and/ or investor and/ or tech. provider etc.)
- multilateral ~
involving project owner, consultants (project developers or advisors) at different profit sharing arrangement or by upfront payments.

Partners in a CDM Project (Contd...)

CDM Executive Board (*cdm.unfccc.int/EB*)

The CDM Executive Board supervises the CDM, under the authority and guidance of the COP/ MOP, and is fully accountable to the COP/ MOP. EB is based in Bonn, Germany and is under the UNFCCC Secretariat. Any CDM project must be registered with EB before its operation. Roles of EB include:

- Supervision of overall CDM process including registration/ review.
- Approval of CDM methodologies.
- Accreditation of Operational Entities for validation and certification of CDM projects.
- Issuance of CERs

Partners in a CDM Project (Contd...)

Designated Operational Entities (DOEs)

A DOE is either a domestic legal entity or an international organization accredited and designated, by the Executive Board (EB) for;

- It validates and subsequently requests registration of a proposed CDM project activity
- It verifies emission reduction of a registered CDM project activity, certifies as appropriate and requests the Board to issue Certified Emission Reductions accordingly.

There are about 19 DOEs. The following have operations in Pakistan.

- DET NORSKE VERITAS (DNV) (www.dnv.com)
- TÜV- NORD (www.tuv-nord.net)
- SGS- GROUP (www.sgs.com)

Partners in a CDM Project (Contd...)

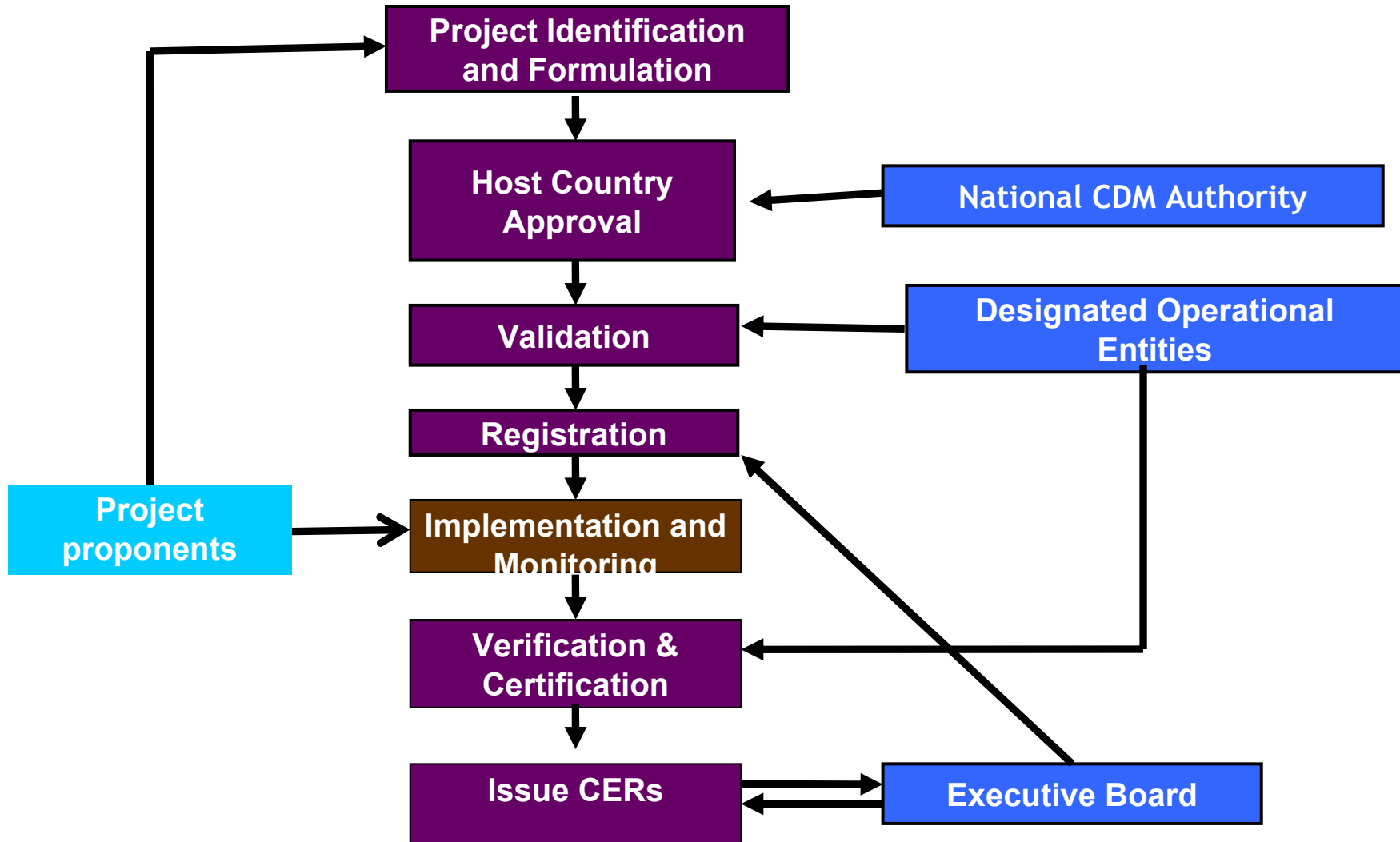
Designated National Authority (DNA)

A DNA is a national institution preferably a public sector organization, designated by Government of host country. The DNA is responsible for overall CDM process in the country, including:

- Ensure effective implementation of CDM by preparation and implementation of national policies, strategies etc.
- Represent the country at all international CDM related for a and negotiations including, COPs/ MOPs, EB and DNA Forums.
- Grant of Host Country Approval according to National CDM Criteria and strategy.
- Promote CDM process by raising awareness, capacity building etc.

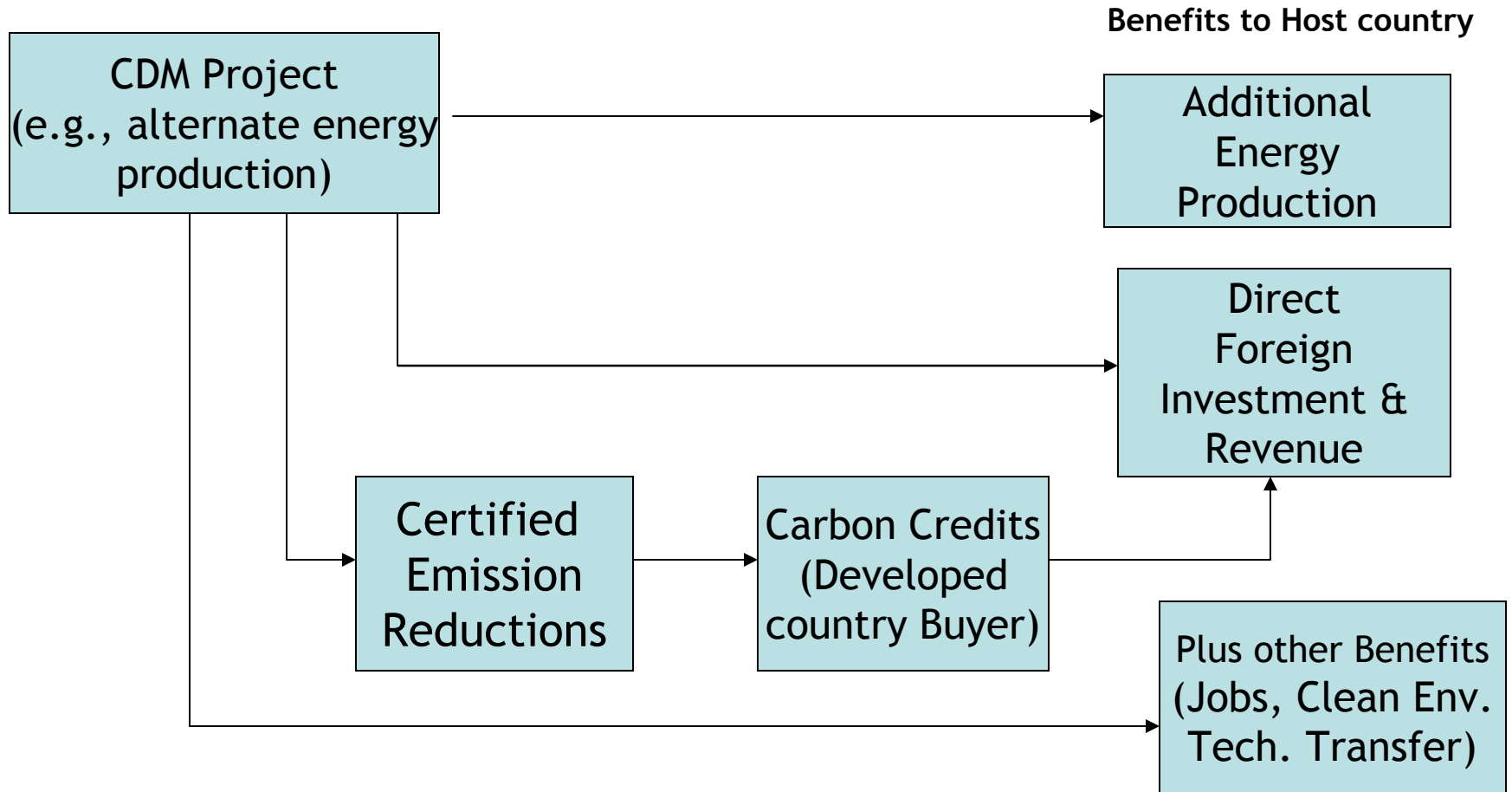
Ministry of Environment, Government of Pakistan is the CDM- DNA for Pakistan (www.cdmpakistan.gov.pk)

CDM Project Cycle



Benefits from CDM (Carbon Finance)

(An Example)



CDM Incentive for Developed Countries

Developed countries have been subjected to legally binding emission targets.....**2008/12**.

Due to **un-localized** nature of CO₂...it does not matter for environment where reduction occurs.

Costs of abatement or reduction of emissions :

Developed Countries : U\$ 50-100/ton (estimated)

Developing Countries : U\$ 1-10/ton

Reductions of GHG is much cheaper in developing countries.

CDM Incentives for Developing Countries

Capitalize an **“unvalued”** commodity..... CER

“Additional” financing for local Sustainable Development priorities and as such has potential of **“Catalyzing” large Foreign Direct Investment (FDI) flows**

Instrument for **“appropriate” Tech. Transfer**

Linkage with local environmental issues – (air pollution etc.)

Financial viability ~ Carbon financing can increase project Internal Rate Returns (IRRs) between 0.5 to 50% (WB)

Type of CDM Projects

Unilateral, bilateral and multilateral CDM projects allowed in:

Energy

- renewable/ alternate energy,
- energy efficiency/ conservation and cogeneration

Waste Management

- landfill gas capture
- recycling

Transportation

- alternative fuel vehicles
- mass transit systems, cleaner engines, CNG

Industrial processes (sugar, cement, fertilizer, textile)

Land, Land use and Forestry (A/F)

Agricultural and livestock practices

Eligibility Criteria for CDM

- Country must have ratified Kyoto Protocol and set up national office to approve projects.
- Project must reduce/displace one of the six GHGs.
- Project must not have been commissioned yet.
- Emission reductions must be additional to emission reductions that would occur under normal business-as-usual scenario.
- Project funding must not utilize official development assistance.
- Project must contribute to the country's SD.
- Project must use technology that is readily available in a market (experimental or trial phase technology cant be used).

Contact DNA- Pakistan

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THANK YOU