



Climate Change and Carbon Market

Rwanda DNA

2nd National Workshop on Renewable Energy & Energy Efficiency

Kigali, December 15, 2010

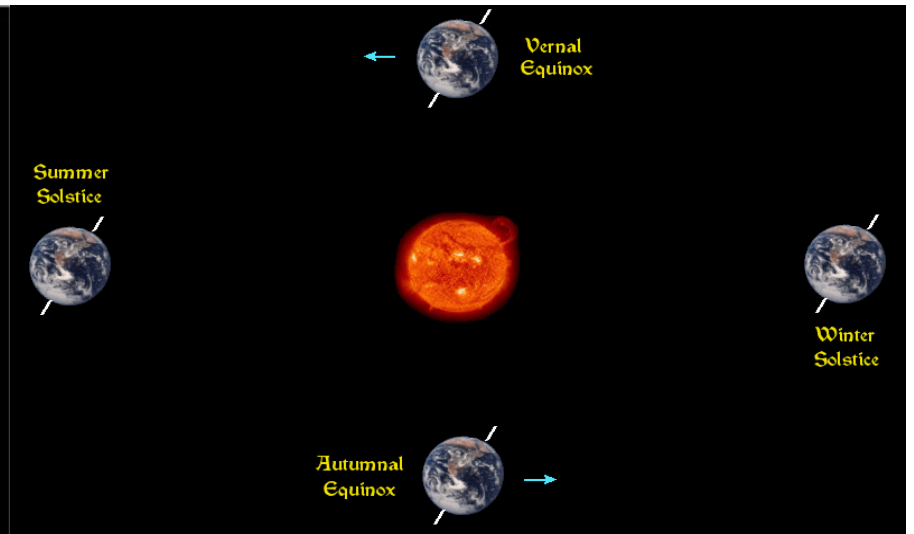


Agenda

1. Climate Change
2. Kyoto Protocol
3. The Carbon Markets
4. The Clean Development Mechanism (CDM)
5. Voluntary Carbon Market



Climate Change



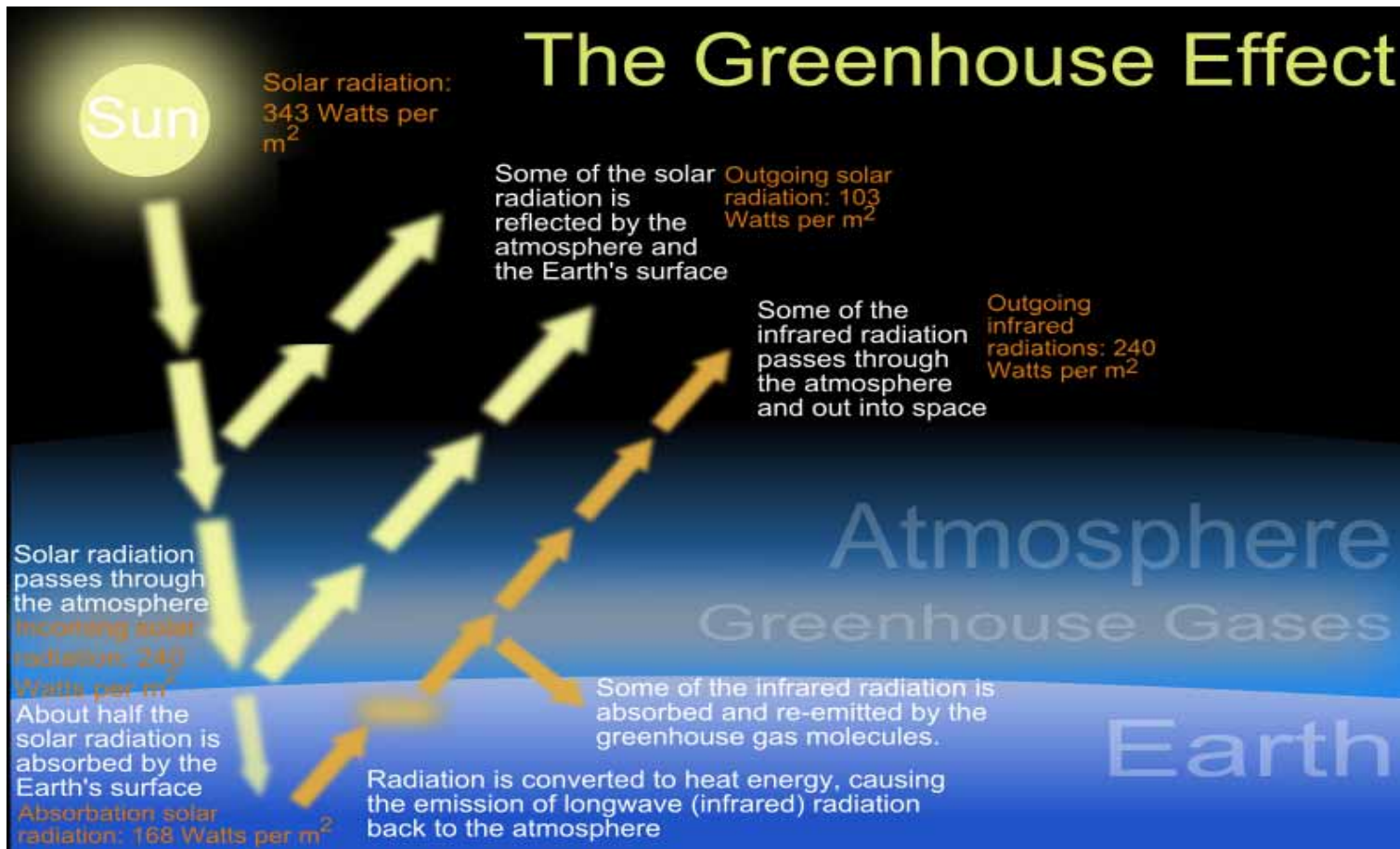


Climate change Science





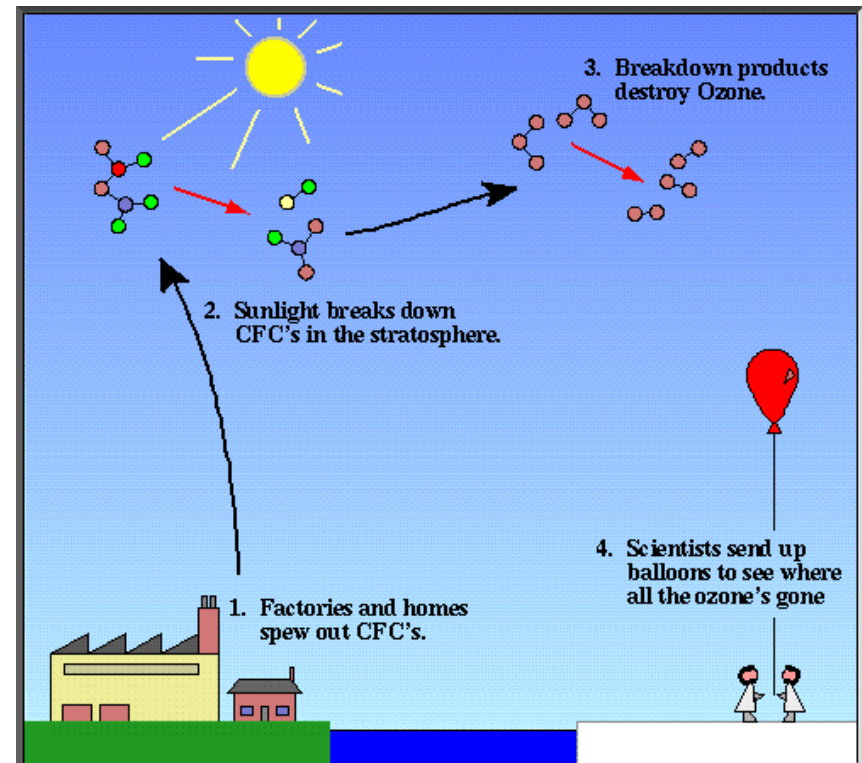
Climate Change





Climate Change Science

- CFLs blocks solar radiations at Cosmos level
- CFLs reduce hotness at Stratosphere level





1. Reductions of GHG covered by the KP

Methane (CH₄)

GWP: 21

**Sulphur
hexafluoride (SF₆)**

GWP: 23,900

**Carbon
dioxide (CO₂)**

GWP: 1

**Nitrous oxide
(N₂O)**

GWP: 310

**Hydrofluorocarbons
(HFCs)**

GWP: 11,700

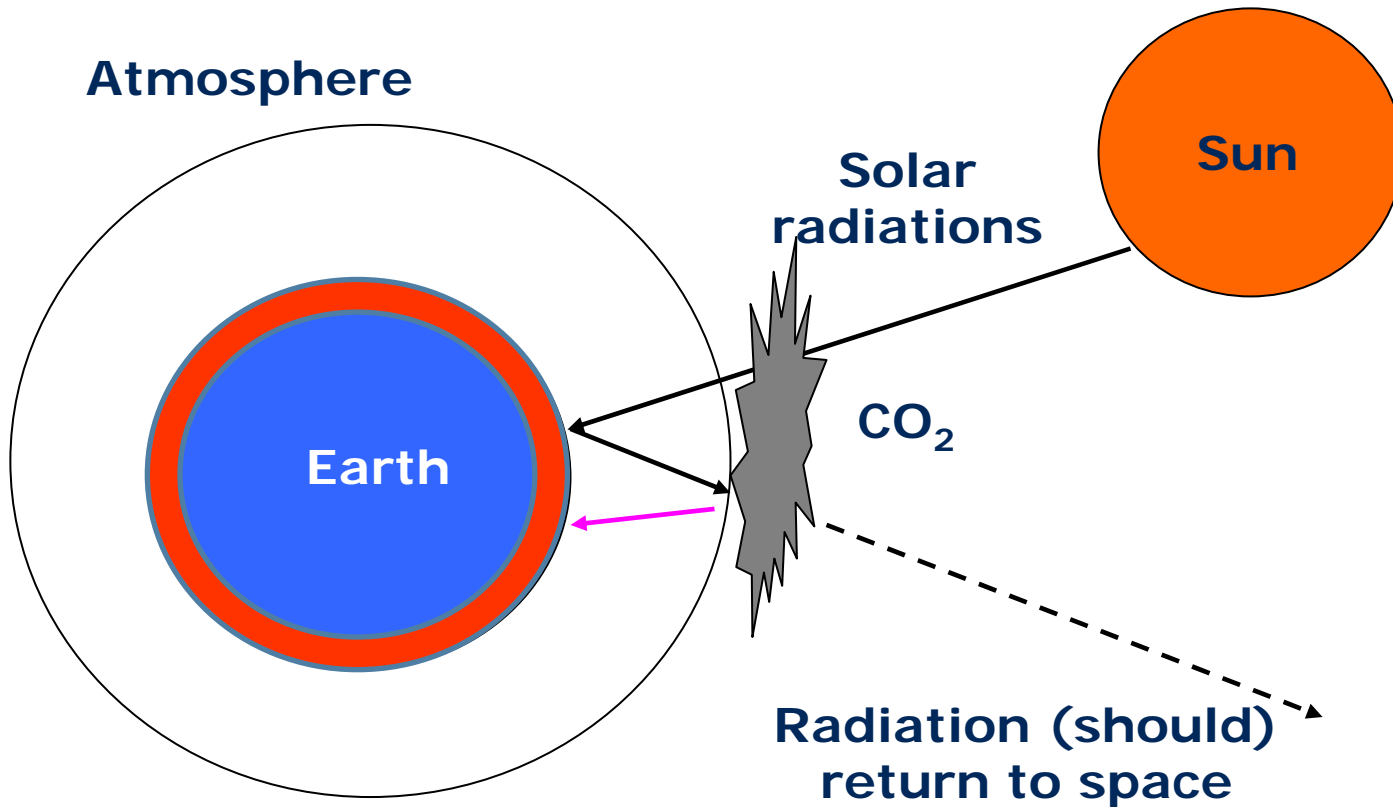
**Perfluorocarbons
(PFCs)**

GWP: 9,200

Each GHG has a different Global Warming Potential

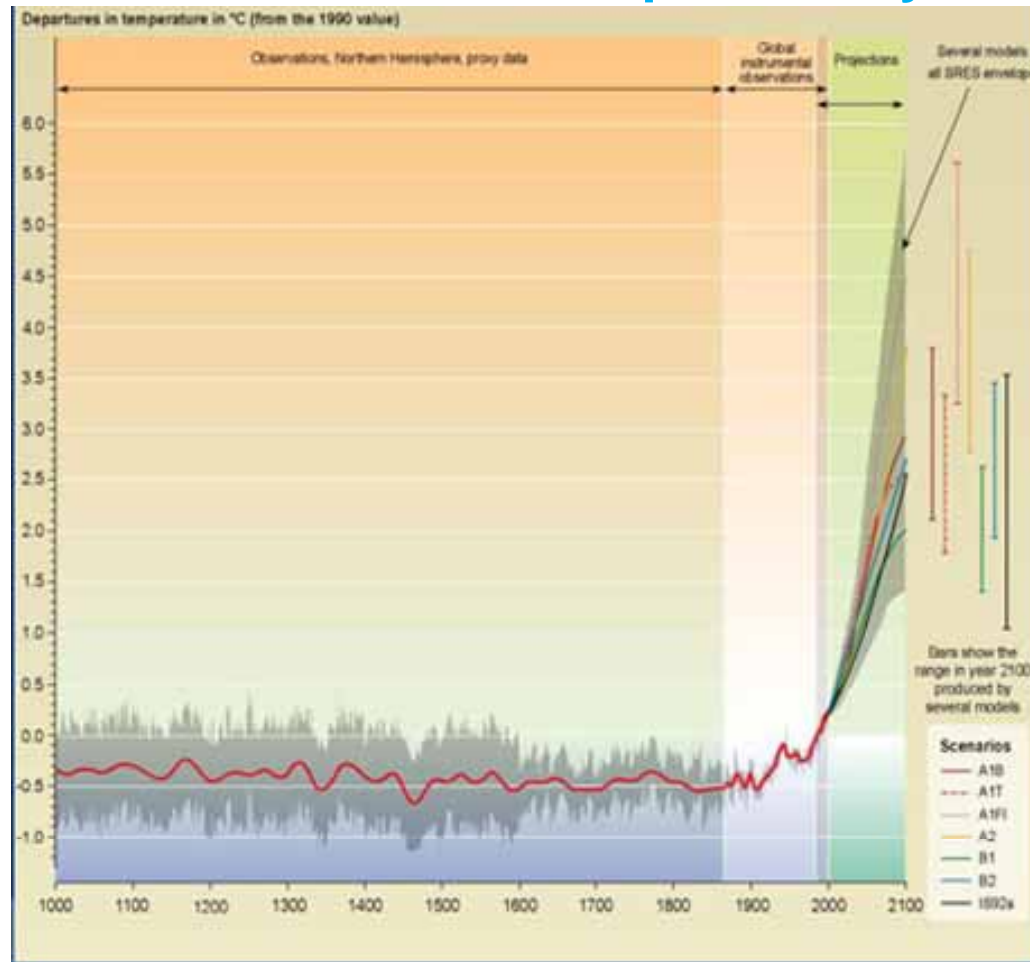


Greenhouse Effect





Variations of the Earth's surface temperature: year 1000 - 2100



IPCC 2007



**1 bag of charcoal
(20kg)**

=

48.2kg of CO2



**Drive from Kigali to
Butare (160km)**

=

59.9kg of CO2

(7km/l)



Probable consequences of climate change in Rwanda

- Increased flooding
- Increased droughts
- Increased number of very hot days
- Increases and decreases in rainfall

All of which will impact: agriculture, energy supply, infrastructure, water resources and health



Crop failure in eastern province due to the 2005 drought



Dried out river bed during the drought



A farm and a house near Gishwati forest damaged by floods





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Kyoto Protocol

- Adopted in **1997**, Ratified in **2004**, In effect as of **February 2005** (**182 Countries are parties to KP**)
- Protocol to the 1992 UN Framework Convention on Climate Change (**UNFCCC**) (**26 DC are parties and 156 Dving C are Parties**)
- Requires **Annex 1** countries (West and Eastern Europe, North America, Japan, New Zealand, Australia – *industrialised countries*) to reduce overall emissions of greenhouse gases by at least **5.2% during 2008 – 2012**
- Voluntary participation of **Non-Annex 1** countries (China, India, etc. – “*developing countries*”)
- Clean Development Mechanism (CDM) involves Annex 1 and non-Annex 1 countries



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Role of DNA in Rwanda CDM Projects

The Permanent Secretariat of DNA

- ❖ Build capacity of relevant stakeholders in carbon market
- ❖ Raise public awareness on Carbon market and CDM in particular.
- ❖ Help in CDM and VCM Projects' development
- ❖ Links project developers and carbon credit buyers case of (ERPA) between **SEI & MINIFRA**
- ❖ Assist in Emission Reduction Purchase Agreement
- ❖ Explore possible CDM projects and propose their project ideas to potential developers (PSF members and/or Gvt institution)
- ❖ Link PP, Credit buyers and DOEs, facilitate partnership between foreign investors Private Sector (case of **UK/CCPO & Evi Ltd**)
- ❖ Facilitate issuance Letter of Non Objection (**LoNO**) and Letter of Approval (**LoA**) (in less than 3 weeks)

DNA will assure the integration of social, economic and environmental factors.



The carbon markets

Key concept: reducing emissions where the abatement cost is lower, via a market mechanism

Unit traded = GHG emissions
1 unit = 1 tonne of CO₂e

How are these units generated?

1. Allowances under cap and trade schemes (e.g. European Emissions Trading Scheme)
2. Project-based credits – Clean Development Mechanism (under the Kyoto Protocol) or Voluntary Carbon Market



Emissions (carbon credit) buyers

Kyoto Protocol Annex 1

Developed
countries that
need to meet
their targets

Other compliance market signatories

New South
Wales
(Australia)

US schemes
(e.g. RGGI)

EU-ETS

Voluntary Regime

Private companies
(e.g. Yahoo,
companies
preparing for
compliance
regimes)

Individuals (e.g. for
offsetting flights)



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The Clean Development Mechanism

- Flexible mechanism under the Kyoto Protocol
- Two goals:
 - Reduce greenhouse gas emissions
 - Assist sustainable development in developing countries
- Cooperation between Annex-1 countries and non-Annex 1 countries





CDM – main eligibility criteria

1. **Reduction in GHG Emissions** covered by the KP
2. **Host country** (Rwanda) must be a **Party** to the Kyoto Protocol
3. **Contribution to Sustainable Development** of Rwanda
4. **Additionality** (demonstration that the project would not have happened without the CDM component)
5. Emission reduction must be **real, measurable** and **long term**
6. **Sector** must be eligible



Annex I

Non-Annex I

Buyer

Carbon value (€)

Emissions reductions needed

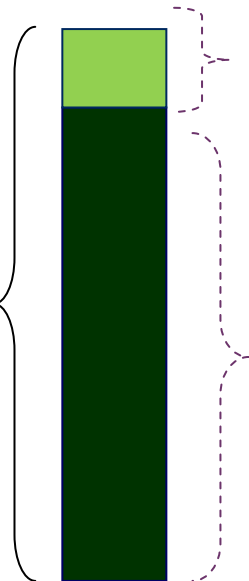
Emissions reductions achieved



Seller

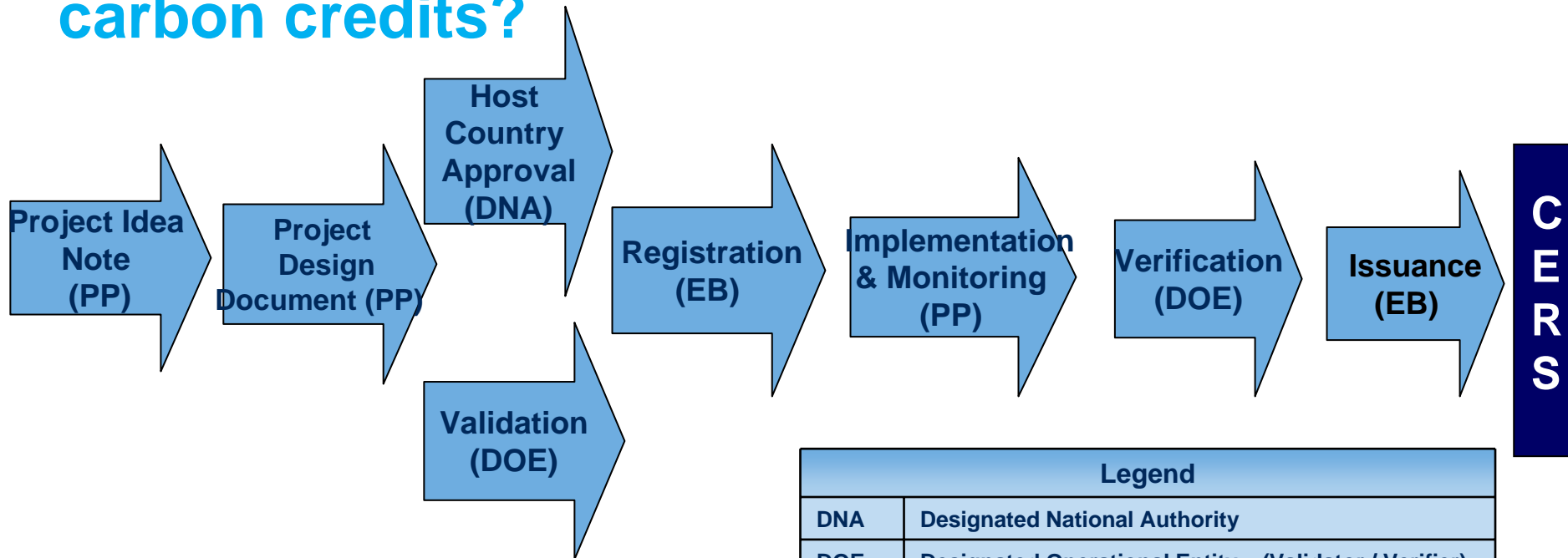
Certified Emissions Reductions (CERs)

Emissions reductions target (e.g. 8% for Portugal)





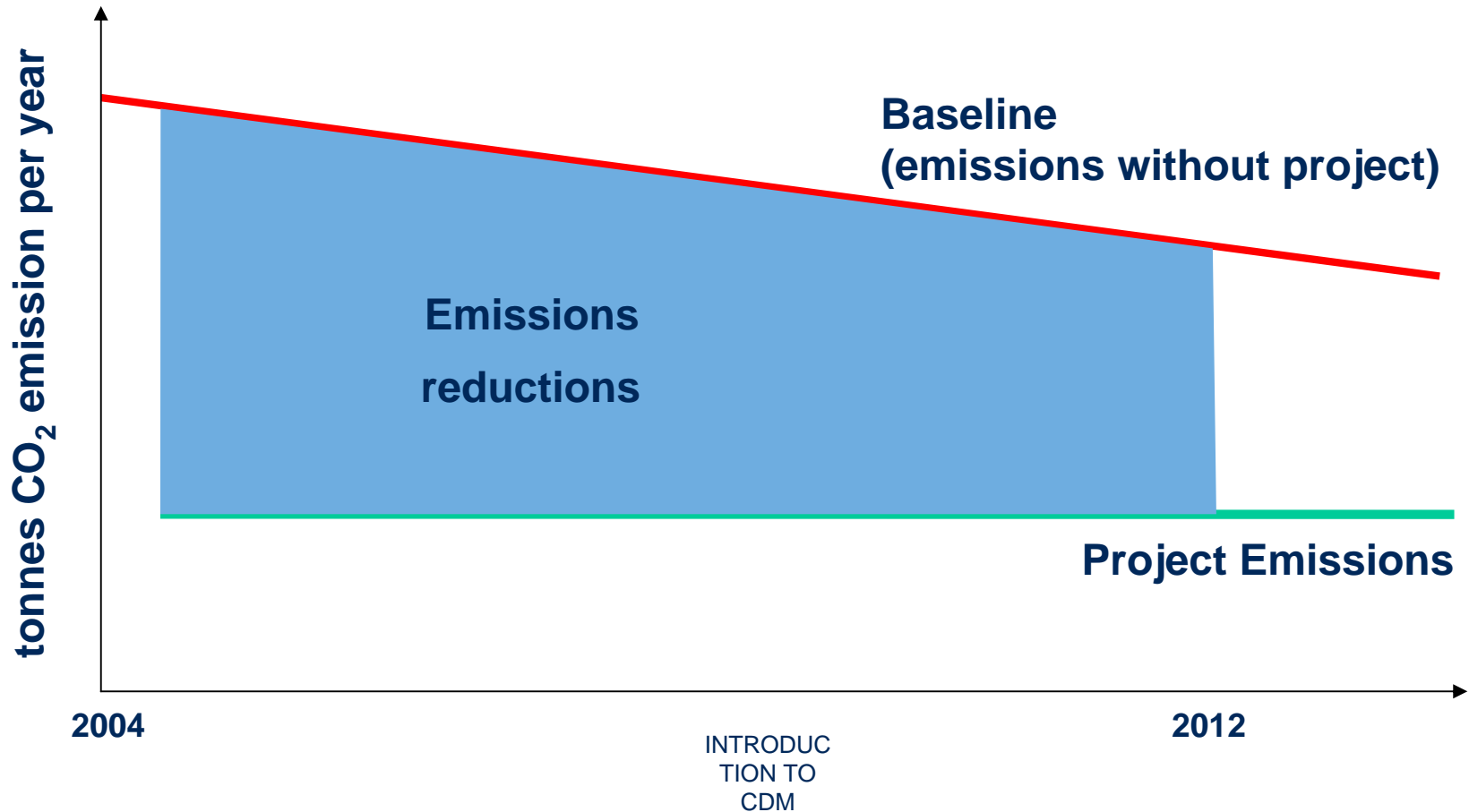
How to develop a CDM project and create carbon credits?



Legend	
DNA	Designated National Authority
DOE	Designated Operational Entity (Validator / Verifier)
PP	Project Participants
EB	CDM Executive Board
CERs	Certified Emission Reductions



Baseline emissions

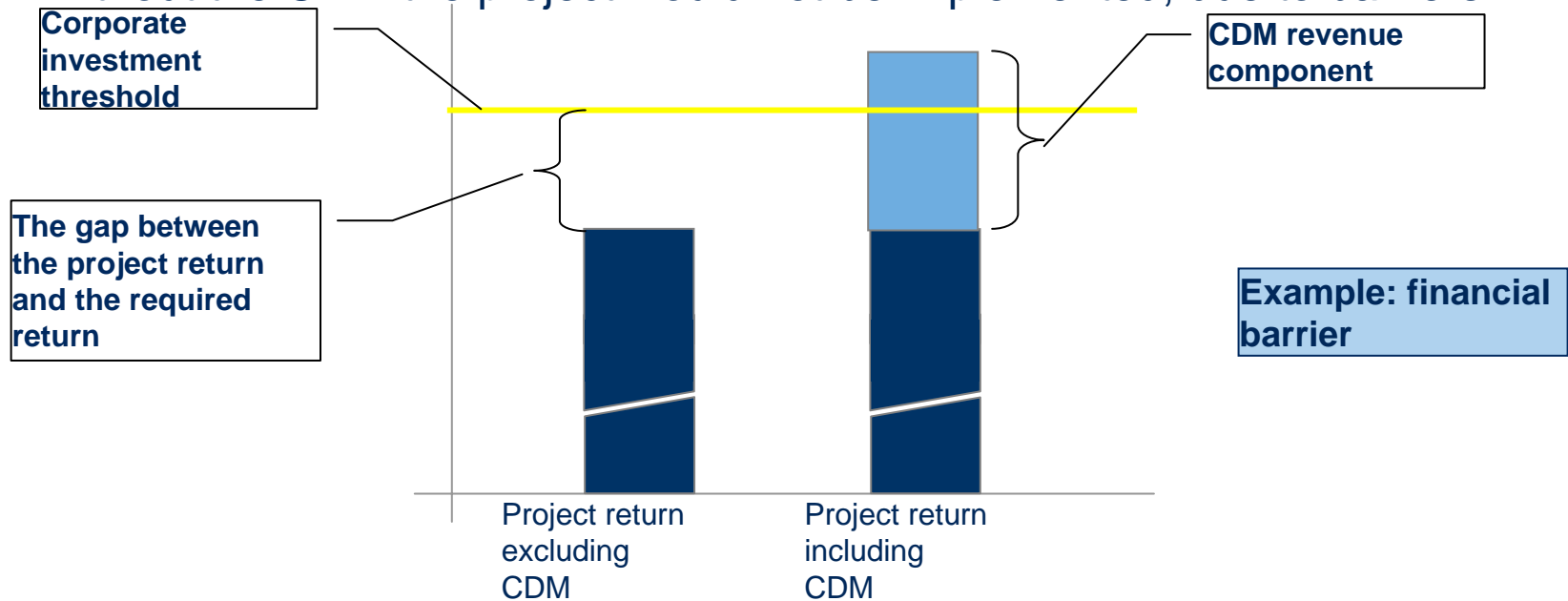




4. Additionality

The emissions are reduced below the level that what would have occurred in the absence of the project

➡ without the CDM the project would not be implemented, due to barriers.



The CDM revenue component increases the Internal Rate of Return (IRR) of the project making it more interesting for allocation of capital.



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Voluntary carbon market

- Participation of the buyers is voluntary
- Various voluntary market schemes are available
 - Different schemes are suitable for different project types





Is it happening in Rwanda?

- **RECO & RWASCO** has been registered by the CDM Executive Board on 30th May 2010
- **3 projects** were sent for validation this year
- **More than 5** projects at PDD level
- **More than 10** project at PIN level



Rwanda Carbon Market Project Information

- Sector of Energy:
13 Projects
- Sector of Forestry:
9 Projects
- Sector of Waste Management:
1 Project

For more regarding available projects:

http://www.rema.gov.rw/dna/index.php?option=com_content&view=category&layout=blog&id=57&Itemid=64





Voluntary carbon market pros and cons

Pros	Cons
Many standards to choose from	Lack of creditability of some standards
Flexible	Lower price per carbon credit
Quicker process cycle	
Less stringent procedures	
Lower transaction costs	

The choice is the project developer's about whether the voluntary market or the CDM is more beneficial to apply



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Thank you!