



BASQUE CENTRE
FOR CLIMATE CHANGE
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Carbon Markets and REDD+

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Outline

- 1) Carbon Markets
 - Main features and definitions
 - Current state and trends
- 2) REDD+
 - What is REDD+ all about?
 - Main Issues for implementation
 - Financing REDD+ (link with carbon markets)
- 3) Perspectives for REDD+

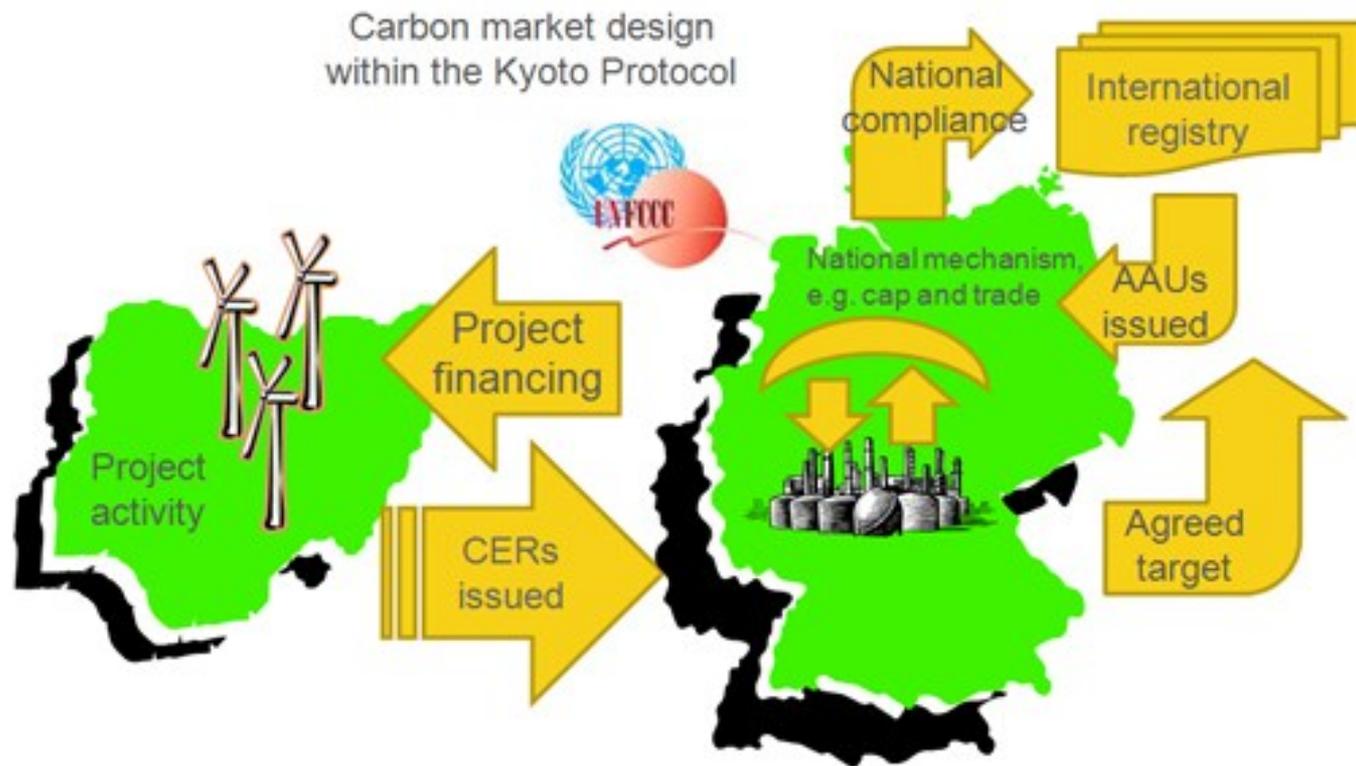
Carbon Markets: basic concept

- Under the Kyoto Protocol, authorities determine by how much GHG emissions must be cut every year to have a positive effect on climate (or, equivalently, a CAP on total emissions).
- Targeted CO₂ reductions are translated into quantifiable commodities, 'allowances', which are auctioned or given (grandfathering) by governments to industries and businesses.
- Industries that find it expensive to reduce emissions can buy allowances to keep polluting; companies that cheaply reduce GHG emissions and exceed their reduction commitment can sell their allowance surpluses to those who have failed to reduce their emissions.
- Objective is to provide flexibilization for total GHG emission reductions.

Carbon Markets

- **Carbon credit:** any tradable certificate or permit to emit 1 tCO₂eq (e.g. Assigned Amount Units – AAU that are country-level allowances; Certified Emission Reductions – CERs – project-level credits);
- **Demand** for carbon credits is mainly created by regulation (region-specific targets imposed to industries); offsets by individuals and/or businesses;
- **Supply** of carbon credits is generated by entities (e.g. companies) that were given allowances surpluses AND by emission reduction projects (offsets);
- Markets for emission allowances (**compliance markets**) are different from markets for project-based credits (**voluntary markets**);

Compliance Market

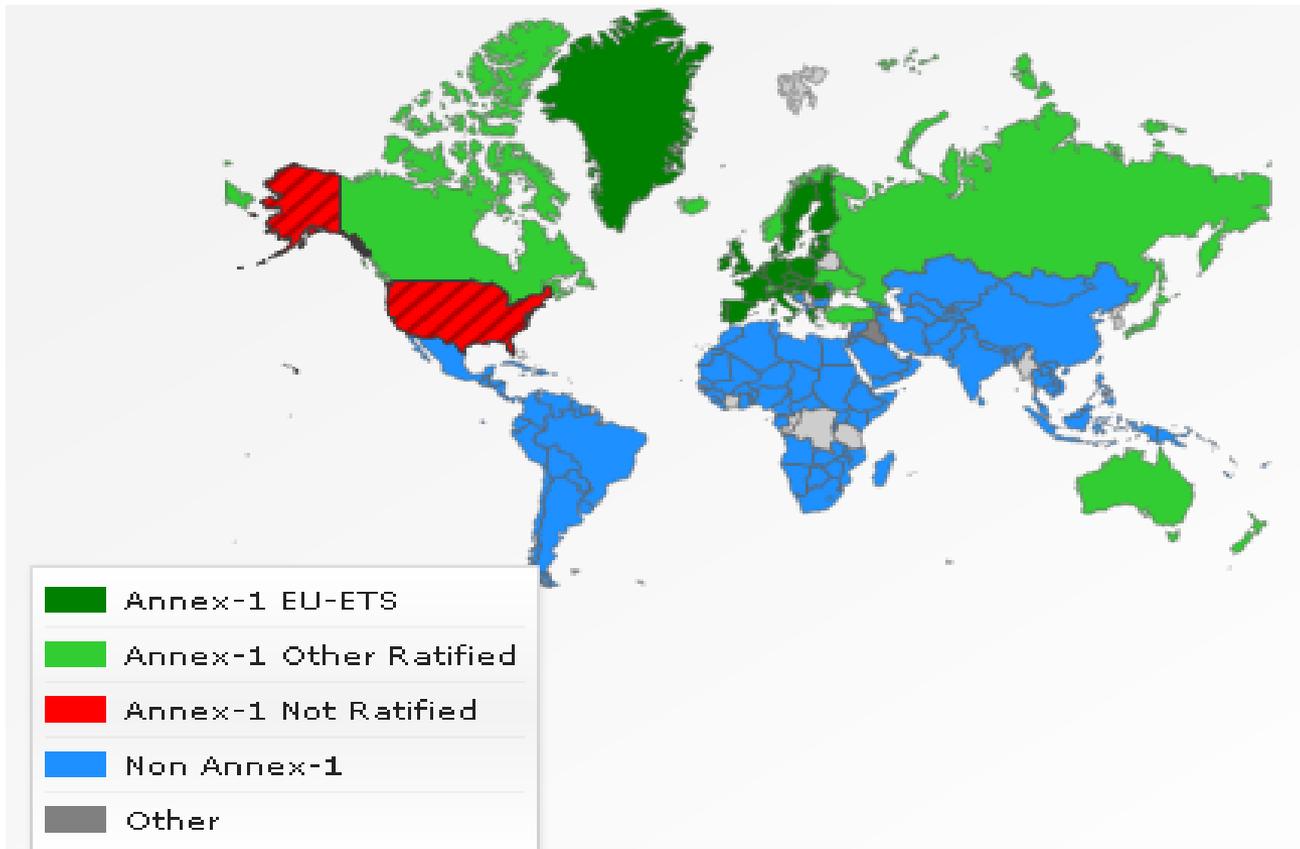


Source: <http://blogs.shell.com/climatechange/category/offsets/>

Compliance or Regulatory Market: The Kyoto Protocol Flexible Mechanisms 2005-2012

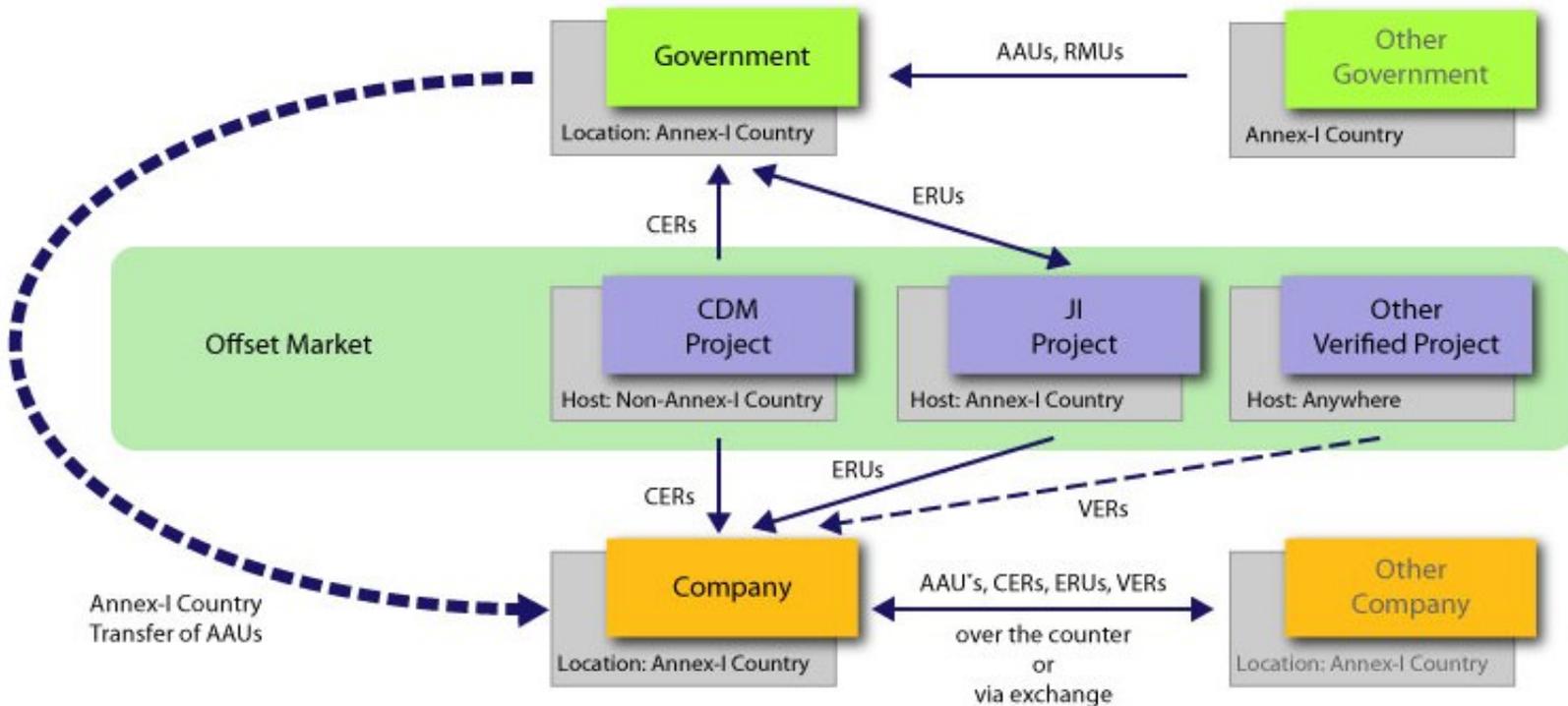
- **Clean Development Mechanism** – CDM: Annex-I (industrialized) countries can invest in projects that reduce GHG emissions in developing countries (non-Annex-I);
- **Joint Implementation** – JI: Annex-I country with relatively higher emission reduction costs finances projects in another Annex-I country;
- Emission reductions projects are currently accepted in **sectors**: energy use, distribution and production; waste management; transportation; industry; and LULUCF – agriculture; afforestation and reforestation (A/R); improved forest management (IFM – JI only).

Kyoto Protocol 2008 - 2012



- http://www.greenrhinoenergy.com/climatechange/carbon_markets/

Compliance Market

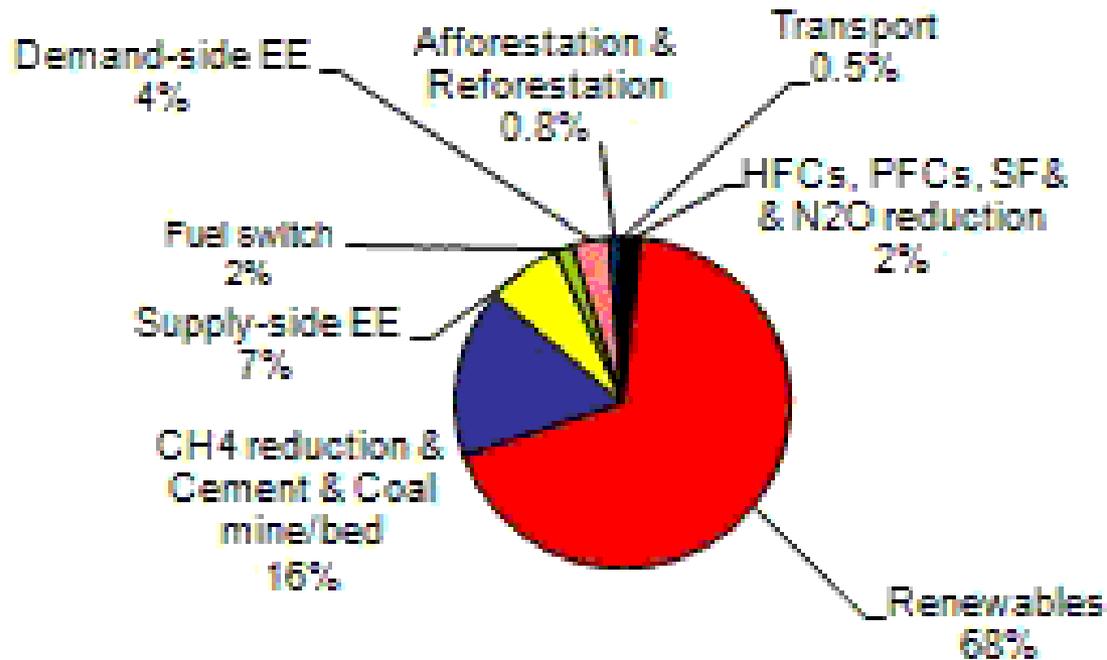


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CDM/JI Forestry Credits

- Currently, only A/R projects are allowed under CDM in the forestry sector;
- Forestry projects constitute only 0.8% of the CDM pipeline;
- Forestry projects are slow and time consuming compared to other CDM credits. Carbon is the only source of revenue, while projects in the energy sector generate other revenues (e.g. electricity).
- A/R CERs cannot be carried over for compliance in subsequent Commitment Periods, and may only contribute to a maximum of one percent of Annex 1 countries' emissions.
- While the EU Emission Trading System (ETS) excluded A/R projects in the first trading period (2008–2012), Directive 2009/29 EC supports the development of a financing mechanism stimulating investment in A/R and REDD for future commitment periods (CPs).

CDM projects as in July 1st 2012



- Source: UNEP-RISOE (<http://www.cdmpipeline.org/cdm-projects-type.htm#2>)

The Voluntary Market

- These markets include all carbon offsets not generated by regulation (e.g. VERs), and regulatory market credits (e.g. CERs), to voluntary buyers.
- **Demand** is created by corporate social responsibility (CSR), individual ethics, public relations and corporate branding, sustainability reporting and anticipation of future regulation.
- **Two main systems:** the Chicago Climate Exchange (CCX – exited from the market in 2010), which is a voluntary and legally binding cap-and-trade system, and the Over-the-Counter (OTC), which is a non-binding offset market. Other exchanges include Beijing (CBEEEX), Shanghai (SEEE), Santiago (SCX).

Carbon Markets: current state

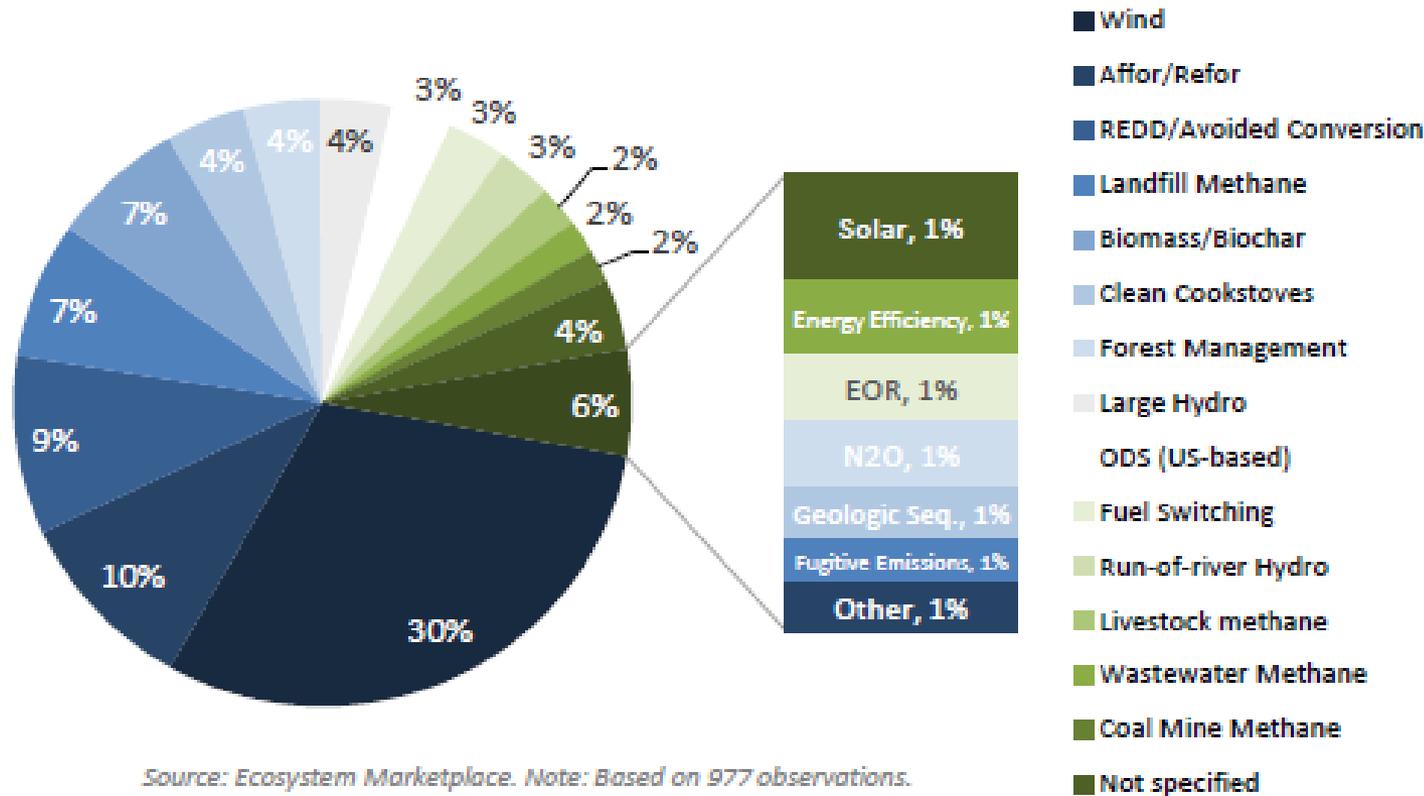
Markets	Volume (MtCO ₂ e)		Value (US\$ million)	
	2010	2011	2010	2011
Voluntary OTC-traded	128	93	422	572
CCX (exchange-traded and OTC-cleared)	2	-	2	-
Other Exchanges	2	2	11	4
Total Voluntary Markets	133	95	433	576
Total Regulated Markets	8,702	10,094	158,777	175,451
Total Global Markets	8,835	10,189	159,210	176,027

- Source: "Developing Dimension: state of the voluntary carbon markets 2012"
- Voluntary markets represent only 0.9% of the total volume traded in 2011; and 0.3% of the total value traded.

Projects whose Credits were in the OTC Market

Figure 1: Market Share by Project Type, OTC 2011

% of Market Share



Source: Ecosystem Marketplace. Note: Based on 977 observations.

Source: State of the Voluntary Carbon Markets 2012

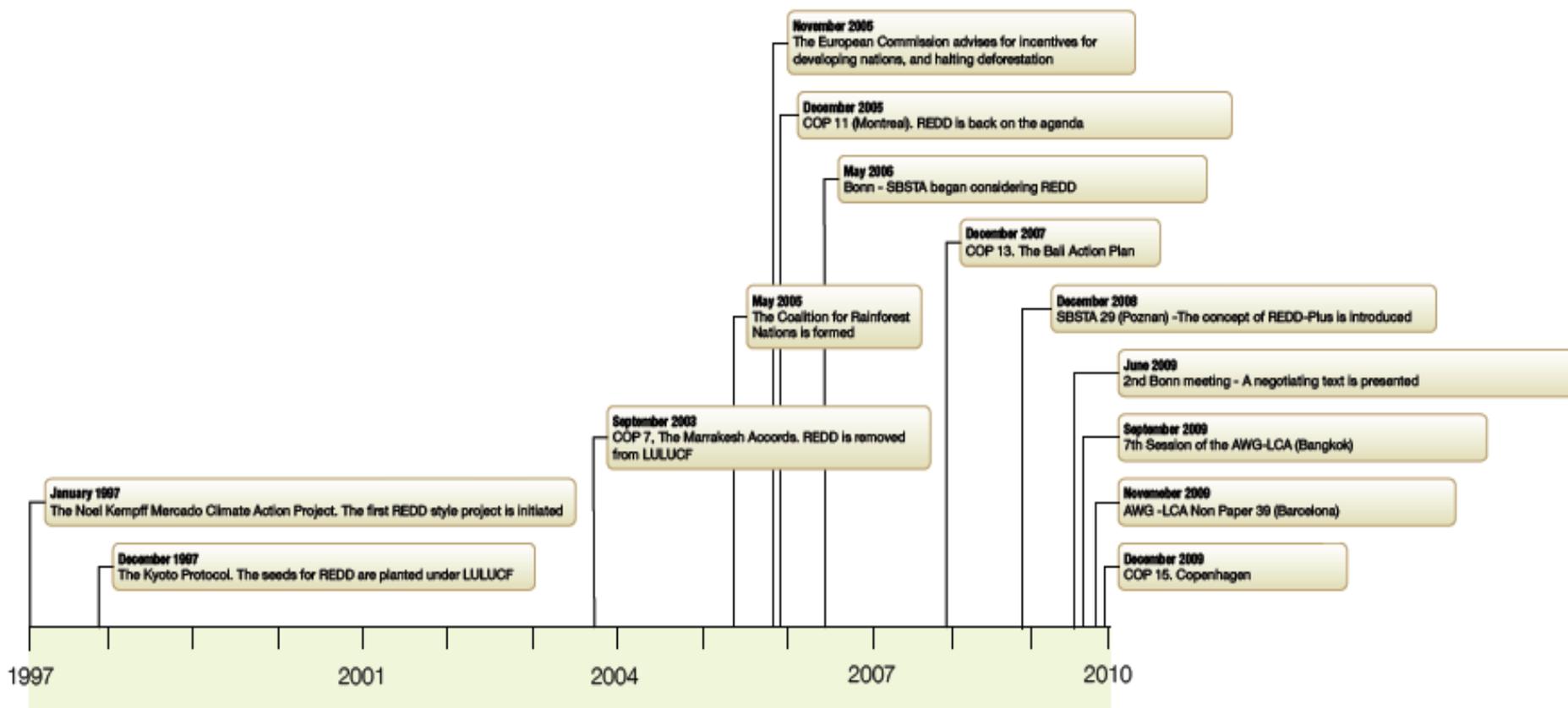
What is REDD+ all about?

- UNFCCC definition: **R**educing **E**missions from **D**eforestation and forest **D**egradation is an international framework (set of policies, measures, incentives) to halt GHG emissions from deforestation and fight poverty while conserving biodiversity and sustaining vital ecosystem services.
- **Simple idea:** to financially reward (forest land owners in) developing countries for reducing GHG emissions by protecting their forests (avoiding deforestation and forest degradation).
- **How does it differ from CDM?** Forests play a limited role under CDM (only A/R projects in developing countries); REDD+ is more than carbon stocks, it also focuses on conservation of biodiversity and ecosystem services, development and indigenous people welfare.

Timeline of REDD+

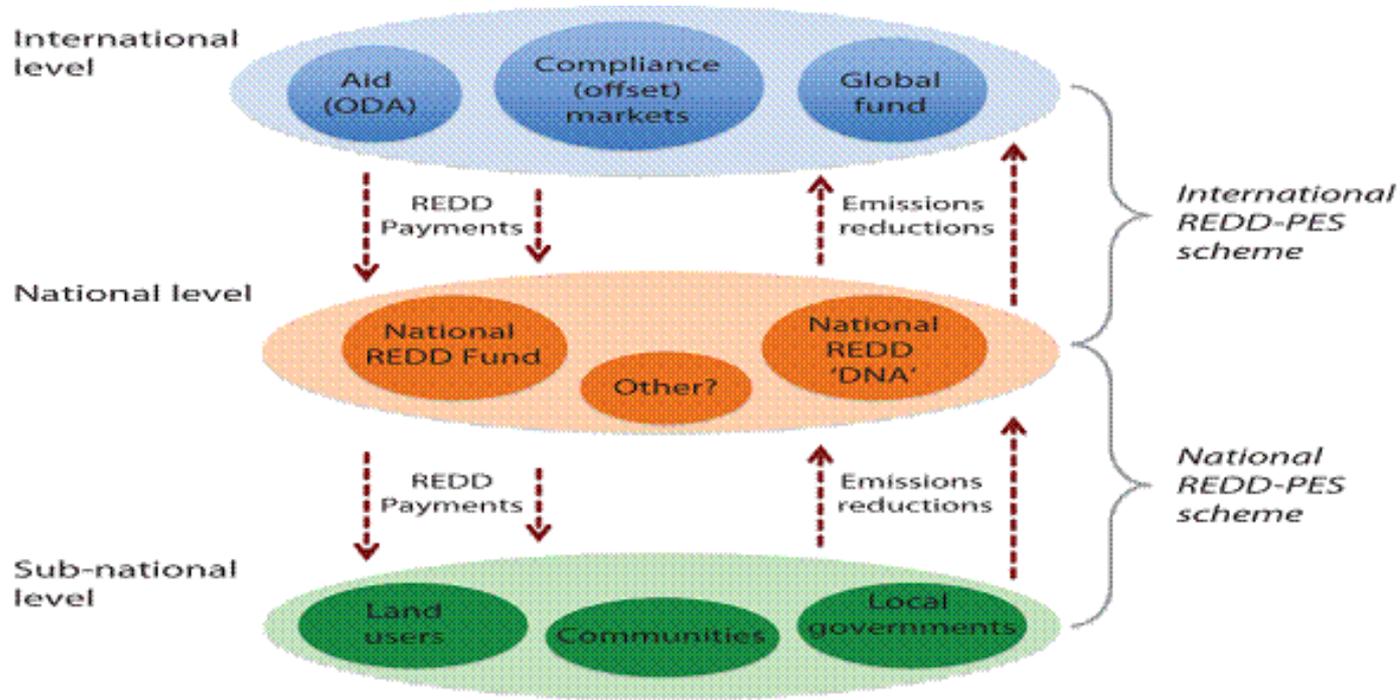
- COP 11 Montreal 2005 – RED (only deforestation) first introduced in the COP agenda (Papua New Guinea and Costa Rica – Coalition of Forest Nations);
- COP 12 Nairobi (2006) – RED expanded to REDD;
- COP 13 Bali 2007 – adopted for inclusion in the pos-Kyoto agreement; the pluses were introduced (REDD++); the Bali Action Plan
- Cancun Agreement (2010) – three phased approach for implementation: (1) readiness or institutional capacity building; (2) national policy frameworks including technical requirements; (3) performance-based payments;
- COP 17 Durban (2011) – **huge uncertainties still remain.**

Timeline of REDD+



Source: Carbon Planet White Paper: The History of REDD (2009)

How does it work?



- Source: Olsen and Bishop (2009)

REDD and REDD+

- The importance of REDD programs relies on the relevance of tropical **deforestation** as an important source of GHG emissions, accounting for **11.3% of global CO₂eq emissions** (WRI, 2005).
- **Deforestation is expected to remain a major emission source in the future.** Around 13M ha of forest are annually lost (FAO, 2006).
- Emissions reductions from REDD are among the **least expensive mitigation options available** compared to other options (e.g. Afforestation and options in the energy market). However, this claim seems to be based on **opportunity costs only**, MRV costs can be substantial.

Issues for REDD+ implementation

- The main problems are institutional: contracting, measuring, monitoring, financing.
- Additionality and permanence;
- Definition of forest';
- Leakage;
- Setting a baseline scenario.

Main Implementation Issues in REDD (1)

■ Definition of forests.

- UNFCCC: “forest is a minimum area of land of 0.05-1.0 ha with tree crown cover (or equivalent stocking level) of more than 10-30% with trees with the potential to reach a minimum height of 2-5 meters at maturity”
- Failing to distinguish between natural forests and plantation forests, despite considerable differences in their species composition, ecology, biodiversity value, and safety as a carbon store;
- May redirect funds from forest conservation to modified ecosystems of far lesser conservation value (e.g. palm plantations).
- For a REDD+ scheme to be effective we need a more careful definition involving: forest degradation, forest conservation, sustainable forest management, and enhancement of carbon stocks.

Main Implementation Issues in REDD (2)

■ Readiness

- Readiness is understood as what it will take for a country to be ready to participate in an international REDD mechanism (capacity building)
- 3-phased approach to establish REDD+ mechanism: (1) readiness; (2) national policy framework; (3) performance-based payments;
- Main constraints for participating in carbon markets are the institutional barriers, including appropriate **land tenure** and **forest protection law** (e.g. **Guyana**), an adequate capacity for monitoring and enforcement.

Main Implementation Issues in REDD (3)

- **Additionality:**
 - Additionality refers to the characteristic of a project in which the emission reduction achieved is additional to what would have occurred in the baseline.
 - Countries with high forest cover but historically low deforestation rates (HFLD) due to pre-existing sustainable forestry legislation (e.g. Guyana, Suriname, DR Congo, India) may be excluded from REDD benefits. On the other hand, REDD might benefit countries with historical high deforestation rates on this basis.

Main Implementation Issues in REDD (4)

- **Setting baseline scenarios:**
 - Reference emissions and reference levels need to be established and verified taking into account national circumstances . Problem of overstating deforestation has to be addressed.
 - Modeling vs. Historic deforestation rates;
 - No consensus on what constitutes a reference level: business-as-usual (BAU) baseline vs. crediting baseline. A BAU baseline is a technical prediction of what would happen without REDD. A crediting baseline is the benchmark for rewarding the country if emissions are below that level and not giving any reward or invoking debits if emissions are higher.

Main Implementation Issues in REDD (5)

- **Measurement, reporting and verification (MRV)**
 - What exactly should be monitored? There are five carbon pools (soil; terrestrial vegetation or biomass; atmosphere; oceans; and wood products). Countries could be required to include all five approved carbon pools in their emissions assessment, which would require a high technical capability and be costly to implement? Or countries could chose which pools to include?
 - Gross or net monitoring? Gross approaches are simpler to implement but overestimate the impact of avoided deforestation by not including carbon stocks in replacement vegetation. Net accounting includes accounting for the carbon emissions from deforestation and accumulation of carbon stocks in replacement vegetation but are more complex to monitor.
 - Who should do the monitoring: national or international bodies?

Main Implementation Issues in REDD (6)

- **Leakage:**
 - Leakage refers to the loss of carbon that a project provokes indirectly outside the physical or temporal boundaries of the project. As an example, a forest reserve can be created, where the people living there move to another forest area and clear it.
 - Leakage favor a national approach to REDD so estimates are made at the national level and not at the project level. In some cases there could also be international leakage and that has to be addressed through international cooperation of all tropical countries.

Main Implementation Issues in REDD (7)

- **Permanence:**
 - Permanence is a case where emission reductions which are already credited or paid for in one period may be emitted at a later date due to natural or anthropogenic disturbances.
 - There are ways in which the permanence issue can be addressed in REDD policy design. The establishment of credit reserves or insurance mechanisms are two examples.
 - Land titling is a source of possible permanence problems: where land rights are poorly recognized, commitments to maintain forests may not be honored if concessions are later awarded legally to another party.

Main Implementation Issues in REDD (8)

■ Financing REDD+

- At these early stages most money are coming from the public sector to support development of the market.
- Currently, 16 donor countries are providing funds into multilateral financing institutions, and some donors also support bilateral REDD agreements (Reimer, 2012).
- UN REDD Program (FAO; UNDP; UNEP, 2008) – 4 donor countries (Norway; Denmark, Spain and Japan, plus pledges from EU) – US\$ 150M for readiness and preparation & implementation of national REDD strategies (42 partner countries).

Main Implementation Issues in REDD (9)

■ Financing REDD+

- Forest Carbon Partnership Facility (FCPF – World Bank, 2007) – US\$ 229M for readiness fund and US\$ 204M for the Carbon finance Mechanism (performance-based mechanism).
- Forest Investment Program (FIP – World Bank, 2008) – US\$ 599M for mobilising increased investment on REDD, so as to generate ‘transformational change’ in developing countries’ forest-related policies and practices.
- Other initiatives include: Global Environment Facility (GEF) Tropical Forest Account (TFA); The Amazon Fund; Congo Basin Fund.

Main Implementation Issues in REDD (10)

- **Financing REDD+**
- Summary: REDD+ currently depends on voluntary contributions from developed countries (donors); some finance come from the compliance market (CDM projects) and Official Development Assistance (ODA);
- Limited resources are available for REDD+ implementation (readiness and preparation) and **full implementation would require other stable sources of financing** (e.g. public budgets – taxation, royalties; other financial mechanisms – equity funds).

Conclusions (1)

- Although there is a huge potential for using REDD as a climate change mitigation option, currently most of the trades in carbon markets involve credits generated in the energy sector.
- If an agreement can be achieved for the effective implementation of REDD and if some of the barriers to expanding the A/R programs can be overcome, the forestry sector has the potential to contribute significantly either to lowering the cost of meeting a given reduction target for GHGs, or for attaining a stricter target at the same cost as would be incurred without REDD being included.
- Uncertainties in setting baseline scenarios undermines the efficiency of the REDD+ mechanism.

Conclusions (2)

- While there is wide agreement on REDD+ potential, there is also considerable doubt as to how fast it can be realized, if it can be realized at all.
- Currently, no carbon market accepts REDD+ credits for compliance; there are plans in this direction in Australia, Japan, California and EU.
- Current technology for measuring carbon stocks and fluxes from forests are not rigorous enough for carbon from REDD+ to be traded in compliance markets; high measurement uncertainties and dispersed sources make the forest sector less amenable to carbon trading than other sectors in a global compliance market.

Conclusions (3)

- **Future perspective:** in order to survive, REDD+ needs greater demand for carbon credits, in other words, a pos-Kyoto agreement with far stricter GHG reduction targets;
- Until a new binding international agreement comes into force, and it is unlikely to happen before 2020, REDD+ finance will probably remain dependant on donations;

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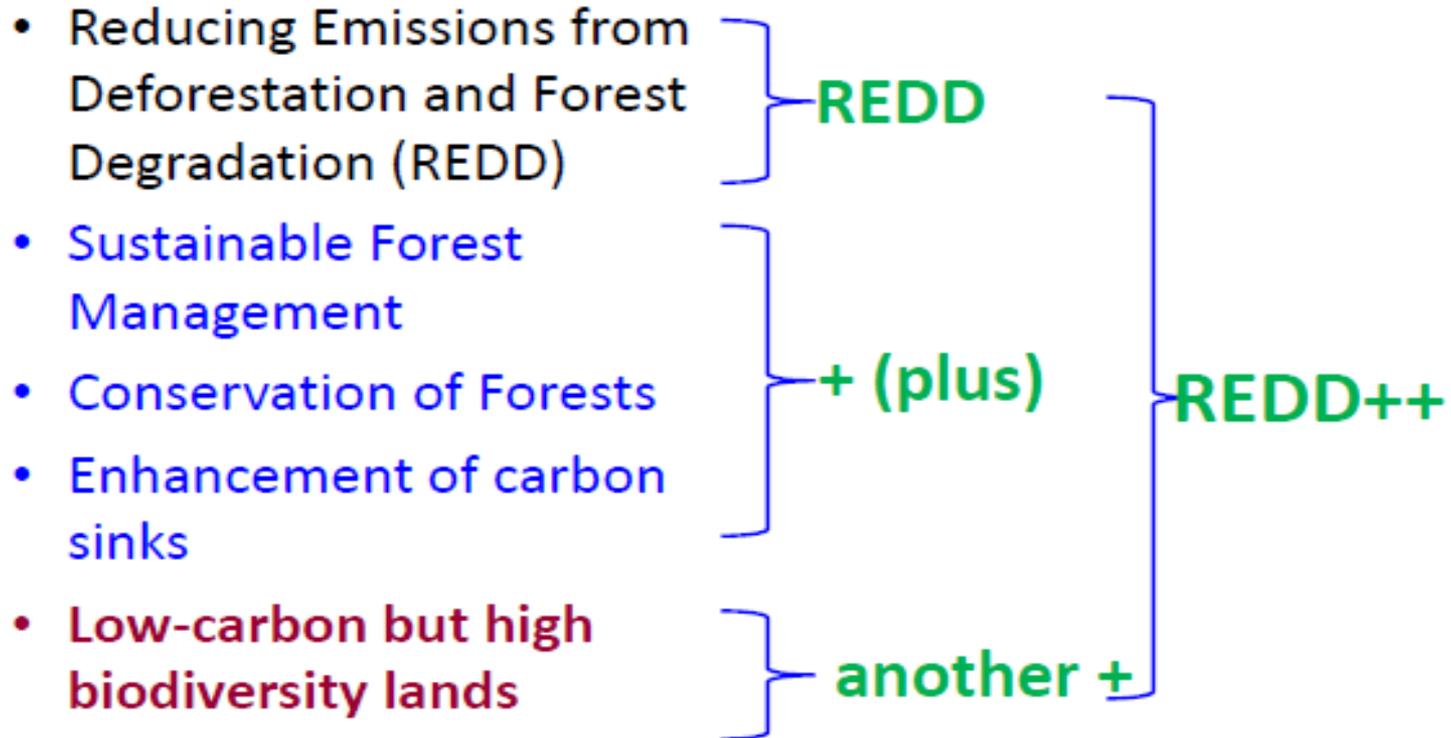
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Thanks for your attention!!

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REDD, REDD+ and REDD++



▪ Source: Sasaki, N.; "What are REDD, REDD+ and REDD++?"