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Climate Change & Carbon Markets

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The theory behind the Carbon Markets

- ▶ Put a price on carbon dioxide emissions (and the other major greenhouse gases) and provide a monetary incentive to reduce such emissions
- ▶ Businesses will then view emissions as an operational cost and seek to minimise them, like any other cost
- ▶ A market price for carbon emissions will provide more clarity about the true costs of responding to climate change, helping governments to more effectively create new rules and regulation dealing with key sectors

The foundation for the Carbon Markets – the Kyoto Protocol

- ▶ 39 industrialised countries committed to reduce their collective greenhouse gas emissions by a combined average of 5.2% below their 1990 levels.
- ▶ 143 other countries (such as China, India, Brazil and Mexico) have ratified the Protocol but have no obligation beyond monitoring and reporting emissions
- ▶ The commitment period runs from 2008-2012.
- ▶ 3 ways to comply with Kyoto commitments:
 1. Directly reducing a country's emissions levels
 2. Purchasing excess emission allowances from another industrialised country – emissions trading
 3. Investing in approved carbon reduction projects within a developing country
 - **Clean Development Mechanism (CDM)** – eg Brazil and China
 - **Joint Implementation (JI)** – eg Russian and Ukraine

What sort of carbon markets are there?

1. Compliance Market

- ▶ The European Union Emissions Trading Scheme (EU ETS) is the largest and best known
- ▶ It covers 12,000 EU installations and roughly 40% of total EU greenhouse gas emissions
- ▶ Iron and steel, cement, glass and ceramics, pulp and paper, electric-power generation, and refining
- ▶ National emission caps
- ▶ Countries divide the cap amongst industrial companies operators in key carbon sectors
- ▶ Penalty of EUR 100 per tonne for non-compliance

2. Voluntary Market

- ▶ No legal obligation to buy carbon credits
- ▶ Example – banks
- ▶ Differing standards of carbon credit

What sorts of carbon credits are there?

1. Allowance-based:

- ▶ A permit to emit **1 tonne of carbon dioxide (or its equivalent in other greenhouse gases)**.
- ▶ Lower emitting entities can trade their extra allowances to those who need them.
- ▶ **European Union Allowances (EUAs), New Zealand Unit (NZU) etc...**
- ▶ Used in the compliance market

2. Project-based

- ▶ Projects which result in carbon emission reductions below a baseline scenario (or “business as usual”) may receive credits for each tonne of carbon which was reduced. Additionality.
- ▶ **Certified Emission Reduction (CER)** from a registered CDM project
- ▶ **Verified Emission Reduction (VER)** from a CDM project not yet registered
- ▶ **Emission Reduction Unit (ERU)** from a registered JI project
- ▶ Potentially used in compliance or voluntary markets
- ▶ Hydroelectric plants.

How do project-based credits work?

Industrialised
Country

Developing
Country

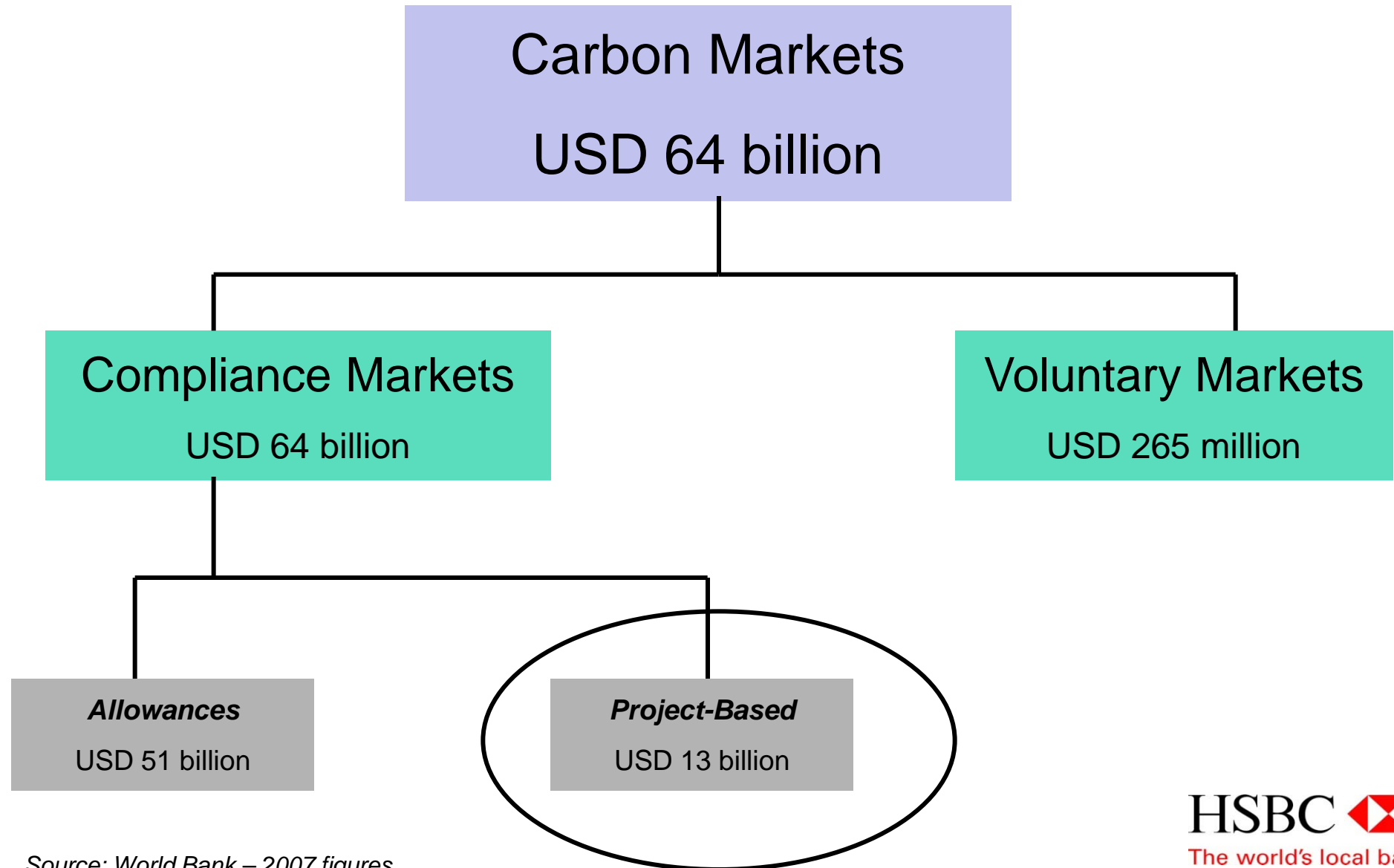
Payment
Technology

Company
with emissions
reduction target

Company
with a qualifying
hydroelectric
project

Carbon Credit

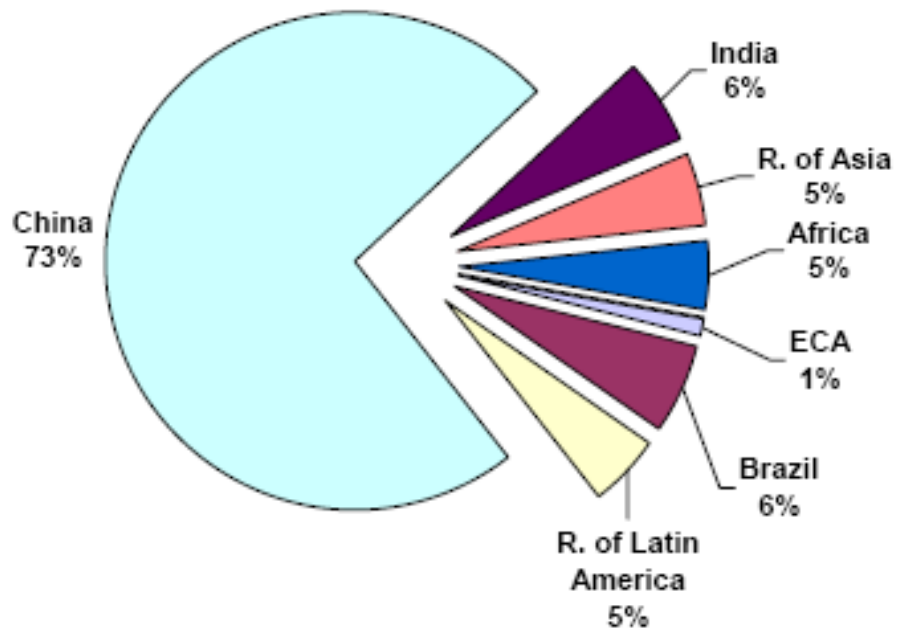
How much are Carbon Markets worth?



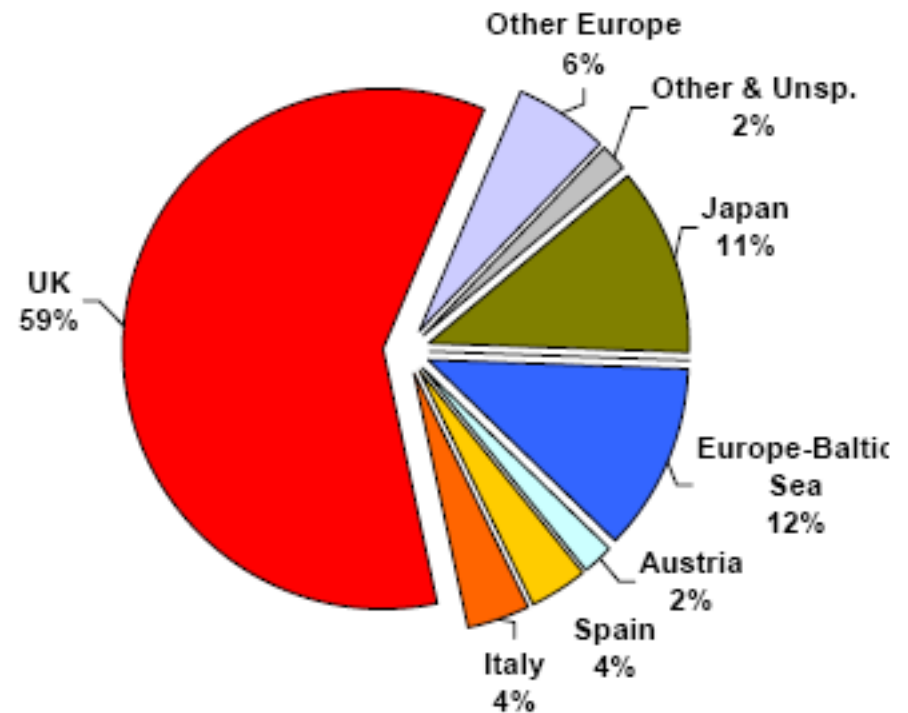
Source: World Bank – 2007 figures

The project-based market in 2007 (by volumes)

CDM Location

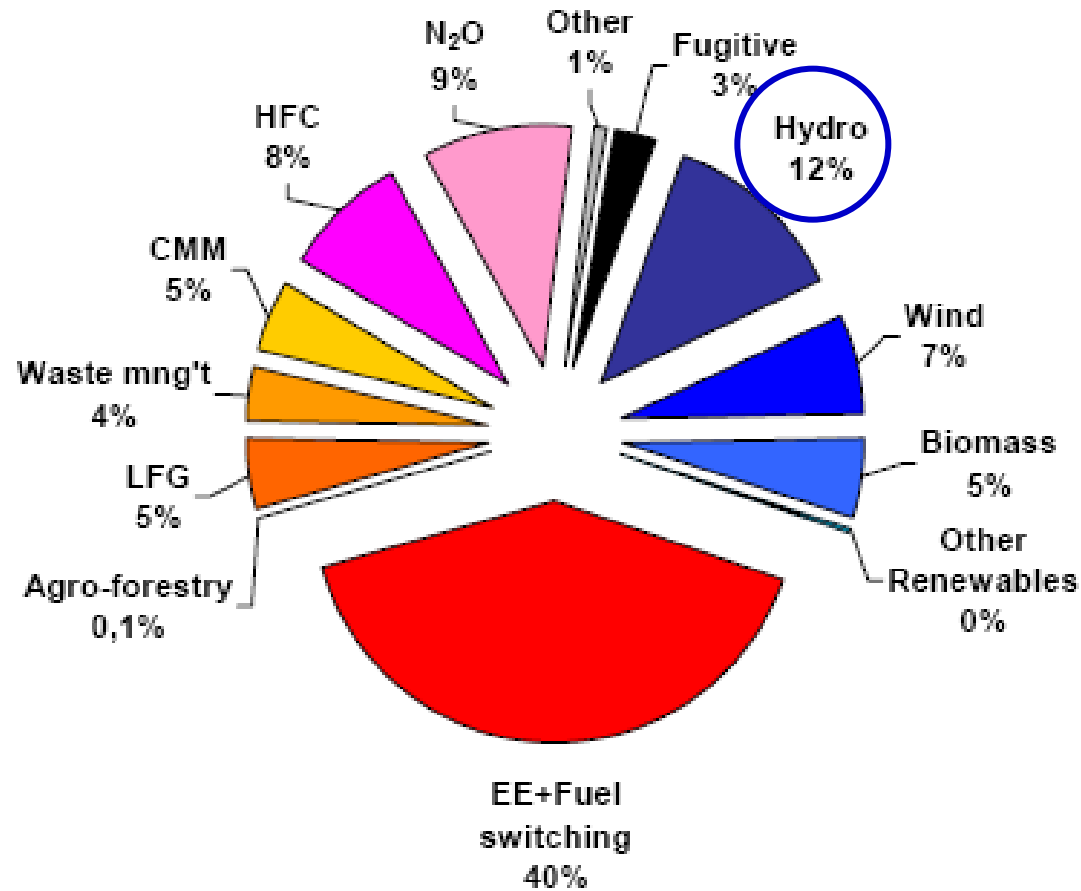


CDM & JI Buyers



Source: World Bank

How many hydro projects are registered under CDM?



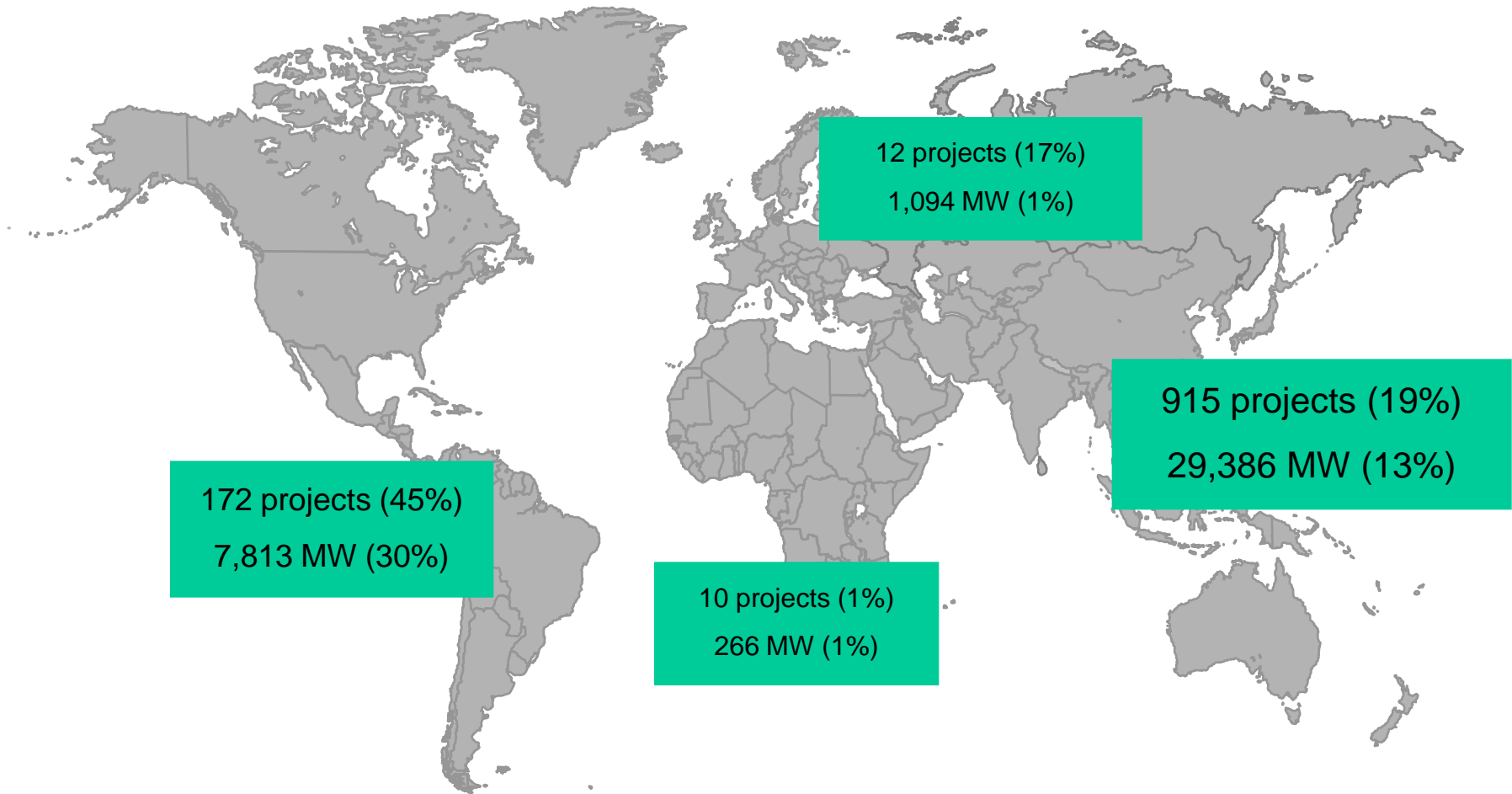
2007

(as a share of volumes supplied)

How many hydro projects are in CDM?

- ▶ The good news:
 - 1,109 projects
 - 38,560 MW
 - 114m CERs pa
- ▶ The not so good news:
 - 23% projects are registered, 16% by capacity
 - 1% rejected for failing the additionality test
 - 76% at validation or similar stage
 - Demand for verifiers
- ▶ Large hydro under CDM = 15MW
 - 47% of projects
 - 92% of CERs
 - Largest is 256 MW in Brazil

Where are the CDM hydro projects?



Issues around hydro projects

- ▶ Delay in registration
- ▶ Rejection of projects
 - Failure to meet additionality requirements
 - Emissions of alternatives, financial benchmarks, poor due diligence
- ▶ Differing criteria
 - CDM thresholds relating to power density (generation capacity per m² of flooded surface area)
 - CDM re 15MW
 - EU ETS defines large hydro as greater than 20MW and requires compliance with World Commission on Dams. Discretion is applied.
 - Other host and investor country (or company) requirements
 - Voluntary markets
- ▶ Consensus on Greenhouse Gas Emissions
- ▶ Successor to Kyoto Protocol
 - The road from Poznan to Copenhagen and beyond

Carbon opportunities and discussion points around hydro projects

- ▶ Consistent framework
- ▶ Meet principal CDM requirements
 - Avoid duplication
 - Avoid rejections (prove additionality)
 - Speed up process
- ▶ Work with main regulators
 - CDM
 - EU ETS
 - Voluntary standards
- ▶ Reduce financing costs
 - Value of credits to construction and operation of project
 - Access to finance – Equator Principles and IFC Performance Standards re GHG assessment
- ▶ Include climate change in Sustainability Assessment Protocol
 - Develop A20 from calculation to meeting selected carbon criteria