Capacity building experiences with CDM and Carbon Finance

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Outline of presentation

- Framing questions in a CB context
- Introduction to CDM and carbon finance issues
- Specific challenges related to a new and emerging issue
- UNEP Risø activities and approach
- Moving from “hand-holding” to structured training to formalized education
- Parallel development of information and training material
- Integrating web-based sources and possibly expanding e-learning approaches
- How to go from quick CB to more systematic approaches with a focus on integration into formal education

Framing questions in a CB context

- What are the barriers and opportunities to expanding university, training or capacity-building programmes across borders or regions?
  - Example of a specific new policy topic with a need for rapid CB across a large number of countries
  - Highly dynamic mechanics with a need for continued adjustment
  - Need for development of methodologies and training material in the process
- What does it take to influence education institutions to expand their programmes?
  - Takes time to work it into general curricula and often as one topic in a broader CC package
  - Faster uptake in shorter more targeted education programs

Global Carbon Market

- Fragmented market
  - Project-based (baseline and credit system)
    - Emission reductions are created and traded through a given project or activity (JI and CDM)
  - Allowance market (cap and trade system)
    - Emission allowances are defined by regulations at the international, national, regional or firm level - Kyoto-ET, EU-ETS, Domestic: UK, Japan, Canada, Korea. Firms: BP, Shell
    - Linkage between EU ETS and project-based mechanisms
  - Voluntary market
    - Individuals and companies account and trade their greenhouse gas emissions on a voluntary basis (carbon compensation and travel compensation schemes)
    - Several companies expressed interest in buying project-based credits (CERs and ERUs)

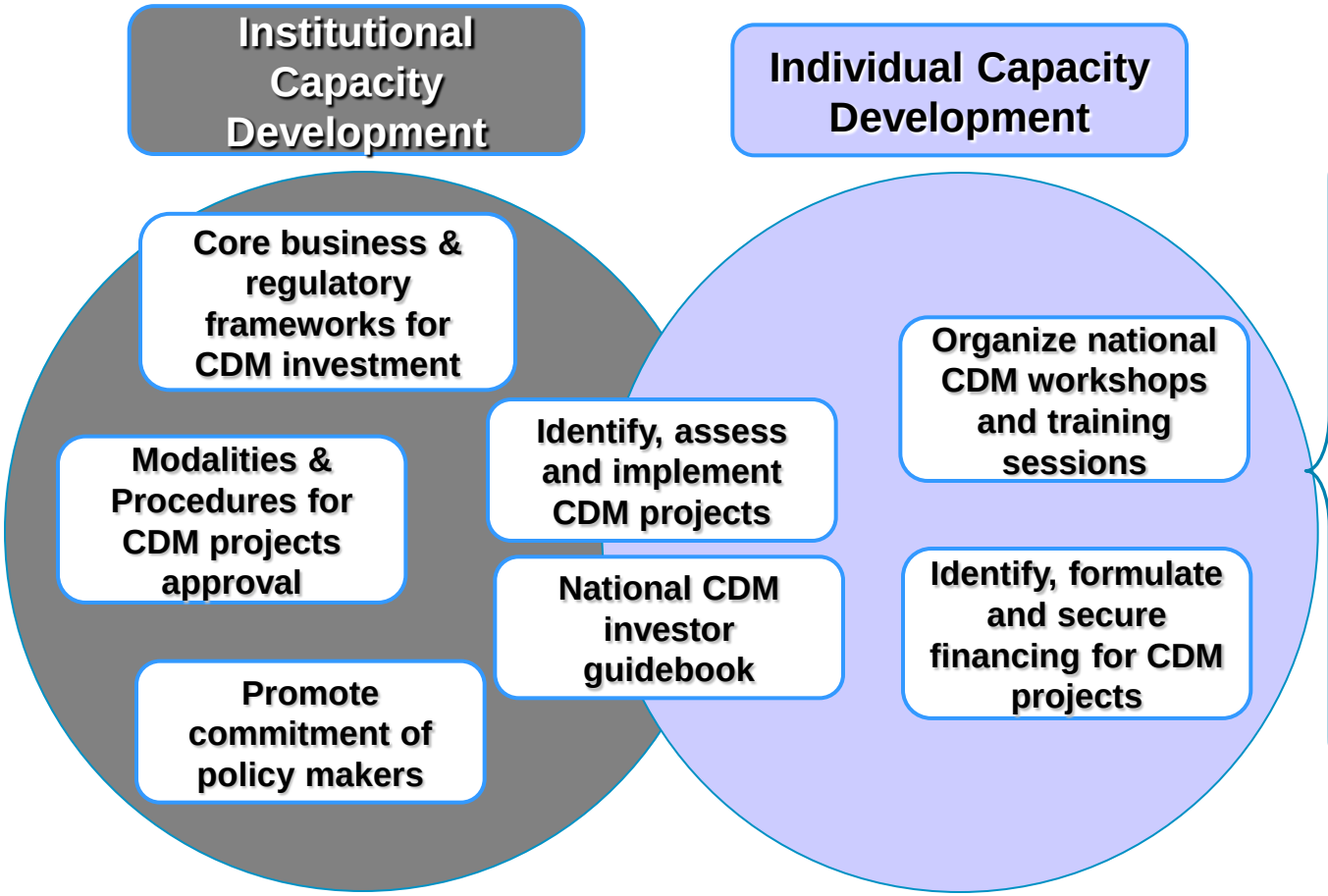
CDM Basics

- CDM is to allow Annex I countries meet part of their emission reduction requirements for first commitment period 2008-2012 at lower costs in non-Annex I countries than could be done domestically.
- Annex I countries are allowed to acquire Certified Emission Reductions (CERs) by implementing GHG mitigating CDM projects in non-Annex I countries.
- Selling CERs is an additional stream of cash inflow to the project, which improves project economics.
- ODA (Official Development Assistance) funds can not be used in CDM investments.

CDM Challenges

- CDM Modalities & Procedures are new and complex
- New institutional requirements for project cycle management.
- Knowledge gap between credit buyers & sellers.
- Limited access to finance by potential developers.
- Financial intermediaries lack of knowledge about CDM.
- Lack of trained national CDM expertise.
- Lack of entities capable of bundling projects for the buyers
- Investment climate restrictions.
- Limited budgets for operation of DNAs.
- For LCDS the majority of potential is in small projects, and difficult to attract financing

CDM capacity development approach



- National awareness raising workshops
- Regional workshops
- Sector specific workshops (e.g RE; landfill; EE, etc) for sector experts; practitioners; project developers)
- Executive briefings for key officials

project origination

project approval

Creates a national CDM projects portfolio and the institutional capability to attract CDM investments

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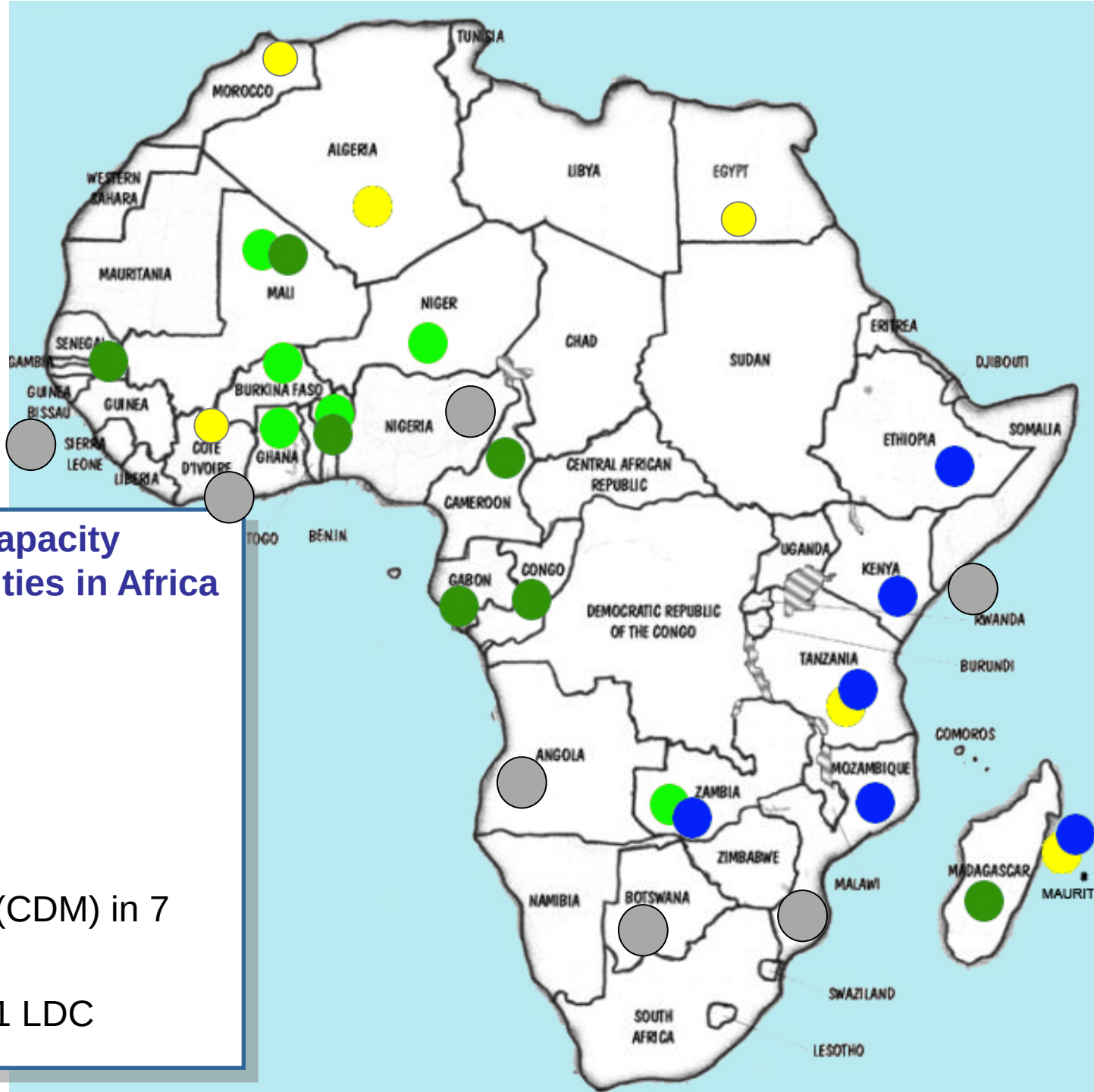
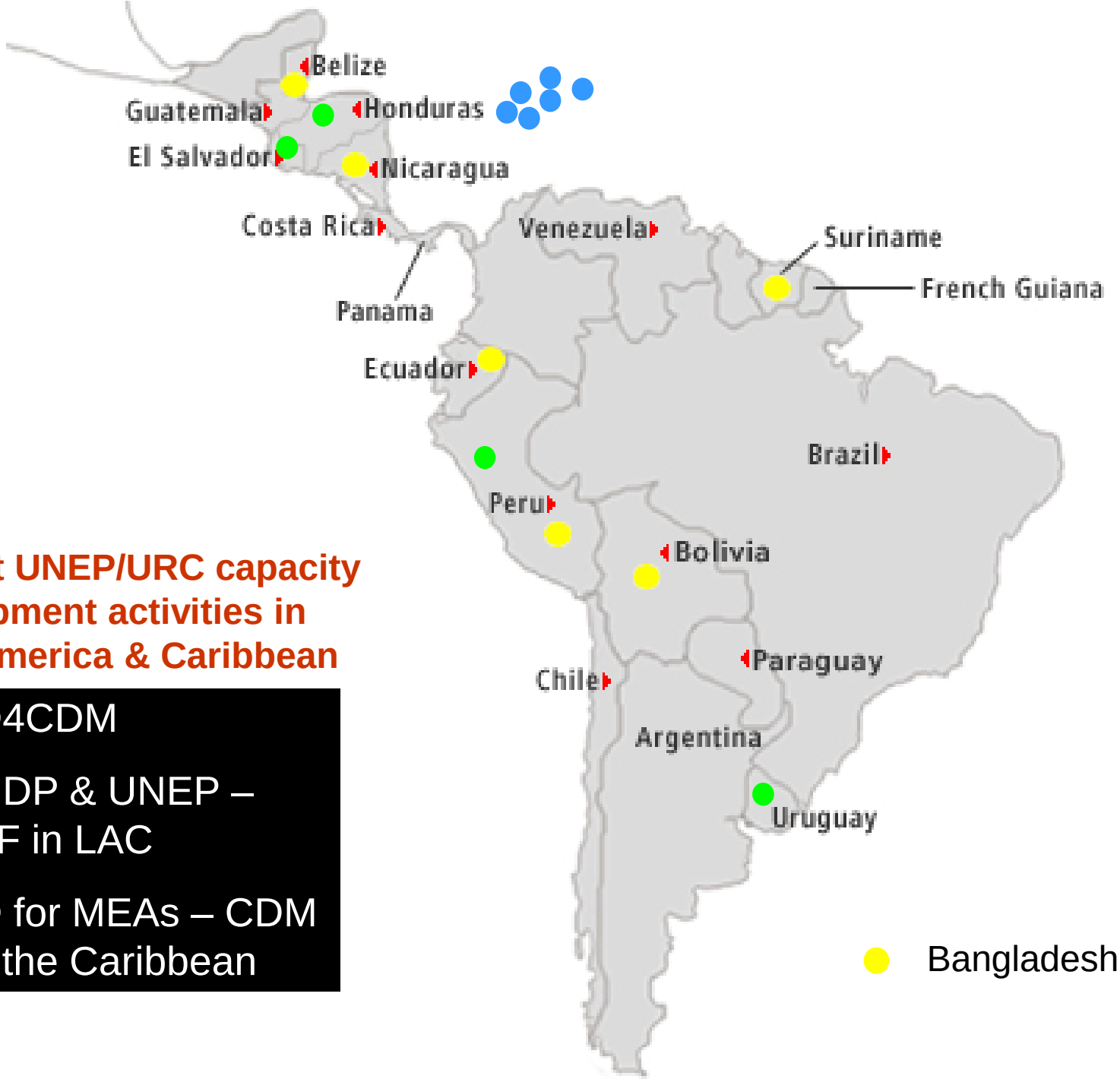


UNEP/URC capacity development activities in Africa

- CD4CDM
- Green Facility
- UNDP-UNEP
- CASCADE
- CB for MEAs (CDM) in 7 countries.

28 COUNTRIES; 11 LDC



Current UNEP/URC capacity development activities in Latin America & Caribbean

- CD4CDM
- UNDP & UNEP – LCF in LAC
- CD for MEAs – CDM for the Caribbean

- Bangladesh

CDM Capacity Development – need for a dynamic and adaptive approach

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- Design of interventions based on
  - Continuous barriers analysis process – to include countries and sectors left behind;
  - Monitoring global market.
  - Consultations with in-country stakeholders.
  - Focus on complementarily and synergistic approach – international – regional – national – inter-sectoral
  - Focus on strengthening national CDM markets: CDM regulation, projects origination and promotion
- Implementing in Partnership
  - national activities undertaken with government focal points and engage local experts and institutions
  - Technical support is provided in collaboration with regional centres of excellence and experts from other countries in the regions
  - Partnership with UNDP on CDM in Latin America and Africa.
  - Partnership with World Bank on national projects and e.g. regional carbon forums and finance events
  - Partnership with UNFCCC Secretariat on CDM Bazaar and Pipeline

Workshops and training

Different target groups have different CDM knowledge needs

- Tailor made workshops are designed for each group in public and private sectors
  - general informative CDM workshops about modalities and opportunities
  - disseminations and promotions workshops
  - sector focused project development training workshops

- Practical, hands on and participatory training sessions
  - how to identify and formulate PINSs and PDDs
  - institutional, legal and CDM regulatory issues
  - CERs commercialization, including ERPAs negotiation
  - portfolio dissemination and promotion

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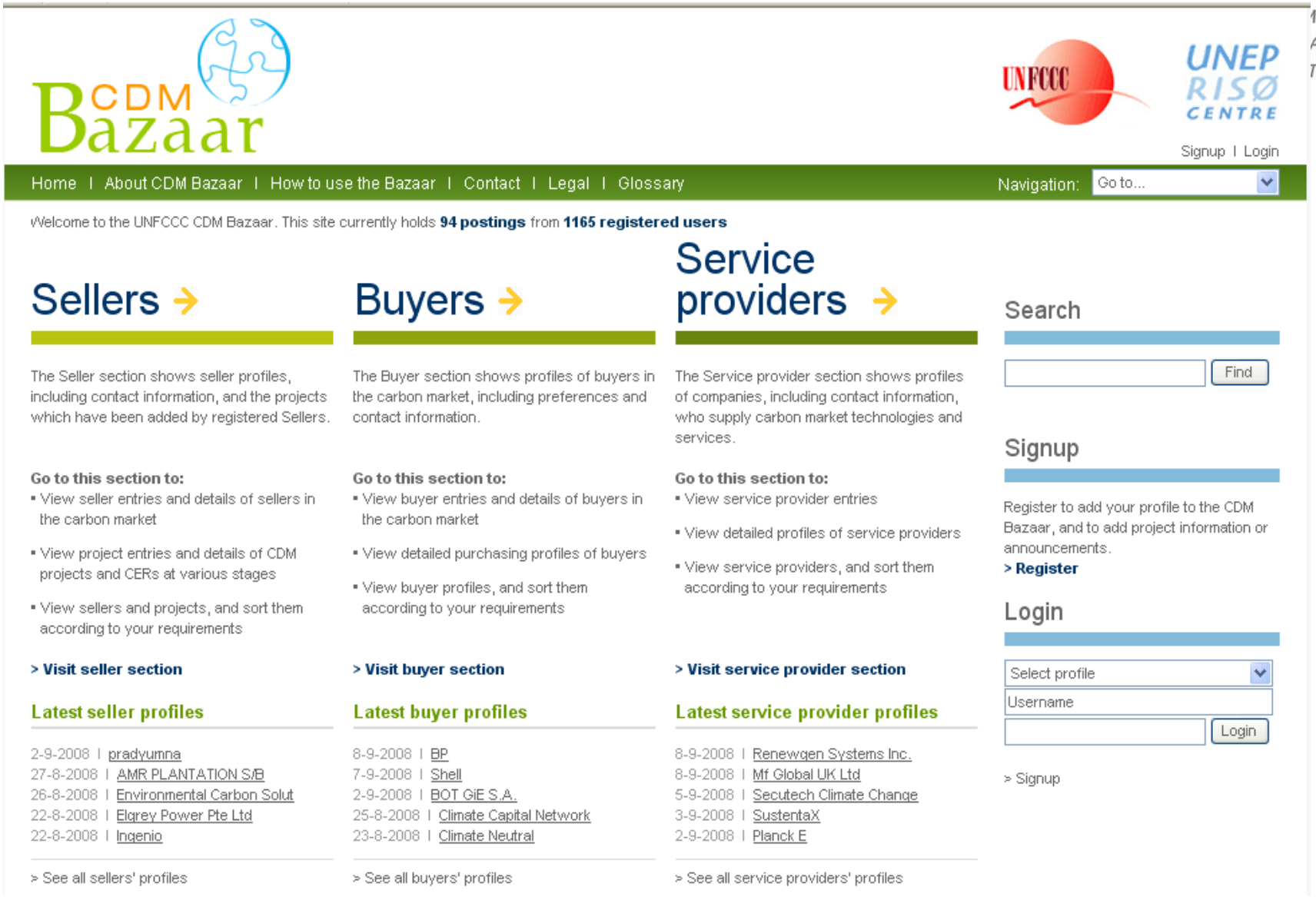
Developing the necessary guidance and training material

Analytical activities & publications

- **CDM data & analysis - CDM&JIPipeline**
  - A web based data base compiling CDM projects
  - Analysis and market surveillance
  - Projections of GHG emission reductions
  - Calculation of different parameters
  - It also contains the baseline & monitoring methodologies, a list of DOEs and several analyses. Almost all information is from cdm.unfccc.int and ji.unfccc.int.

Data base and analysis updates monthly

Virtual platform for information exchange



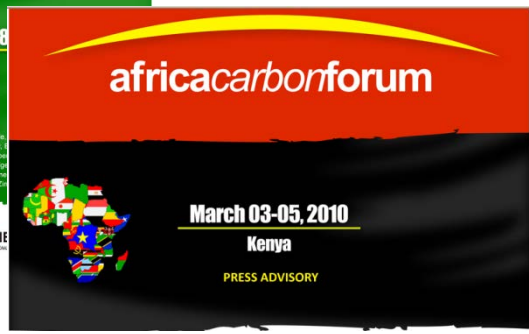
Regional activities

Investment mobilization and engaging the finance sector

- Dakar, Senegal: Carbon finance perspectives for the banking sector. Feb 12-14, 2008
- Training finance sector staff – Regional Financial Sector CDM Forum, Lima, Nov 2008
- ACAD 2010 – 14 on African finance

Regional Carbon Forums

- **Africa Carbon Forum,** Senegal 2008**;** Kenya 2010, Morocco 2011, Ethiopia 2012
- **Latin America Carbon Forums,** Quito 2006, Lima 2007, Santiago 2008, Panama 2009, Santo Domingo 2010. Sam Juan 2011
  - ✓ Knowledge and information sharing platforms
  - ✓ Bring together CDM stakeholders to benefit from:
  - ✓ Updates on Carbon markets; technical knowledge sharing on conferences; trade fair and capacity-development sessions,
  - ✓ Organizers: IETA, UNEP/Risø, WB, OLADE,



Web based tools and platforms

- Web based CDM Methodology Selection Tool

- A handy and simple tool
- Categorizes methodologies by technology
- It facilitates choosing a methodology that is applicable to the type of CDM project you are planning to develop
- Builds on the list of approved methodologies
- It is updated regularly
- It is a work in progress – comments and suggestions for improvement are welcome

Web based tools and platforms

- CDM Methodology Fact Sheets

NEW

Type	Number of CDM projects (rejected projects excluded)		Estimated CERs (000)/ year		Number of CDM projects with CERs issued		Issuance success	CERs (000) issued	
Wind	877	17.4%	78016	11.5%	134	25.2%	83%	16842	4.5%
Total	4926	100%	680327	100%	650	100%	97%	372352	100%

Region and "top3" countries	Number of wind CDM projects in the pipeline		Region and "top3" countries	Number of wind CDM projects in the pipeline		Region and "top3" countries	Number of wind CDM projects in the pipeline		Region and "top3" countries	Number of wind CDM projects in the pipeline	
Mexico	16	36.4%	China	430	53.8%	Egypt	4	50.0%	Cyprus	6	85.7%
Brazil	10	22.7%	India	351	43.9%	Morocco	3	37.5%	Israel	1	14.3%
Chile	6	13.6%	South Korea	13	1.6%	Cape Verde	1	12.5%	-	-	-
Other countries	12	27.3	Other countries	5	0.1%	Other countries	0	0%	Other countries	0	-
Latin America	44	100%	Asia and the Pacific	799	100%	Africa	8	100%	Europe, Central Asia and The Middle East	7	100%

Source: UNEP Risoe CDM/JI Pipeline Analysis and Database, February 1st 2010

HYDRO

Hydro CDM projects are divided into small scale (less than 15 MW) and large scale projects. During 2008 small hydro installations grew by 28% to raise the total world small hydro capacity to 85 GW.

World wide hydroelectric power (small scale and large scale) supplies 20% of world electricity. Given the right location, hydro power is a low maintenance source of renewable energy.

Description of technology

The energy in falling water can be converted into electrical energy or into mechanical energy to pump water or grind grain. The main components of hydro systems are the turbine and the generator. Other components include the physical structures to direct and control the flow of water, mechanical and/or electronic controllers, and structures to house the associated equipment. Different types of turbines are available and the optimum choice depends strongly on the head and the water flow rate. Generally, a high head site will require smaller, less expensive turbines and equipment. For most hydro projects, water is supplied to the turbine from some type of storage reservoir, usually created by a dam or weir. The reservoir allows water to be stored and electricity to be generated at more economically desirable times – during periods of peak electrical demand, for example – when the electricity can be sold for a higher price. In these systems the amount of electrical power that can be generated is determined by the amount of water that is stored in the reservoir and the rate at which it is released.

The most environmentally-sound hydro systems do not impact the amount or pattern of water flow that normally exists in the river or stream. Such "run-of-river" systems may use a special turbine placed directly in the river to capture the energy in the water flow. A conventional plant may also operate as a runoff river system if the natural variability of the river flow is maintained. However, this type of system may generate less power during times of low water flow.

Small-scale hydro systems are modular and can generally be sized to meet individual or community needs. However, the financial viability of a project is subject to the available water resource and the distance the generated electricity must be transmitted. Hydro systems do not create any pollution when they are operating, and generally offer highly reliable power. They also have very low running or maintenance costs, and they can be operated and maintained by trained local staff. Hydro systems generally have a long project life. Equipment such as turbines can last 20–30 years, while concrete civil works can last 100 years. This is often not reflected in the economic analysis of hydropower projects, where costs are usually calculated over a shorter period of time. This is important for hydro projects, as their initial capital costs tend to be comparatively high because of the need for civil engineering works.

Hydro developers generally need to invest in detailed analyses before a project can proceed. Regulatory authorities may require structures or systems that prevent adverse effects on flora and fauna, particularly fish. Conversely, some hydro systems may enhance local environments through, for example, the creation of wetlands.

Example of application

Title: "Santa Cruz I Hydro Power Plant" (ref. no. 2405)

The CDM project is a run-of-river hydropower plant, located north east of Peru's capital city of Lima at 1,985 meters above sea level in the basin of the Blanco River (Santa Cruz) in the district of Colcas. The plant will have an installed capacity of 5.9 megawatts and a projected yearly average generation of 35,627 megawatt hours. The objective of the Santa Cruz I Hydroelectric Power Plant is renewable electricity generation to be supplied to the Peruvian National Inter-connected Electric Grid.

Project investment: USD 7,500,000

Project CO2 reduction over a crediting period of 7 years: 118,490 tCO2e

Expected CER revenue (CER/USD 10): USD 1,184,900

Common methodologies

The methodologies presented here are the ones mainly used by the project developers in the different hydro projects in the CDM pipeline.

- ACM2 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"
- AM52 "Increased electricity generation from existing hydropower stations through Decision Support System optimization"
- AMS-I.D."Grid connected renewable electricity generation"
- AMS-I.A."Electricity generation by the user" http://cdm.unfccc.int/methodologies/index.html

CDM status

CDM projects based on hydro hence represent 27.4% of all CDM projects in the pipeline and is the most common project type in the pipeline. The geographical distribution of hydro projects is concentrated around Asia and in particular China.

A snapshot review of technologies used to date in CDM activities, including:

- An example of application including:
- Investment
- Estimated CERs revenues
- Performance under CDM
- Methodology applicable to the technology

CB experiences

- Approaches have largely focused on short term actions rather than building sustained national capacity to deal with CDM and broader climate change issues.

Questions:

- How to change this on evolving and rapidly developing issues ?
- What is the best approach ?
- How to deal with country specificity & issue complexity

Moving towards more formalized education

Short course collaboration with University of Twente on CDM and project development training

Linking CB and education some concluding remarks

- Project based or integrated CB needs to be combined with more systematic education and training
- National workshops and training may be used for senior experts
- Education and training of mid-level or junior staff in public and private institutions should be priority to develop the “leaders of tomorrow” and build sustained capacity
- “short courses” could play an important role in several areas and broad integration in education is required for the future
- Integration into formalized education takes time and need to be realistic in relation to future needs and dynamic of issues