

Harnessing opportunities in carbon credits

PRICEWATERHOUSECOOPERS 

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Context

- There is a huge opportunity for India and Indian corporate sector,
 - Estimates range from US\$ 2 billion to US \$ 4 billion per year for developing countries
 - India and China can meet almost 75% of the total market
- Carbon finance can provide 5% - 15% of new project costs
 - Make marginal projects investment grade
 - Leveraging carbon financing for better project financing terms
- You are sitting on a significant unrealized carbon asset
 - Eligible investments made since January 1 2000
 - Can be monetised to provide dollar revenue stream

Global developments in climate change

Global agenda

The long-term objectives of global action are:

- to de-couple emissions growth from economic growth, and
- to de-carbonise the economy (reducing emissions by >50%)

This will mean a further shift:

- from energy profligacy to energy efficiency in supply and use,
- from coal to oil to gas to renewables in power generation,
- from petroleum to hybrids to hydrogen in transport,
- from waste as a by-product to waste as a value-stream,
- from free emissions to costly emissions

What has been the global action on climate change

- The Kyoto Protocol sets binding targets for GHG reductions in a majority of developed countries (Annex 1)
- Developing countries must ratify the Protocol to participate in CDM.
- The Protocol provides opportunities to reduce global emissions by utilising cheapest abatement options
- The Protocol has come into force from 16 February 2005
- India ratified the Protocol
- COP 10 held in Buenos Aires (Argentina) in December 2004 clarified many issues and provided transparency in the mechanisms functioning

What has been the global action on Clean Development Mechanism

- Prospect of ratification has made several EU-countries start developing CDM initiatives.
 - CERUPT –programme by HOLLAND already underway
 - AUSTRIA to dedicate \$36 million, starting Jan 03
 - DENMARK has committed \$17 million
 - SWEDEN has budgeted \$22 million
 - JAPAN recently bought an annual flow of 62 000 tonnes of CO₂e from Kazakhstan
 - The NORDIC COUNTRIES have set up a \$10 million fund
- Active participation by Annex 1 countries is likely to:
 - Increase demand of credits
 - Increase private companies' sense of security of investing in CDM
 - Increase transparency in all stages of project development

Kyoto Protocol and us

Mechanisms under Kyoto Protocol

- Emissions Trading
 - Amongst Annex-I countries
 - Accounting period 2008-12
- Clean Development Mechanism
 - Annex-I party and a non-Annex-I party
 - Project based mechanism
 - Crediting from 2000 through to 2008-12
- Joint Implementation
 - Annex-I party and Annex-I party
 - Project based mechanism
 - Crediting period 2008-12

Mechanisms under Kyoto Protocol

- Emission Reduction
= Baseline Emissions (estimated) – project emissions (verified)
- Emission Reduction become a commodity after host country endorsement, validation, registration and certification
- Before certification, ERs are very heterogeneous depending on the plausibility of their baseline

Eligibility criteria

- “Project activity” initiated after January 1, 2000
- Environmental additionality
 - Emission reductions generated are additional (above and beyond) those that would have occurred in normal course of events
 - Other additionalities (technological, financial, investment) not officially required
- Meets host country sustainable development criteria

GhG eligible under Kyoto Protocol

- Carbon dioxide (CO₂)
- Methane (CH₄)
- Nitrous oxide (N₂O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulphur hexafluoride (SF₆)

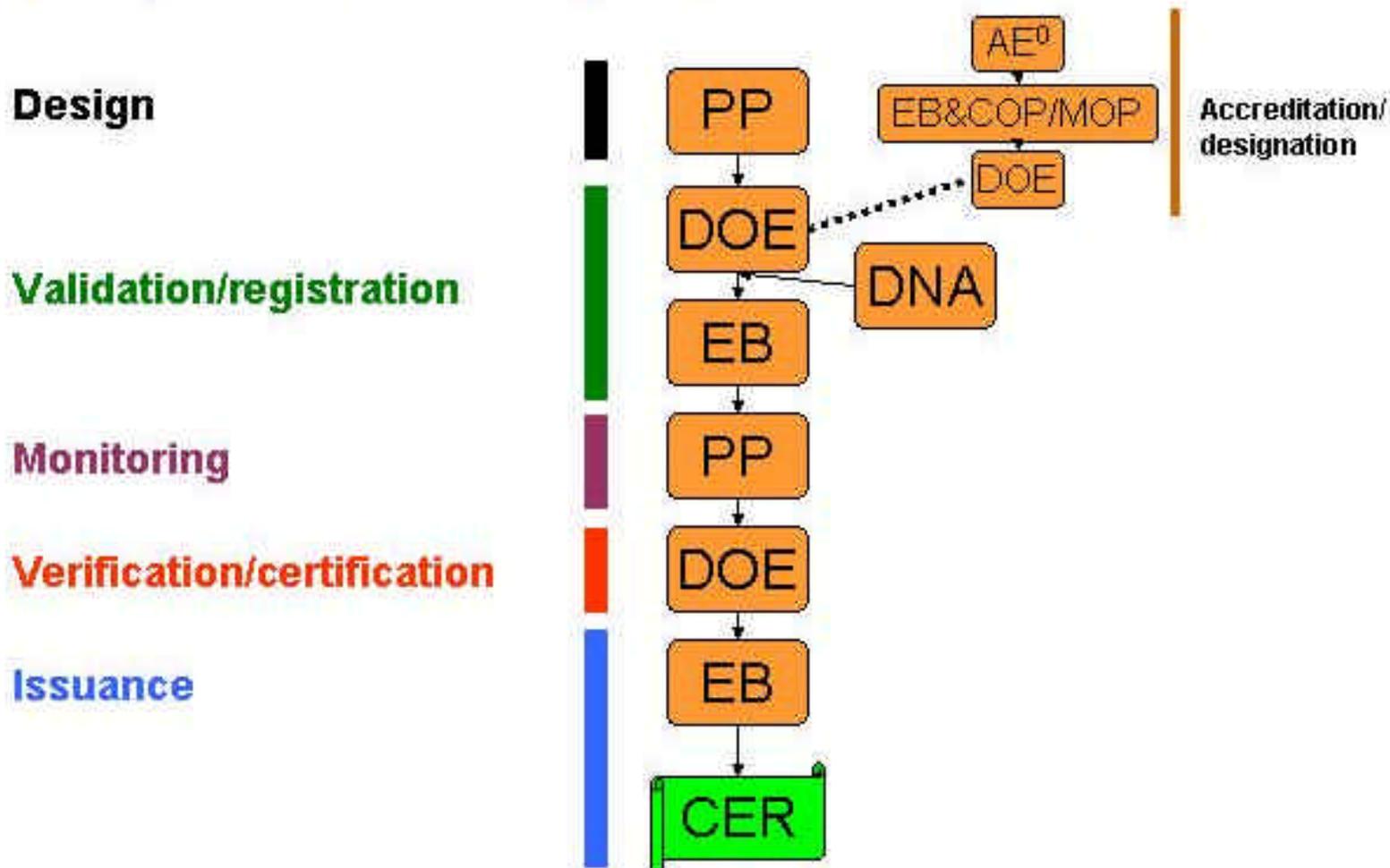
Projects likely to be eligible

- Energy projects, to illustrate
 - PF Supercritical boilers
 - CCGTs – natural gas based, Integrated gasification combined cycle, fuel switching
 - Renovation and modernization, Fugitive gas emission capture, Reduction of T&D losses
- Renewables: Solar power projects, Small hydro power projects, Wind energy, Biomass, MSW
- Generic industrial projects, to illustrate
 - Co-generation
 - Waste heat recovery
 - Energy efficiency projects
 - **Material Substitution Projects**
 - System change Projects

The ranking of CDM project types

- Methane gas capture
- Biomass
- Fuel Switching-coal to biomass.
- Hydropower- Small hydropower.
- Energy efficiency-electricity producers
- Fuel Switching-coal to gas
- Wind Power
- Energy efficiency-Process
- Energy efficiency - end user
- Material / System Substitution
- Agriculture
- Solar Power
- Sink projects

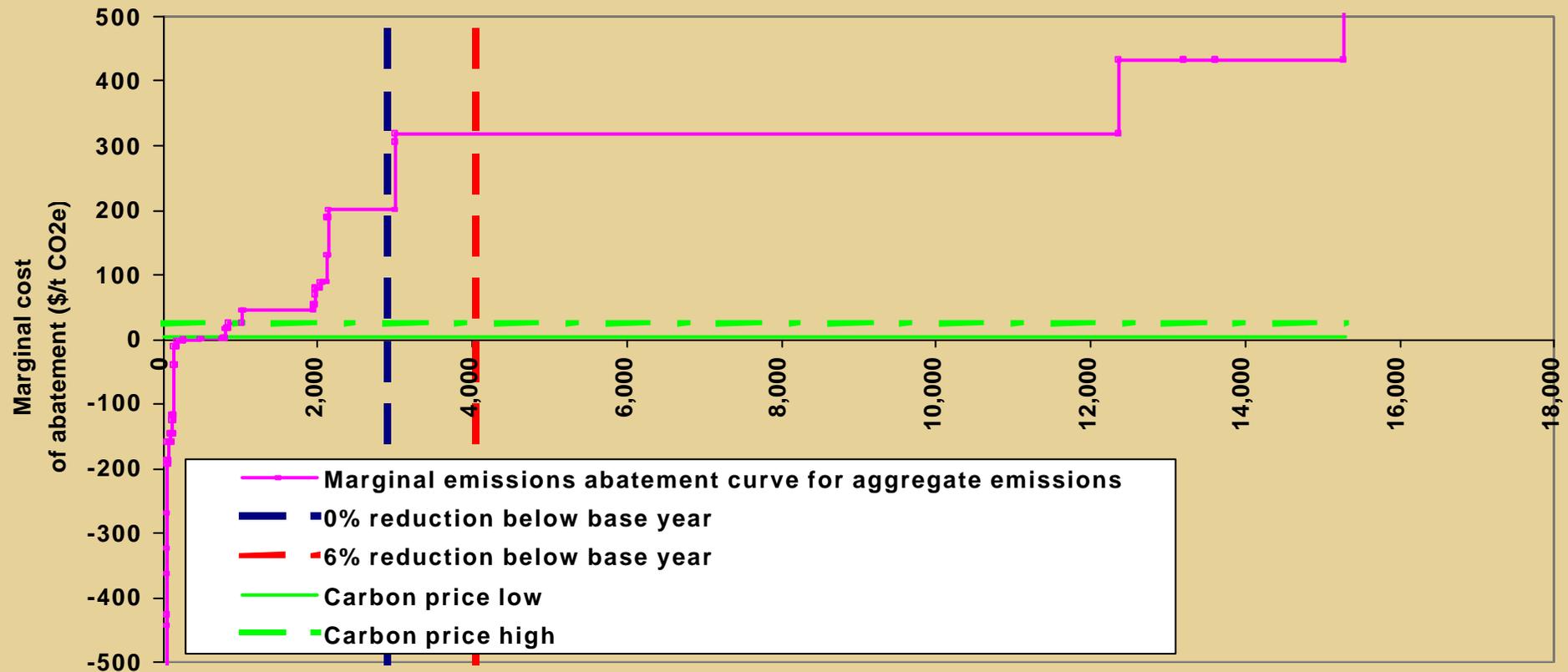
CDM project activity cycle



Transactions in CDM

What is the key driver for carbon market

Marginal Emissions Abatement Cost Curve
Aggregate emissions abatement (t CO₂e) in target year



Emissions abatement in target year (t CO₂e)

PricewaterhouseCoopers

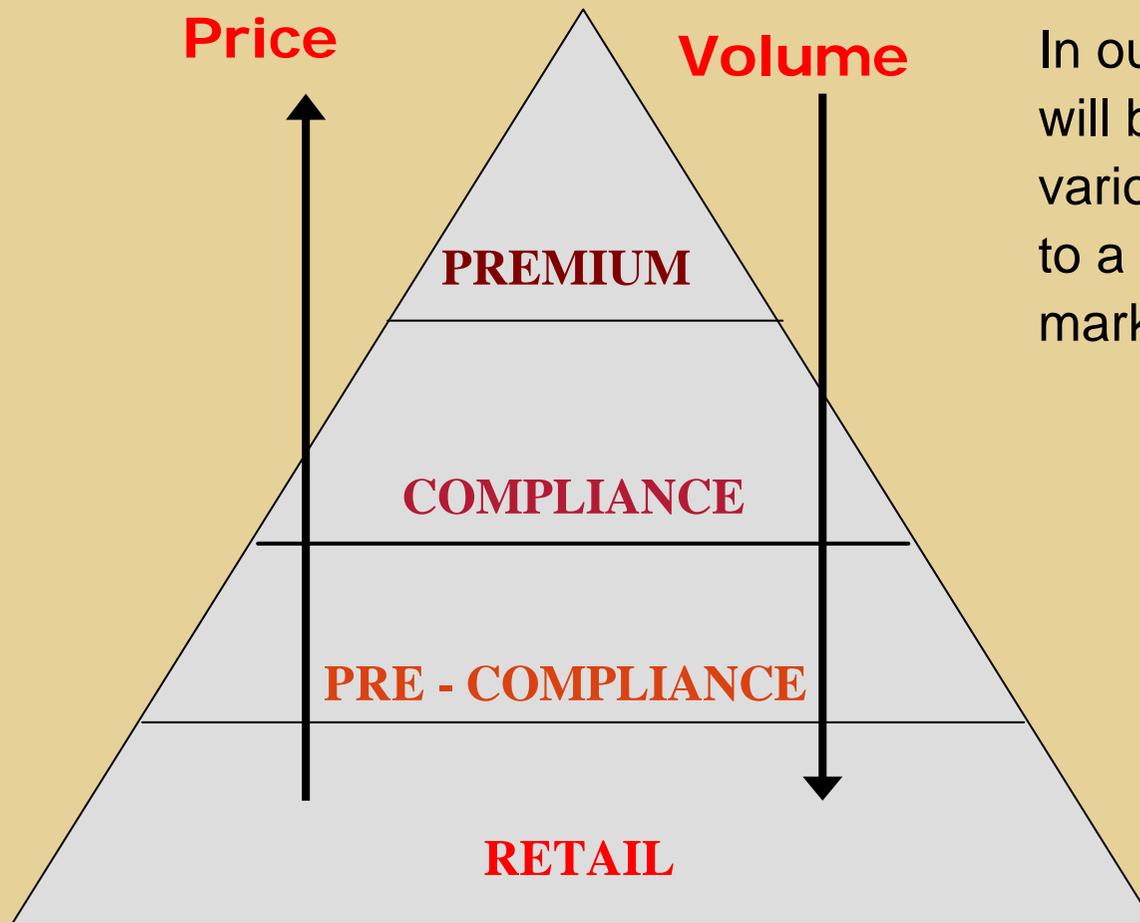
Have there been any transactions so far

- Internationally since 1996 over \$ 100 million has been traded on the carbon market
 - A total of 60 trades (55 MtCO₂e) have been executed
 - Deals have been VER's approved by third-party accountants
 - ER deal reported by an Indian steel major
- Dutch government
 - Selected 6 projects from India under first CERUPT
 - Already bought credits from two ERUPT tenders
- Prototype Carbon Fund investments in CDM projects

What would buyers look for

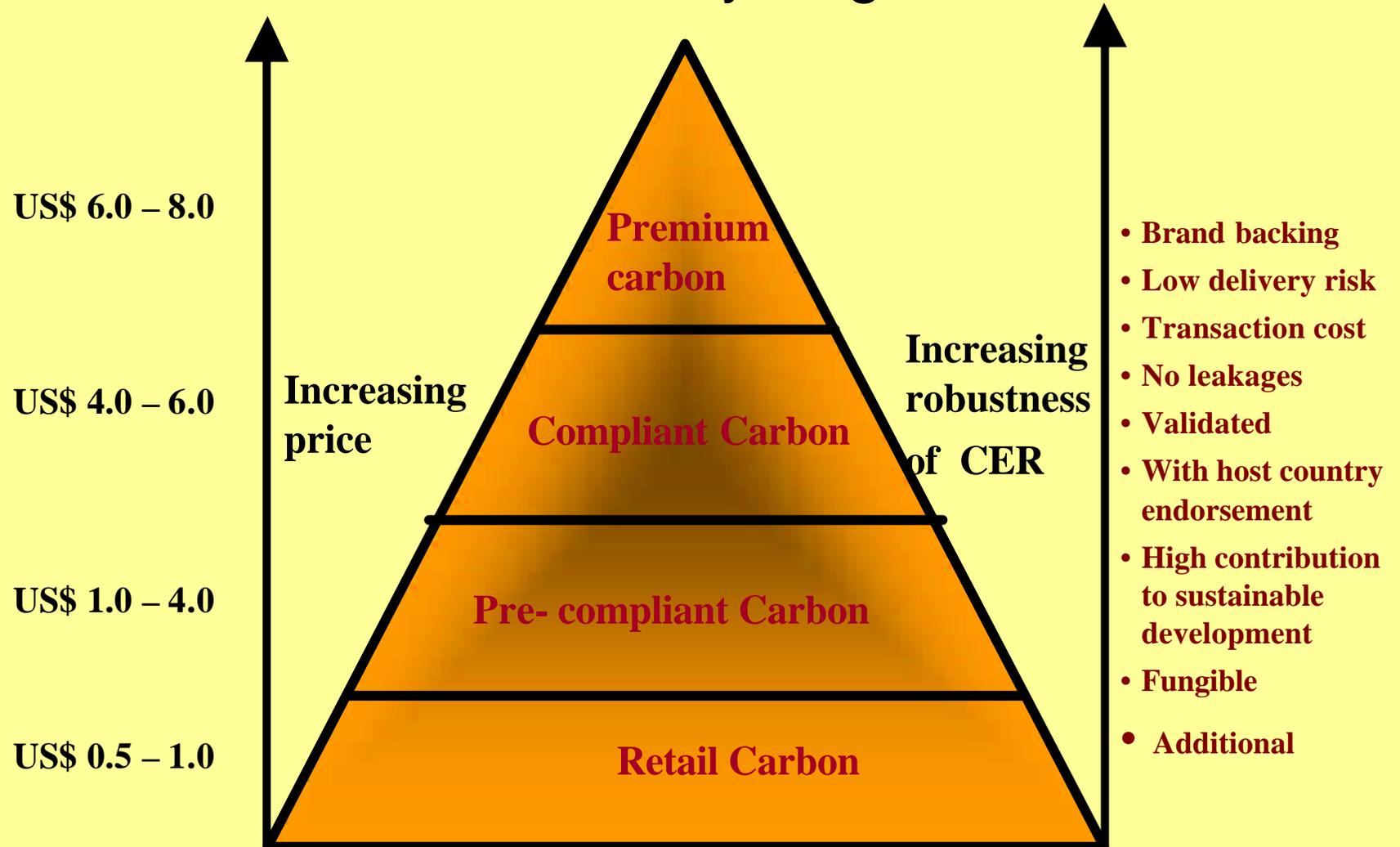
- Clear CDM rules
 - Host country endorsement rules
 - Investment rules
- Robust and large CDM projects
 - robust carbon, robust project
- Developed by large Indian companies
 - Ability to standby performance obligations
 - Portfolio of credits
- Projects having high sustainability criteria
 - Stakeholders' perspective

One price - one credit? Or segregation of carbon markets?



In our view it is likely that there will be a strong demand for various types of credits – leading to a segregation of the carbon markets according to credit type

Carbon Market by Segment



One price - one credit? Or segregation of carbon markets?

Credit type	Characteristics	Use
Premium	Highest quality, world-class developers, top-class host countries, very strong additionality, fungible across jurisdictions, sustainability benefits above Kyoto compliance	All purposes, all jurisdictions
Compliance	Credits fully Kyoto compliant but not necessarily fully fungible, Sustainability benefits according to demands by CDM Executive Board	Compliance, possibility of restrictions in certain Annex 1 countries
Pre-Compliance	Credits from projects that need re-development before compliance ready, projects developed before rules set, awaiting ratification	Internal schemes
Retail	Verified credits but not to be used for compliance, use for retail schemes and offset schemes	Internal, offset, retail

Implication for you

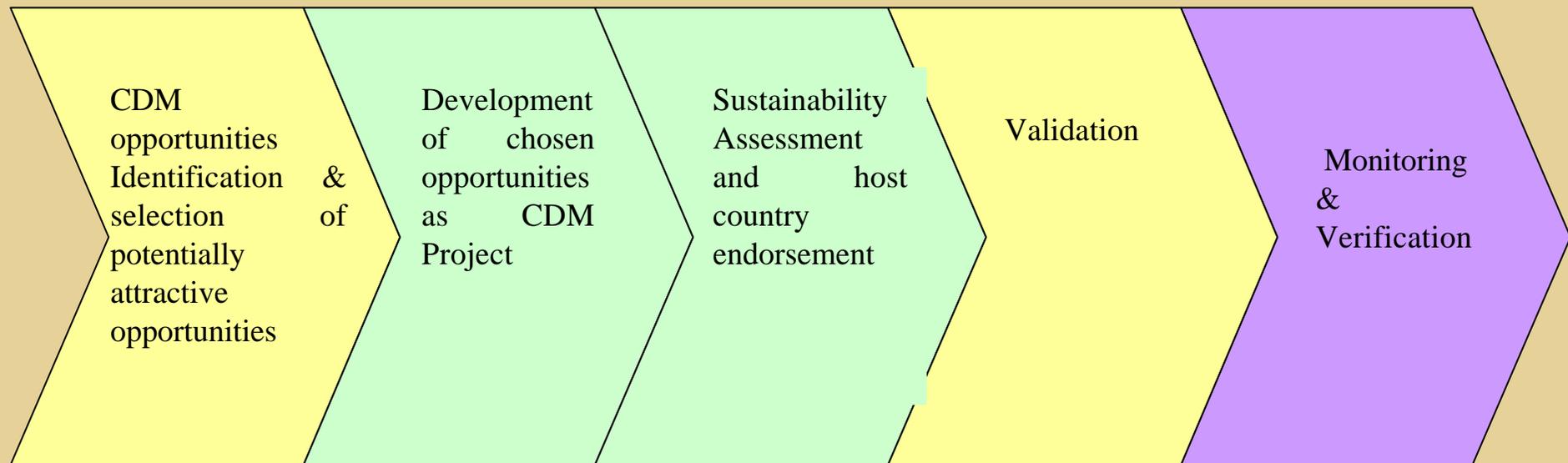
- Early mover benefits and greater scope to influence policy
- Additional benefit from and support for core business strategy
- Improve market perception
- Financial benefits from implementing CDM projects
- Cost savings from efficiency gains
- Expansion into new businesses
- Public relations gain

We can assist you in...

- Developing a comprehensive climate change strategy
- Managing your carbon assets
- Identifying and prioritizing CDM opportunities
- Co-developing CDM opportunities
- Transaction services

CDM Process

CDM process



Process

- Project documentation
 - Background and information
 - Project boundary
 - GHG sources and sinks (direct/indirect, onsite/offsite)
 - Baseline methodology selection and justification
 - Estimates of project emission using selected baseline(s)
 - Crediting period
 - Monitoring and Verification Protocol

Process

- Host country endorsement
 - Sustainability review: Social, Economic, Environmental
- Validation
 - Selection of DOE
 - Validation of baselines, emission estimates, M&VP
 - Validation of additionality
- Registration
 - Register project activity as CDM with CDM-EB

Process

- Monitoring
 - Self or third party
- Verification and certification
 - Selection of DOE
 - Verification of performance against baseline
 - Certification
 - Request for issuance of CERs from CDM-EB
- Crediting of Emissions reductions with CDM-EB registry

Illustrative India experience

Client	Sector	Summary
UNDP	Multi-sector	Review of the project to identify GHG emission reduction options in power, mining, steel and renewable sectors in India
Private utility	Energy	<i>CDM Project Development</i> A 8 MW bio-mass to energy project was included in SENTER's CERUPT tender earlier this year. PwC is assisting the client in preparing the CDM project documentation and obtaining host country approval
Private utility	Energy	<i>CDM Project Development</i> PwC is assisting the client in structuring the fuel switching of its power project as a CDM project and is providing complete support from developing project documentation to sale of credits.
Steel major	Steel	<i>Climate Change Strategy</i> Client commissioned PwC to develop a climate change strategy including identifying CDM project opportunities in their operations. PwC is now assisting Jindals in obtaining host country approval for three CDM project opportunities.
Private utility	Utilities	<i>Climate Change Strategy</i> PwC has been commissioned to develop a climate change strategy including identifying CDM project opportunities in their operations. PwC is now assisting the client in obtaining host country approval for selected project opportunities.
Private utility	Energy	<i>CDM Project Development</i> A 18 MW wind farm project is one of the projects included in SENTER's CERUPT tender earlier this year. PwC is assisting the client in preparing the CDM project documentation.

Some experiences

Opportunity identification, PDD, Validation assistance, Host Country endorsement

Large Indian Power major– 3 projects, Large Indian Steel – 3 projects, large power– 1 project, Biomass power– 1 project,

Large HFC Two projects, Large PFC one Project

One Coal Bed methane Project

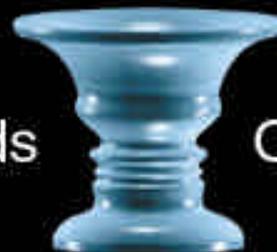
Project Management: (i.e. upto transaction)

Large wind major, large power, Wind project

Validation (PwC Certification): large wind, Biomass project

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Our people