



CDM Project Overview

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Kyoto Protocol: An overview

- **May 1992: UN FCCC* establishes framework for containing global warming**
- **Dec 1997: Following intense negotiations in Kyoto (Japan), a protocol is agreed upon by over 100 countries**
- **Feb 2005: 141 countries, including EU, Japan, Canada, and Russia sign the Kyoto Protocol and it gets ratified w.e.f. 16-Feb-05**
 - The US remains a key non-signatory
- **The Kyoto Protocol sets legally binding targets for reducing green house gases (GHGs)**
 - Developed countries have a target to reduce GHG emissions by 5.2% below 1990 levels, by year 2012
 - EU members committed to reduce their average emissions by 8 %
 - India, China, and Brazil are classified as emerging countries and hence exempted from this protocol

Green house gases

- **Green house gases (GHGs) are gases that result in global warming**
 - Degree of warming caused by a specific GHG depends upon its CO₂ equivalence (CO₂e)
- **6 GHGs are regulated under the Kyoto Protocol**
 - Carbon dioxide (CO₂)
 - Methane (CH₄)
 - Nitrous oxide (N₂O)
 - Hydrofluorocarbons (HFCs)
 - Perfluorocarbons (PFCs)
 - Sulphur Hexafluoride (SF₆)
- **There are at least 25 other gases, including chloroform, CO, and water vapour that influence climate-change**
 - Above-mentioned six are key ones, that can be controlled by human intervention with relative ease

Global warming potential

- Global warming potential (GWP) for the 6 GHGs are summarised below:

GHG	Global Warming Potential
Carbon dioxide	1
Methane	21
Nitrous oxide	310
Hydrofluorcarbons (HFCs)	140 – 11,700
Perfluorcarbons (PFCs)	6500 – 9,200
Sulphur hexafluoride	23,900

- GWP is the global warming impact that a GHG would have over a 100-year timeframe
 - By definition, CO₂ is used as the reference benchmark, with GWP of 1

Kyoto Protocol: Issues & drawbacks

- **USA, world's largest GHG emitter, has not ratified the Protocol**
 - Other countries that have not yet ratified the Kyoto Protocol include Australia and Monaco
- **Short horizon: First phase of the Protocol covers the period upto 2012**
 - Kyoto Protocol will have to be further extended beyond 2012
- **Country targets defined, but division of that by industry and sector within countries not yet structured**

ASSESSMENT...

Support for GHG control and reduction, and hence the Kyoto Protocol, is gaining momentum worldwide.

The further extension or US ratification of the Kyoto Protocol, however, will be determined by multiple factors.

Carbon credits

- Carbon credits are certificates issued to countries that reduce their GHG emissions
- One credit = 1 tonne of CO₂ (or CO₂ equivalent) reduced
- Surplus credits result when a country overshoots its reduction target
 - These can be traded, with countries facing a shortfall in target able to buy and meet their targets
 - Carbon credit trading encourages emission reduction, provides financial incentives to those who do
- Carbon credits can be acquired through
 - **Clean development mechanism (CDM)**: Project-based emission reduction activities in developing countries
 - **Joint implementation (JI)**: Two developed countries can invest in emission mitigation projects, generating ERUs
 - **International emission trading (IET)**: Credit deficient and credit surplus countries (that have ratified the Kyoto Protocol) can trade carbon credits at specialised exchanges (European Climate Exchange, Chicago Climate Exchange, UK's CO₂E Exchange)

Carbon credit market

- **Buyers**

- EU and Japan main buyers (apx >60%)
- Private and government
 - Of total purchased volumes, private entities accounted for 69%
 - Govt of Netherlands single largest buyer, accounted for more than 16%

- **Sellers**

- Mainly HFC producing countries
- Asia and Latin America main sellers (45% & 35%, respectively)
- India, Brazil, and Chile together account for ~58%
- India as of now the largest producer of carbon credits and highest country rating

- **Other participants include OECD countries and voluntary projects in USA**

SRF's CDM project...

- SRF has been manufacturing HCFC-22 (R-22) at its Bhiwadi plant since 1989
 - HFC-23 gets produced as a by-product
- HFC-23 is a GHG, regulated under the Kyoto Protocol
 - GWP of 11,700

Emission baseline and emission reductions

Total production of R-22 (MT/annum)	11,145
Ratio (%)	2.942%
R-23 available for destruction (MT/annum)	327.89
Destruction efficiency (%)	99.99%
GWP	11,700
CO2e reduction (MT/annum)	3,833,566 (3.83 million)

...SRF's CDM project

- **SRF proposes to reduce this HFC-23 emission**
 - **Incineration of HFC-23 gas by thermal oxidation**
- **SRF has commenced storage of HFC-23 since July 2004 for incineration**
 - **instead of releasing it into the atmosphere**
- **Cost of the proposed CDM project: Rs 13 crore**
- **Total crediting period of the project: 10 yrs**
- **Estimated emission reduction per annum: 3.83 million tonnes**
 - **38 millions in 10 year**

SRF's CDM project: Current status

- HFC-23 thermal oxidation plant (incinerator) recently commissioned
- Methodology approved by UNFCCC
- Public Comment Period of one month at UNFCCC site is over and no inputs received
- Necessary approvals from designated national CDM authorities in India (Host Country), Germany and UK obtained
- DNV (UNFCCC accredited validator) completed the site visit as part of validation process
- Filing for registration expected in October 2005
- Already entered into two forward sale agreements for 1 million CERs

...SRF's CDM project

- **High quality international project partners**
 - **Solvay Fluor GmbH, Germany (Technology Provider)**
 - **ICECAP Trading, UK (Buyer)**
 - **Shell Trading International, UK (Buyer)**
 - **More Buyers are interested to participate as they are looking for a large, reliable and financially & technological sound project**

Expected cash in-flows

- **Market for carbon credits in nascent stage.**
- **Forward sale agreements entered into by SRF**
 - For initial tranche of CERs
 - July 2005: 500,000 CERs to ICECAP Trading (UK)
 - September 2005: 500,000 CERs to Shell Trading International (UK)
 - Combination of fixed and floating rates
- **Cash inflows will result in significant value creation for all stakeholders over the next 10 years**

Conclusion

- **SRF is one of the largest Indian projects to gain :**
 - **Already commissioned the incinerator, first in India and second in world**
 - **Having critical mass of more than a million credits p.a. (3.8 million p.a.)**
 - **Got ready buyers and developing wide buyers base**
 - **Got the approvals from the government of UK & Germany (buyers country)**
- **Cash inflows will result in significant value creation for all stakeholders over the next 10 years**
- **SRF has an aggressive growth plan based upon the existing strengths, technology and capabilities in its leadership businesses viz. New generation Refrigerant Gases, Technical Textiles etc**
 - **Cash flows from CER sales will be ploughed back into the business to drive future growth**
 - **SRF is committed to high levels of corporate governance and financial prudence to strengthen balance sheet**

Thank You

Note:

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