



Carbon Strategy for the Pakistani Petroleum Industry

Workshop: "Carbon Credits Potential in Oil and
Gas Sector of Pakistan", 11th & 12th Sept. 2007

Islamabad

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Factor Consulting + Management AG

Success in Carbon Business - since 1999



Carbon Financing



Carbon Asset Development



Carbon Risk Management



Factor`s Team

- Over 40 full time CDM and Carbon Finance Experts at Factor
- Operations include
 - Headquarters in Zurich, Switzerland
 - Subsidiaries and Partner offices in:
 - China
 - Pakistan
 - India
 - Abu Dhabi
 - Brazil
 - Romania
 - Moscow



We do business with leading global firms...



Factor's Track Record in a Nutshell (as of August 2007)

Carbon Financing

- Executed transactions from initial offering to final contract
- Transacted with the most credible Buyers in the market
- **15 Mt CO₂ transacted** since 2004 with a market value exceeding € 100 million

Carbon Asset Development

- Zero failure rate at registration
- Total pipeline exceeding 20 Mt CO₂ to 2012
- Track record: see reference list below

Track Record: CDM & JI Projects

Volume t CO ₂ e	Vintages	Host Country	Project Type
300'000	2005-11	India	Biomass energy
61'000	2005-12	India	Biomass energy
500	2004-13	Costa Rica	Biomass energy
960'000	2008-12	Costa Rica	Landfill gas
5'000	2005-11	India	Solar energy
1'900'000	2005-12	Brasil	Landfill gas
1'300'000	2005-12	Brasil	Landfill gas
1'300'000	2006-12	Brasil	Landfill gas
162'000	2004-12	India	Hydro
105'000	2004-12	India	Hydro
200'000	2005-12	India	Hydro
120'000	2005-12	India	Hydro
840'000	2007-12	India	Hydro
90'000	2005-12	India	Biomass energy
50'000	2006-12	India	Hydro
210'000	2007-12	India	Hydro
21'000	2008-12	India	Hydro
150'000	2008-12	India	Hydro
180'000	2007-12	India	Hydro
210'000	2007-12	India	Biomass energy
810'000	2006-12	India	Biodiesel
360'000	2007-12	India	Energy efficiency
189'000	2007-12	India	Biodiesel
90'000	2007-12	India	Energy efficiency

Track Record: CDM & JI Projects

Volume t CO ₂ e	Vintages	Host Country	Project Type
3 000'000	2 007-12	India	Hydro
3 000'000	2 007-12	India	Hydro
84'000	2 007-12	India	Hydro
3 150'000	2 008-12	India	Energy efficiency
1 050'000	2 008-12	India	Fuel switch
2 700'000	2 008-12	India	Hydro
840'000	2 007-12	India	Hydro
3 500'000	2 006-12	India	Hydro
4 500'000	2 006-12	India	Hydro
1'015'000	2 007-12	India	Hydro
560'000	2 007-12	India	Biomass energy
280'000	2 009-12	India	Biomass energy
280'000	2 008-12	India	Biomass energy
1 050'000	2 008-12	India	Hydro
1 400'000	2 009-12	India	Hydro
0	2 006-12	India	Fuel switch
3 150'000	2 009-12	India	Hydro
5 250'000	2 009-12	India	Hydro
4 000'000	2 008-12	Mali	Fuel switch
92'000	2 007-12	Switzerland	Biomass energy
1 500'000	2 007-12	China	Hydro
4 000'000	2 008-12	China	Hydro
1 200'000	2 007-12	Brazil	Fuel switch
50'000	2 008-12	Indonesia	Energy efficiency
50'000	2 007-12	Indonesia	Landfill gas
3 000'000	2 008-12	Argentina	Biomass energy
20'000	2 007-2012	Nepal	Solar energy

Track Record: CDM & JI Projects

Volume t CO ₂ e	Vintages	Host Country	Project Type
139'000	2008-12	Romania	Fuel Switch, En.eff.
60'000	2008-12	Romania	Energy efficiency
150'000	2008-12	Romania	Energy efficiency
500'000	2008-12	Romania	Energy efficiency
200'000	2008-12	Romania	Biomass energy
5'000'000	2008-12	Romania	N ₂ O
300'000	2008-12	Estonia	Methane recovery
200'000	2008-12	Estonia	Biomass energy
1'000'000	2008-12	Bulgaria	Biofuel, transportation
175'000	2008-12	Bulgaria	Biofuel, energy efficiency
600'000	2008-12	Bulgaria	Landfill gas
200'000	2008-12	Bulgaria	Methane recovery
650'000	2008-12	Czech Republic	Dist. Heating, Geotherm
238'000	-	Czech Republic	Fuel Switch, En.eff.
247'000	2008-12	Slovak Republic	Energy efficiency
40'000	2008-12	Poland	Energy efficiency
140'000	2008-12	Poland	Energy efficiency
145'000	2008-12	Lithuania	Energy efficiency

Track Record: CDM & JI Projects

Volume t CO ₂ e	Vintages	Host Country	Project Type
1'380'000	2004-12	Russia	Methane recovery
1'800'000	2008-12	Russia	Methane recovery
2'700'000	2008-12	Russia	Methane recovery
600'000	2008-12	Russia	Flaring
2'800'000	2008-12	Russia	Flaring
780'000	2008-12	Russia	Industrial energy efficiency
465'000	2008-12	Russia	Dist. Heating, fuel switch
280'000	2008-12	Russia	Energy efficiency
960'000	2008-12	Russia	Gas capture
2'200'000	2008-12	Ukraine	Gas capture
990'000	2008-12	Ukraine	Power, energy efficiency
590'000	2008-12	Ukraine	Gas capture
620'000	2008-12	Ukraine	Wind energy
200'000	2008-12	Ukraine	Industrial energy efficiency
500'000	2004-12	Belarus	Energy efficiency
350'000	2008-12	Kazakhstan	Hydro power
50'000	2008-12	Kazakhstan	Solar energy

Track Record CDM Projects (Oil & Gas)

- **Russia, ongoing:** On behalf of Gazprom Bank, Factor is currently analysing CDM potentials and technical solutions for recovering and processing associated gas. Factor is also currently negotiating ERPAs for potential projects.
- **Globally, ongoing:** Support to BHP Billiton in identifying and developing CDM project opportunities in the operations of BHP Billiton and their clients

Carbon Services Pakistan

- Pakistan's first carbon consulting company
- A subsidiary of PITCO (Private) Limited, an established leader since 1940 in the fields of
 - Energy Consulting,
 - Power Plant Engineering and Consulting,
 - Environmental Consulting and Carbon Emission Markets
- Exclusive Partner of Factor

Factor and Carbon Services - Activities in Pakistan

- Development of over 15 CDM projects in Pakistan
 - Cement Plants
 - Power Generation
 - Paper & Pulp Sector
 - Sugar Sector
 - Waste Management
 - Textile Sector
 - Energy Efficiency Projects in Various Sectors

Our Services in Pakistan

- CDM Project Development
 - Initial feasibility study
 - Taking the project through CDM registration
 - Post-registration support
- Trading or Brokerage of CERs
 - Defining the sales strategy
 - Identifying parties interested in purchasing CERs
 - Support in structuring the ERPA
- Project Finance

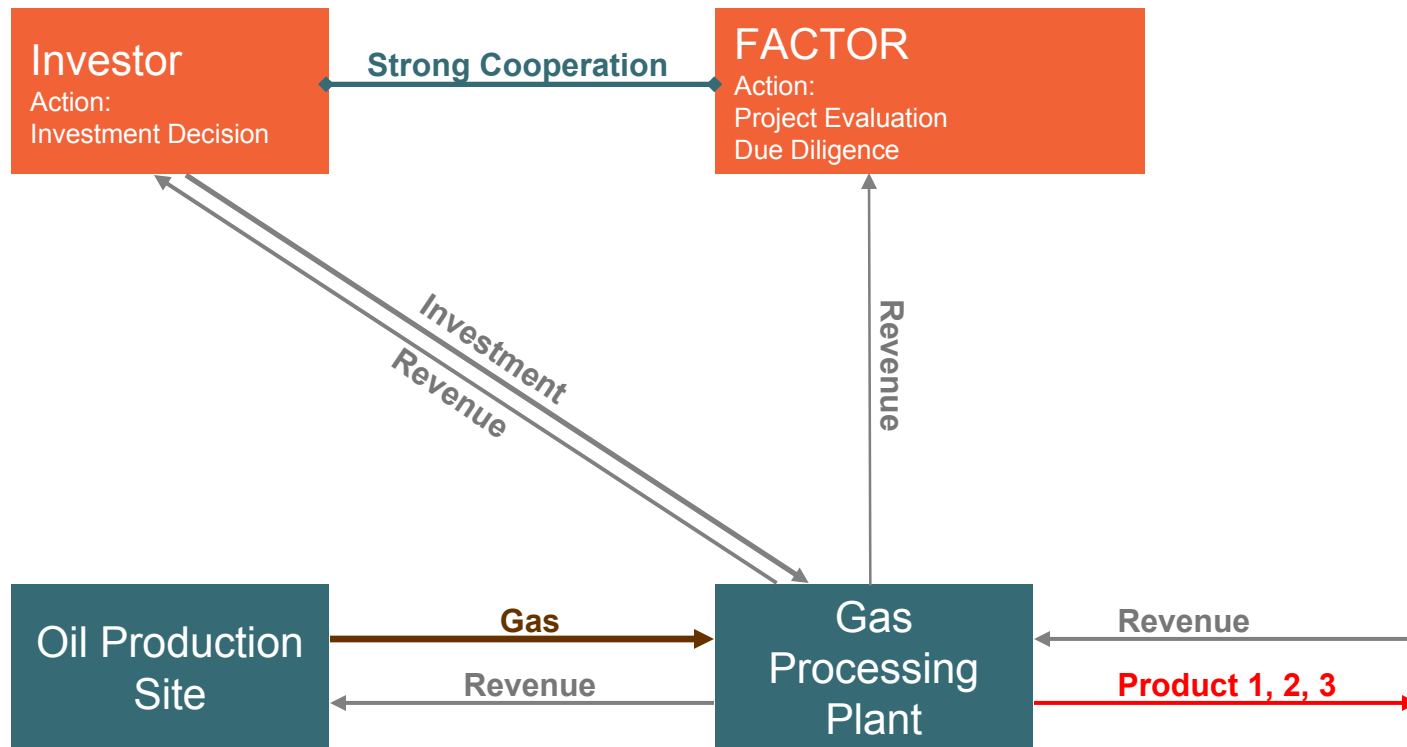
Project Finance - Eligible Projects

- Investment Size
 - Minimum amount € 15 m.
- Minimum Return on Equity (before taxes)
 - Without CER component: ca. 15 %
 - With CER component: ca. 25 %
- Preferred Project Type
 - Renewable energy and renewable fuel production, based on water, wind, solar, and sustainable produced biomass
 - Energy efficiency in infrastructure and industrial processes
 - Reduction of Non-CO2 greenhouse gases
 - Fugitive emission reductions from fossil fuel and natural gas processing
- Target Client Profile
 - Project normally will have the legal form of a special purpose company and should be majority controlled by a private party

Project Finance - Basic Requirements

- Investment Instruments
 - Equity types of securities (common or preferred shares)
 - Subordinated debt instruments with warrants and options attached
- Minimum Investment Requirements
 - All relevant project contracts signed
 - All relevant permits in place
 - Invest exist agreed upon and documented
 - Proper approval according the Working Procedures in place
 - Legal documentation in full force and effect
- Environmental and Social Policy
 - Project should adhere to international recognized standards
- Corporate Governance
 - Conduct business according international standards and comply strictly with all local laws and regulatory requirements

Project Finance Example: Oil Associated Gas Processing Plant



Emission Reduction Opportunities in Oil & Gas Sector

- Flare reduction and gas utilization
 - Recovery and utilization of associated gas from oil wells that would otherwise be flared.
 - Flare reduction and gas utilization at gas and oil processing facilities.
- Leak reduction
 - Reduction of gas venting in gas transmission and distribution systems.
- Carbon Dioxide Capture and Storage
 - Long-term storage of CO₂ in deep geological formations, e.g. depleted oil and gas reservoirs.

Project Pipeline

- Flare reduction and gas utilization
 - 3 projects registered, 1 project requesting registration
 - 13 projects at validation
 - Large CDM potential (as long as there is no general ban on gas flaring)
- Leak reduction
 - 8 projects at JI determination
- CO2 capture and storage
 - No project registered
 - Technical potential: at least about 2,000 Gt CO2 of storage capacity in geological formations. (IPCC, 2005)
 - Economical potential: 220-2,200 Gt CO2, with a contribution of 15-55% to the cumulative mitigation effort worldwide until 2100. (IPCC, 2005)

Flare Reduction & Gas Utilization

- Kwale oil-gas processing plant, Nigeria (registered)
 - Associated gas which was previously flared is used for power generation
 - Capacity: 480 MW
 - Emission reduction: 1,496 kt CO₂e/year
 - IRR: 13-15%
- Rang Dong oil field, Vietnam (registered)
 - Associated gas which was previously flared is recovered and processed into dry gas, LPG and condensate.
 - Dry gas is supplied to nearby power plants and a fertilizer plant. LPG and condensate are used as fuels for domestic use.
 - Emission reduction: 677 kt CO₂e/year
 - IRR: 8-9%
- Flare gas recovery at Uran plant, India (requesting registration)
 - Tail gas which was previously flared is used for the production of C2C3, naphta and LPG
 - Emission reduction: 98 kt CO₂e/year

Flare Reduction & Gas Utilization in India

- Recovery and utilization of associated gas at oil wells
 - 8 projects at validation
 - Total emission reduction: 558 kt CO₂e/year
- Flare reduction and gas utilization at gas and oil processing facilities
 - 1 project at validation
 - 1 project requesting registration
 - Total emission reduction: 111 kt CO₂e/year

Leak Reduction

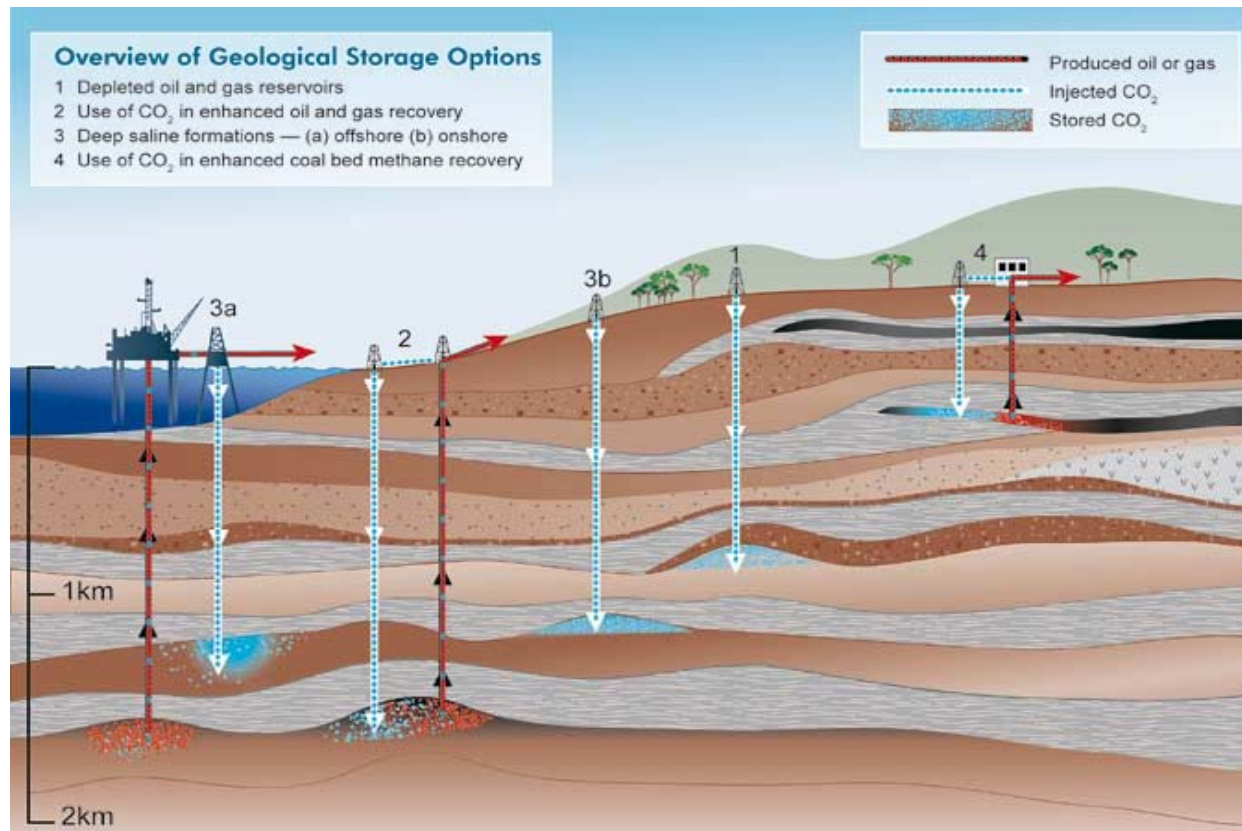
- No project registered so far.
- Experiences in other countries show that such projects may involve reputation risks.



Source: www.futurdeleurope.parlament.gv.at

Carbon Dioxide Capture and Storage

- Large emission reduction potentials
- Not yet eligible for CDM (decisions will be taken at COP/MOP 4 in 2008)



Source: IPCC Special Report on Carbon Dioxide Capture and Storage. 2005.

Carbon Strategy

- Leak Reduction
 - No project registered so far
 - May involve reputation risk
 - ➔ Case-by-case consideration
- Carbon Dioxide Capture and Storage
 - Large potentials
 - Not yet eligible for CDM
 - ➔ Probably an option in the future
- Flare Reduction & Gas Utilization
 - CDM eligible
 - Registered projects
 - ➔ Currently the best alternative to generate CERs in the Oil & Gas sector

Our Contributions

In the short-term

- Support in analysing CDM opportunities in the fields of “flare reduction and gas utilization” and “leak reduction” regarding
 - Feasibility
 - CDM eligibility (additionality, compliance with approved methodology)
- Taking projects through CDM registration
- Offering financial engineering and investor relations

In the long-term

- Support in analysing CDM opportunities in the field of “carbon dioxide capture and storage”
- Support in developing further “flare reduction and gas utilization” and “leak reduction” projects
 - Keeping track of new regulations regarding gas flaring since a general ban on gas flaring could result in flare reduction projects being no longer CDM eligible.
 - Keeping track of new UNFCCC regulations and guidelines in this regard.

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Thank you!