UNEP Feasibility studies for the development of insurance solutions for renewable energy projects

September 2008 **Project Status Note n°3**

Within the framework of a joint initiative of The United Nations Environment Programme (UNEP) and the Global Environment Facility (GEF) to assess financial risk management instruments for renewable energy projects, a number of feasibility studies proposals were received, among which four were supported by UNEP for the development of innovative approaches and instruments for renewable energy projects. The studies were conducted in partnership with leading insurance and financial institutions.

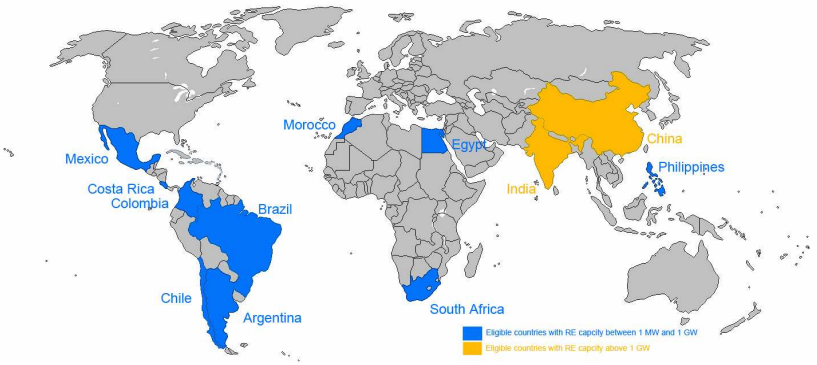
Wind Power Derivative for Mexico by Paris Re and Marsh Finances

The Feasibility study resulted in the structuring of a Wind power derivative using a reserve financial model and offered at competitive and cost effective premiums on the Mexican weather cover market by Paris Re (formerly known as Axa Re). The methodology used to develop the product can be replicated to other emerging markets.

Challenge 1: Weather derivatives for RE projects are expensive. The aim of the feasibility study sponsored by UNEP, and conducted in partnership with Paris Re and Marsh Finances, was to develop a wind power derivative for wind farms in Mexico at an affordable premium using an innovative financial model. The Mexican Wind Farm La Venta III (101 MW), which faces an estimated loss risk of 15 to 25 %, was chosen as a pilot project.

Challenge 2: Lack of viable and continued wind speed data in developing countries. Marsh and Paris Re explored different quantitative approaches that can be used to exploit discontinued series of historical wind speed data to develop a wind index for the derivative.

Solution: Wind speed data from neighbor sites and grid data were used to define the wind index spread. This UNEP-GEF sponsored feasibility study has confirmed the interest of wind risk coverage for wind energy projects in developing countries, but also pointed out the difficulty of implementing such products with the level of premium requested for traditional wind derivative (around 16% of revenues for a cover guaranteeing average production). Therefore, an innovative structure, more adapted to the specific periodicity of wind risk and financial structure of wind energy projects, has been developed: the wind reserve. Below is a graphic of countries where a similar wind derivative can be offered.



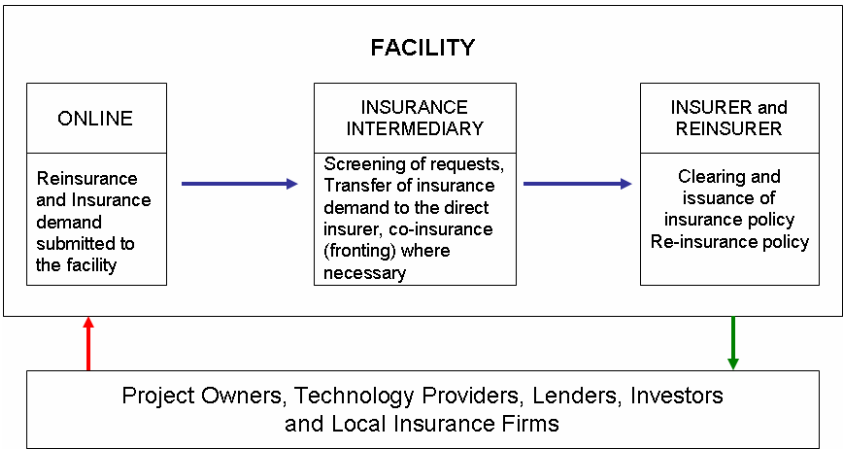
Global Renewable Energy Reinsurance and Insurance Facility by a Consortium led by MunichRe, RSA and CarbonRe

The feasibility study resulted in the Launch of a Global Renewable Energy Insurance Facility operated by the leading reinsurance and insurance groups, MunichRe and Royal & SunAlliance (RSA) and managed by CarbonRe an international insurance broker specialized in clean energy projects. In addition to standard renewable energy insurance, the facility will offer special lines which include Country and Political Risk, Third Party Counter Credit and credit insurance covers.

Challenge 1: Need for centralized insurance channels for the renewable energy markets of developing countries. The aim of this UNEP-GEF supported feasibility study was to identify the appropriate structure and operational tools that need to be developed to provide renewable energy project developers operating in developing countries easy, cost effective and timely access to tailored insurance.

Challenge 2: Overcome the risk and business context perception that investors have of renewable energy markets in developing countries. UNEP believes that when business acts as an initiator on the renewable energy markets of developing countries, it can result in beneficial policy initiatives that will help scale up investments.

Solution: UNEP supported a new partnership with leading insurance industry players. Corporate champions joined their efforts to create a feasibility study for the implementation of a global insurance facility which provides innovative risk management and insurance solutions that address renewable energy specific risks in developing countries conditions.



During a first implementation phase, the Facility will be operated on line from the following website (under construction) http://www.insurance4renewables.com

Wind Reinsurance Facility for China and South East Asia by Marsh China & UK and Ascot Renewco

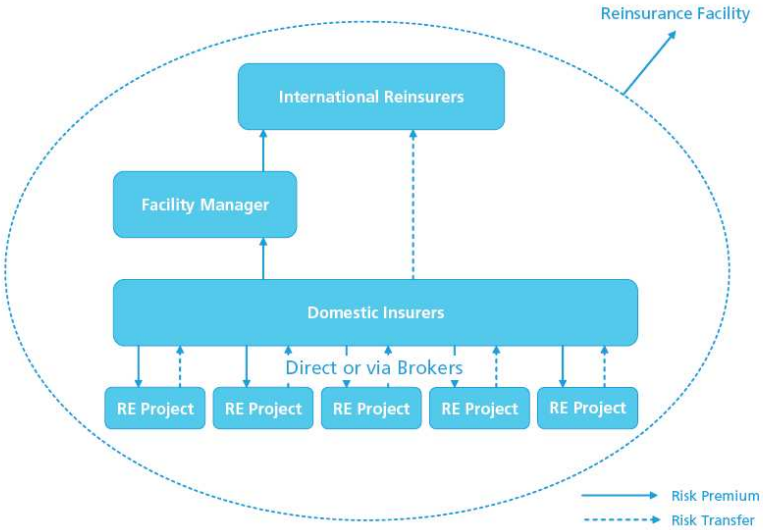
Feasibility study result: Implementation plan for a Reinsurance Facility for large and medium scale wind farms in China and other South Asian countries operated by Marsh, an international insurance broker, in partnership with Ascot Renewco, a Lloyd's syndicate specializing in renewable energy reinsurance.

Challenge 1: Wind energy insurance is broadly available with domestic markets in China but suffers due to intense competition leading to price cutting and consequent poor underwriting results. Most importantly, the domestic insurance industry has limited underwriting experience and expertise in respect of revenue stream protection during both construction and operational phases inhibiting developers' access to debt financing.

Challenge 2: Improve the investment grade credit rating for wind energy projects in China and attracting alternative risk capital to support new risk management market structures in the emerging carbon trading market.

Challenge 3: Attract multi-lateral lenders or guarantors within a "public-private-partnership" framework minimizing the need for them to extend risk and draw specialist engineering consultancy services to a wind energy financial risk management platform on a portfolio versus project basis.

Solution: Marsh and Ascot Renewco have performed a feasibility study into the implementation of a renewable energy reinsurance facility and/or development of a "Special Purpose Underwriting Vehicle (SPUV)" for the People's Republic of China with direct focus on projects related to wind energy. The development of a Specialist Reinsurance facility or Wind Energy SPUV would represent a convergence of multiple factors for renewable energy investment. For instance, the reinsurance facility structured within a Lloyd's syndicate umbrella framework would benefit the credit rating of projects, secure investments and increase project profitability. **The study recommended that in order for the facility to operate successfully, local capacity building, focused marketing, wider product offering and marketing differentiation should be made key elements of its operation.**



Feasibility Studies for the Development of Financial Risk Management Instruments for Renewable Energy Projects

Development of Insurance Products for Credit risks in Small Scale Biomass Projects in India

Feasibility study result: In respect of fuel supply and pricing risks, failure to procure fuel cannot be considered to be an insurable risk, as these are business risks attributable to the relative efficiency of supply chain management and financial capacity.

Credit defaults can be insured through existing credit insurance products. There are no instances of insurance products to insure fuel supply risks. Business Interruption insurance policies can provide compensation for loss of profits arising from shutdown in Biomass Power Plants caused by shortage of fuel. Use of hedging instruments such as Futures contracts and credit default guarantee mechanisms can be considered as possible alternatives. Nonetheless, the Power Plants may face the prospect of shutting down power generation in the event that fuel is not available in adequate quantities or at reasonable prices; availability of suitable insurance products can improve the financial capacity of the Biomass Power Plants.

Challenge 1: The biomass power Industry in India is in a high growth trajectory, but many projects, particularly small scale projects, are unable to obtain equity and debt finance. This is mainly due to the high-risk perceptions about the industry.

Challenge 2: Despite the abundant availability of biomass, the market is under-developed and faces uncertainties of supply and pricing. State-owned power utilities, which are monopoly buyers of power generated by the Biomass Power Plants, are often irregular in paying dues.

Challenge 3: Insurance companies in India currently offer a suite of insurance products to cover various business risks, but have no solutions to tackle fuel and credit risks.

Solution: *Crestar Capital India* conducted a Feasibility Study for the United Nations Environment Programme in collaboration with 3 leading insurance companies in India: Iffco-Tokio General Insurance, National Insurance Company, and ICICI Lombard General Insurance. The study included the development of a concise risk management protocol that can help project developers mitigate fuel supply and credit default risks.

Programme partners:

Münchener Rück Munich Re Group

RSA

MARSH

MARSH MERCER KROLL GUY CARPENTER OLIVER WYMAN

CarbonRe GREENHOUSE GAS RISK SOLUTIONS

IFFCO-TOKIO

Climate Capital GmbH

UPCAR

ascot renewco

CRESTAR CAPITAL

National Insurance Company

GSDP GLOBAL SUSTAINABLE DEVELOPMENT PROJECT

ICICI Lombard

THE FULL FEASIBILITY STUDIES REPORTS CAN BE ACCESSED AT:

WWW.UNEP.FR/ENERGY/FINANCE/RISK

FOR MORE INFORMATION, PLEASE CONTACT:

FATMA BEN FADHL
PROJECT MANAGER
EMAIL: FBENFADHL@UNEP.FR