UNEP e-Learning Course on

Risk Management Instruments for Renewable Energy Projects

Module 5 - Intermediaries and Networks

Overview

The training is organized in 6 modules and fits into a two-day training schedule:

Module	Main Content	Length of Module
1 – Climate Change	Briefing, policy frameworks and business impact	2 hours
2 – Renewable Energy Technologies and Risks	Renewable Energy technologies, policy, investments and risks	3 hours
3 – Underwriting Guidelines and Policy	Underwriting information, guidelines, risk evaluation, coverage evaluation	5 hours
4 – Claims Handling and Policy	Claims information, management, reserving, legal and payment	2 hours
5 – Intermediaries and Networks	**Project development, information and consultation**	**1 hour**
6 – Case Study	Renewable Energy case study, risk assessment, impact and suitability of instruments	3 hours
Total		16 hours

Module 5 Contents

Learning Objectives	
Project Development	To understand the main stages of the development of Renewable Energy projects.
Role of Intermediaries, Networks and Facilities	To understand the contribution of intermediaries, networks and facilities in the context of RE expertise and development.

Introduction

Similar to traditional energy and construction projects, Renewable Energy (RE) projects must be diligently developed and operated. A series of key stakeholders are involved at various stages. In the context of financial solutions, financial intermediaries, brokers, insurers, and reinsurers, support the risk management, risk financing and risk transfer process.

As of 2008, more than 1.000 renewable energy projects, in developing countries, have reached the stage for insurance requirement; more than 2.000 are still at an early stage of risk management and control.

Intermediaries, networks and facilities play a crucial role in enabling and facilitating the successful development of any project portfolio. For the insurance industry, the main intermediary services are provided by insurance and reinsurance brokers. Brokers require a certain set of skills and expertise with regards to RE projects. Networks are set up and supported by governmental agencies, non-governmental organizations, development banks and private companies.

Section 1 – Project Cycle

This section presents the main steps and stakeholders involved in the development and execution of Renewable Energy projects.

Section 2 – Intermediaries

This section describes the role of insurance intermediaries.

Section 3 – Networks

This section lists a number of networks that promote the development of renewable energy technologies.

Section 4 – Facilities

This section describes the role of Insurance facilities in the context of RE development.

1 Project Cycle

Renewable Energy (RE) projects follow traditional project development and management steps, including project initiation, installation, operations, and benefit realization.

Main Stages	RE Project Activities
Project Initiation	A preliminary feasibility study evaluates energy resources, availability, opportunities, prospects and barriers to development. Natural Resources Canada (NRCan) has developed, with the contribution of numerous experts from government, industry, and academia, a Clean Energy Project Analysis Software, called **RETScreen**, which is provided free-of-charge, and can be used worldwide to evaluate the energy production and savings, costs, emission reductions, financial viability and risk for various types of Renewable Energy and Energy Efficient Technologies (RETs). The software (available in multiple languages) also includes product, project, hydrology and climate databases, a detailed user manual, and a case study based college/university-level training course, including an engineering e-textbook. **RETScreen** can be downloaded at http://www.retscreen.net/ang/centre.php
Contracting	The contracting activity requires the appraisal of the contracting partner and project developer. In some cases the contractor and the project developer are the same individuals/organizations. In the case of competitive bidding, an RfP (Request for Proposal) is issued and the competitors are asked to submit proposals. Relevant documents in the bidding process include: letters of credit, a bid bond, a supply contract, and a power purchase agreement (PPA) that will set up the obligations to the electricity power off-taker.
Project Financing	Financing is the last step before the project gets started. Due diligence of the project is performed by prospective lenders. There is a considerable focus on the risk management factors: off-taker agreements, the off-taker's counterparty credit-worth, the market conditions, and further securities issued by public institutions (e.g. government). A project finance agreement is then made between the project owner and the lending institution. Among the most common lending institutions are banks and international finance institutions.
RET Installation	The guiding principles for the installation of RETs follow construction, erection and engineering principles. Construction and erection are performed by the project developer and the contractor, with the help of specialized sub-contractors. RE plants require permits, so a permit request is made as well. Also the project, once installed and commissioned, goes through a series of tests. Test and acceptance documents are required. A tight risk management process includes the consideration of non-renewable risk transfer products such a Construction All Risk, Erection All Risk, and ALOP/BI. See module 3.

Operation	RE project operation follows the successful installation, testing and commissioning of the technology. In some cases the project developer also runs the RE power plant and constitutes a commercial operation start-up. The operation of the plant is maintained according to an Operations & Maintenance agreement that covers all operational and maintenance issues that might arise during a project's operation period. In other cases, the project is transferred to the customer, e.g. the local government or utility operator.
Benefit Realization	The main sources of revenues of a renewable energy project come from: - Carbon credits (Certified Emission Reductions – CERs - from CDM projects) - Power Purchase Agreements - Green certificates or Tradable Renewable Certificates (TRCs) - Tax Incentives and other financial incentives In the case of a Clean Development Mechanism (CDM), an industrialized country that wishes to get credits from a CDM project must obtain the consent of the developing country hosting the project and ensure that the project will contribute to sustainable development. The project is then approved by the CDM Executive Board and the Designated National Authorities (DNA) before the realized CERs (Certified Emission Reduction) can be credited.
Relevance of risk management and risk transfer	Risk management solutions help to identify the key risks and, therefore, are important to enhance the credibility and economic viability of RE projects. With better access to risk information and with the ability to better track records, underwriting information will be available which will then enhance the ability to set up risk transfer solutions. Risk transfer solutions have a positive effect on default and debt rates, allowing better access to finance, higher cash flows, and finally a higher IRR. Sound financial risk management increases the attractiveness of RE projects.

The main project sponsors include the project owner, the project developer, and other specialists:

RE Project Execution Roles	**Main Focus**
Project Owner	The Project Owner is the principal, and usually the initiator of the RE project. His role includes: ▪ The overall responsibility for successful delivery of project. ▪ The selection of the different project stakeholders. ▪ Possibly also a shareholder of the company operating the RE technology, but might also focus on project setup through the hand-over

	to a utility or government. ▪ Co-ownership of private and public institutions.
Project Developer	The Project Developer is the planner and executing partner of RE projects. He works closely with the contracting company. In some cases they are the same entity. His role consists of: ▪ Coordinating RE projects and project portfolios. ▪ Executing RE projects (preparing, planning, managing staff and contractors, setting up deliverables such as environmental impact analysis, managing budgets, communicating with stakeholders, and negotiating with the government). ▪ Applying RE financing schemes (e.g. Carbon Credits (CDM), project finance and risk management).
Other Specialists	Other specialists intervene on a case-by-case basis: ▪ Insurance and risk management specialists during initiation, project construction, and operations phases. ▪ Engineers, during the construction of RE projects, including wind, solar, hydro, and biomass power plant specialists. ▪ Claims or Loss Adjusters / Forensic Investigator and Solicitors during the claims adjusting process, once a damage/loss had occurred. ▪ Further specialists depending on the specific project requirements.

The global project opportunities for RE projects are significant, especially in the developing world. As of 2008, there are thousands of RE projects in developing countries and emerging markets. More than 1.000 have reached the stage of requiring insurance, and more than 2.000 are still at an early stage of risk management and control.

With regards to the financial and insurance aspects of RE projects, there are three additional groups of players involved: intermediaries, networks, and facilities. The following three sections will provide an introduction to their role and function in the context of RE project development.

2 Intermediaries

Risk management and risk transfer solutions are offered directly by financial companies or via an intermediary. Intermediaries play a crucial role in matching the demand and supply sides for risk management and transfer solutions.

Intermediary Services	Financial intermediary services are provided by brokers or financial advisors. They are the "parties sitting in the middle" between the demand and supply side for risk capital. For risk transfer or insurance offerings, the financial intermediary is the insurance or re-insurance broker. Risk transfer capacity is often combined with risk financing. In many cases, adequate risk transfer is a pre-condition for risk financing. Brokers play a crucial role in understanding the requirements of risk financing and risk transfer and the dependencies between them.

Depending on the specific insurance requirements, the following parties are involved in risk transfer for RE projects:

Market context for insurance intermediaries and direct capacity providers	
Local Direct Insurers	Local insurers can cover the needs of small and mid-sized commercial businesses, however little expertise exists locally for the design of insurance covers for small scale renewable energy projects. Historically, the types of insurance offered by public institutions (e.g. state or government) often include: crop insurance, credit insurance and natural catastrophe insurance.
Local Brokers	Depending on the maturity and the historic development of the local insurance market, insurance brokers may play either a significant or a minor role.
Local/State Reinsurers	In some emerging countries there is a compulsory state reinsurer with a minimum share for RET specific treaty and facultative business.
International Brokers	The larger a project is the more complex is the risk. Local insurance markets are often not positioned to offer the requested coverage. International insurance and re-insurance brokers are used by local insurer or project developers to assess the risks and identify the most appropriate risk management instruments on the international insurance and financial markets.
Fronting	In some countries, the international insurer has no local license and offers capacity via a local insurer serving as fronting company. Insurance regulations in some countries mandate a minimum share of cession to local reinsurers. Fronting is often not well perceived by local authorities.
International	International reinsurance is used for the diversification and transfer of the

Reinsurance	risk in case the national markets and individual insurers are not able to underwrite a business, be it a through facultative or treaty insurance.
Capital Markets	Capital markets solutions are used by insurers and reinsurers to optimize their risk exposure. In some areas, capital markets have developed standardized products such as weather derivatives, insurance-linked securities or cat bonds. These sophisticated products are becoming increasingly popular in the renewable energy international markets. In 2008, UNEP has supported Paris Re for the development of wind power derivatives for developing countries at cost effective premiums and using an innovative financial model. For further details see UNEP Risk Management Status Note 3 & 4 2008 http://www.unep.fr/energy/finance/risk .

General Broker Know-How	
Services	▪ Risk placing is traditionally a broker service. Brokers also provide access to insurance capacity, pricing and underwriting. ▪ Brokers' activities rely on active relationship management. ▪ Brokers offer additional services, including claims administration, runoff services, risk management, cat modeling, and other value-added consulting services. ▪ Brokers publish market reports, technical studies, and risk management studies for RE markets and technologies.
Skills	▪ Experience and knowledge are required to understand the underlying technology, market, and project issues in regards to a certain risk. Brokers must be able to adequately identify the specific risks associated with a project. In most cases this is only possible with extensive experience and sufficient expertise. ▪ Advisory skills, negotiation, and relationship management are skills and capabilities required in the course of the insurance process. ▪ Independence is another key element for the broker to be able to objectively identify the best coverage available for the client.

RE-Specific Broker Know-How	
RE Market and Insurance In General	The Insurance broker needs to know the technology, loss/performance history, the underwriting practices on local and international insurance markets, the main RE offerings, the main RE insurance players and their capacity and pricing.
Project Initiation	A good assessment of the likelihood of the counterparty, political risks, the local financial and insurance market conditions, and a comprehensive view on the risk factors in RE projects are prerequisites for a RE insurance broker.
Installation Stage	A good understanding of non-renewable covers such as CAR, EAR and ALOP for the construction and testing/commissioning stages of RET projects.

Operations and Benefits Realization Stage	Specific requirements with regards to renewable covers such as Marine, OAR, MB, BI, TPL, and specific covers (credit, weather, political and emissions risks) for a certain RE type.

3 Networks

Renewable Energy networks are key enablers that successfully promote awareness, share knowledge, advance standardization, and facilitate the development and execution of projects.

Networks are established by governmental agencies, non-governmental organizations, development banks, and private companies.

Following is an incomplete list of key players offering network functions in the context of RE development.

Governmental and Non Governmental Organizations (NGOs)	**Description**
UNEP United Nations Environment Programme	UNEP is an agency of the United Nations system and has the mission to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations. UNEP maintains a growing network of centers of excellence such as: - The Global Network on Energy for Sustainable Development (GNESD) which is a UNEP facilitated knowledge network of developing world Centers of Excellence and network partners. The main objective of GNESD is to carry out policy analysis on thematic energy issues which can facilitate in reaching the Millennium Development Goals (MDG). (see http://www.gnesd.org/) - The Global Resource Information Database (GRID), a UNEP global network of regional centers specializing in environmental data and assessment and disseminates timely and understandable environmental information, to raise awareness and improve decision-making processes. (see http://www.unep.org)
UNEP Division of Technology, Industry and Economics (DTIE)	The UNEP DTIE strategy is to influence informed decision making through partnerships with other international organizations, governmental authorities, business and industry, and nongovernmental organizations; support implementation of conventions; and build capacity in developing countries. (see http://www.unep.fr)
IPCC Intergovernmental Panel on Climate Change	The IPCC was established to provide decision-makers, business, civil society and the world population with objective and reliable source of information about climate change. The IPCC is a scientific, intergovernmental body set up by the World Meteorological Organization (WMO) and by the United Nations Environment Programme (UNEP). It maintains the guidelines for the national Greenhouse Gas inventories (See also Module 1 – Climate Change) and continuously analyses the latest scientific work.[1]

[1] For further information see http://www.ipcc.ch .

IEA International Energy Agency	The International Energy Agency (IEA) acts as energy policy advisor to 28 member countries in their effort to ensure reliable, affordable and clean energy for their citizens. Founded during the oil crisis of 1973-74, the IEA's initial role was to co-ordinate measures in times of oil supply emergencies. As energy markets have changed, so has the IEA. Its mandate has broadened to incorporate the "Three E's" of balanced energy policy making: energy security, economic development and environmental protection. Current work focuses on climate change policies, market reform, energy technology collaboration and outreach to the rest of the world, especially major consumers and producers of energy like China, India, Russia and the OPEC countries. With a staff of around 190, mainly energy experts and statisticians from its 28 member countries, the IEA conducts a broad programme of energy research, data compilation, publications and public dissemination of the latest energy policy analysis and recommendations on good practices. (see http://www.iea.org)
World Bank	The World Bank provides financial and technical assistance to developing countries around the world. The bank is made up of two development institutions owned by 185 member countries, the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA).
GEF Global Environment Facility	The Global Environment Facility is a source of funds for renewable energy in the developing world. As an independent financial organization, the GEF provides grants to developing countries for projects that benefit the global environment and promote sustainable livelihoods in local communities. It already has provided up to USD 7 billion. The GEF projects are managed by UNEP, the UNDP and the World Bank.(see http://www.gefweb.org)
REN21 Renewable Energy Network	REN21 is a global policy network that provides a forum for international leadership regarding renewable energy. Its goal is to bolster policy development for the rapid expansion of renewable energies in developing and industrialised economies. REN21 connects governments, international institutions, non-governmental organisations, industry associations, and other partnerships and initiatives. (see http://www.ren21.net)
SEFI Sustainable Energy Finance Initiative	SEFI is a joint initiative comprising UNEP's Energy Branch, UNEP Finance Initiative and BASE (Basel Agency for Sustainable Energy). SEFI offers the SEF Directory, an online database of lenders and investors who actively provide financing to the sustainable energy sector worldwide. The objective is to help renewable energy/energy efficiency project developers and entrepreneurs identify sources of potential capital easily and quickly. (see http://www.sefi.unep.org)

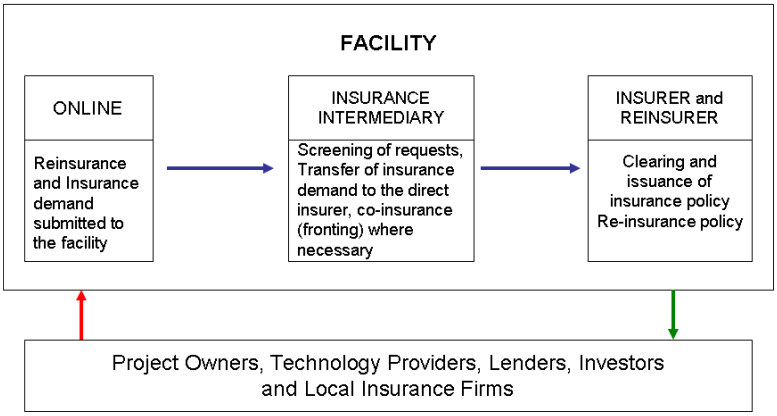
4 Facilities

Facilities offer access to insurance coverage and expertise for RE projects in developing countries and are critical enablers for the successful development and implementation of RE projects. ***UNEP, the Munich Re Group, RSA Insurance and Carbon Re have developed a Global Renewable Energy Insurance Facility*** with a special focus on developing countries' markets. The facility website can be accessed at http://www.insurance4renewables.com .

The main objective of the Global Renewable Energy Insurance Facility is to provide innovative risk management solutions that address specific risks associated with renewable energy projects in developing countries.

Characteristics of the Global Renewable Energy Insurance Facility	**Description**
Insurance Products	Typical products offered are insurance solutions for RE projects including Erection and Construction All Risk (EAR/CAR), Transport, Advanced Loss of Profits (ALOP), Mechanical and Electrical Breakdown (MB), Business Interruption (BI), Operational All Risk, and Third Party Liability (TPL). Special lines include Political Risk, Third Party Counter Credit and credit insurance covers. They can be offered on a case-by-case basis.
Risk Control and Quality Instruments	Key risk control instruments such as a Targeted Equipment List for Technologies (TELT), standard risk questionnaires, and further survey/inspection reports are provided. Wordings are both standardized and customized since RE projects are often very different in terms of site exposure and the nature of stakeholders. It is expected that the degree of standardization will be fine-tuned based on the ongoing working experience.
Value Chain Position	The facility is structured along the value chain of insurance services, from submission, wording, and rating to binding and acceptance. Besides initial underwriting, engineering services, and claim payment services are also offered. Local insurance brokers manage demand in co-operation with the insurance broker of the facility.
Service and Operating Mode	Under normal conditions (standard renewable energy technologies), the facility guarantees an inquiry turn-around of 24 to 72 hours, and targets an overall time span from the initial submission to the policy offer of 2 to 4 weeks. It offers an online exchange platform that links project developers and owners, investors and lenders to insurance brokers, direct insurers and reinsurers. The facility provides access to experiences renewable energy reinsurance, insurance and risk management experts.

Figure 1 –Facility Structure



The Global Renewable Energy Insurance Facility, which was developed with support from UNEP within the framework of the GEF funded Programme "Assessment of Financial Risk Management Instruments for Renewable Energy Projects" (http://www.unep.fr/energy/finance/risk), is operated by an Insurance consortium composed of Munich Re, RSA Insurance and CarbonRe.

The Facility's brokers ensure completeness of information and risk control in order to manage the distribution of direct insurance demand within the facility consortium. Local insurance brokers are integrated through co-brokerage. Sometimes the broker also operates the facility platform and services.

The insurer receives business either directly from the client or through an insurance broker. Risks are usually submitted on standard insurance proposal forms. In order to assess the risks, a due diligence (with the help of a local network partner) is performed. Critical information normally covers catastrophe risk and local geographic information, availability of key components and equipment, legal issues, wordings and translations, premium transfer, and tax payment information. Typically an overrider fee of a certain percentage of the premium will be charged. In some cases the Facility insurer (RSA Insurance) will need to use reinsurance and will contact the facility reinsurer (Munich Re) to arrange an insurance cover. Once a cover is written, policy changes and claims will be handled via the local broker. In case of larger claims, the insurer handles larger claims directly.

The reinsurer provides reinsurance capacity in the form of treaty or facultative reinsurance. The reinsurer can offer treaty capacity in the form of an automatic capacity following pre-determined and mutually-accepted underwriting standards. The treaty contract is written between the primary insurer and the reinsurer. The insured or project owners do not necessarily need to know about this arrangement. In cases where the risk characteristics do not meet the underwriting criteria, facultative reinsurance might be used. This can be arranged directly with the primary insurer or via a broker.

Key Terms

Term	Definition
Facilities	Facilities offer access to insurance coverage and expertise for RE projects in developing countries and are critical enablers for the successful development and implementation of RE projects.
Intermediary Services	Financial intermediary services are provided by brokers or financial advisors. They are the “parties sitting in the middle” between the demand and supply side for risk capital. For risk transfer or insurance offerings, the financial intermediary is the insurance or re-insurance broker. Risk transfer capacity is often combined with risk financing. In many cases, adequate risk transfer is a pre-condition for risk financing. Brokers play a crucial role in understanding the requirements of risk financing and risk transfer and the dependencies between them.
Networks	Renewable Energy networks are key enablers that successfully promote awareness, share knowledge, advance standardization, and facilitate the development and execution of project. Networks are established by governmental agencies, non-governmental organizations, development banks, and private companies.
Project Cycle	Renewable Energy (RE) projects follow traditional project development and management steps, including project initiation, installation, operations, and benefit realization.
Project Developer	The Project Developer is the planner and executing partner of RE projects. The project developer works together closely with the contracting company. In some cases they are part of the same entity.
Project Owner	The Project Owner is the principal, owner, and usually the initiator of the RE project.
RETScreen	A Clean Energy Project Analysis Software which is provided free-of-charge, and can be used worldwide to evaluate the energy production and savings, costs, emission reductions, financial viability and risk for various types of Renewable-energy and Energy-efficient Technologies (RETs). The software (available in multiple languages) also includes product, project, hydrology and climate databases, a detailed user manual, and a case study based college/university-level training course, including an engineering e-textbook. RETScreen can be downloaded from http://www.retscreen.net/ang/centre.php

Lesson Review

Section 1 – Project Cycle

Renewable Energy projects follow a traditional project management cycle covering project initiation, installation, operating, and benefit realization. Initiation is the key stage to successfully launch RE projects and start with the preliminary feasibility study. This is followed by the contracting activity and the setup of a competitive bidding process with a request for proposals (RfP). A further relevant step is the power purchase agreement (PPA). The initiation phase concludes with the finalization of the project financing. The project is then ready to be installed and, once testing and commissioning are completed. Benefits can be generated from the following sources:

- Carbon credits (Certified Emission Reductions – CERs - from CDM projects)
- Power Purchase Agreements
- Green certificates or Tradable Renewable Certificates (TRCs)
- Tax Incentives and other financial incentives

Risk management and risk transfer instruments help to enhance credibility and economic viability. This is a major concern of the key project stakeholders: the project owner and the project developer. The project developer is responsible for planning and executing the RE project, closely working together with the contracting company, the project owner and the other required specialists.

Section 2 – Intermediaries

Financial intermediaries provide intermediary services between the demand and supply sides of risk capital. In the case of insurance these are the insurance and reinsurance brokers.

The involvement of insurance intermediaries depends on various factors such as market maturity, insurance offerings, the size and capacity required, and other criteria. Additional players include the local direct insurers, local brokers, local reinsurers, international direct insurers, international brokers, as well as the capital markets.

Brokerage requires a set of specific know-how with regards to the services and skills offered. In the context of RE project, specific knowledge is required about each project phase, about the concerned RE technologies, and about the host and financing countries involved. Also, a broker needs to understand the dependencies between risk financing and risk transfer.

Section 3 – Networks

Network services are offered by governmental agencies, non-governmental organizations, development banks and private players. They are key enablers to successfully promote awareness, share knowledge, advance standardization, and facilitate the development of RE projects. There is a list of key players provided,

including UN agencies such as UNEP and UNDP, the IPCC, and IEA as policy and decision maker agencies and the World Bank and other facilities as providers of financial assistance.

Section 4 – Global Renewable Energy Insurance Facility

The Global Renewable Energy Insurance Facility, has been developed by Munich Re, RSA Insurance and CarbonRe under the UNEP umbrella, to address the risk management needs of project developers in developing countries. It offers access to insurance and risk management expertise and innovative insurance covers. The facility consortium members can be contacted from the following website http://www.insurance4renewables.com

Further Readings and Related Links

UN Publications	
UNEP	http://www.unep.org
UNEP DTIE Project "Assessment of Financial Risk Management Instruments for Renewable Energy Projects"	http://www.unep.fr/energy/finance/risk

Further Publications	Link
Challenges of the Renewable Energy Industry generate new demands for Risk Advisory, Marsh Ltd, 2007. (Author: E. Leblanc).	http://www.marsh.com

Test

Question 1

What are the four steps of RE project development?	

Answers:

Project Initiation, Installation, Commissioning, Testing.	☐ Check if Correct
Project Initiation, Installation, Operation, Run-off.	☐ Check if Correct
Project Initiation, Installation, Operation, Benefit Realization.	☑ Check if Correct
None of the above.	☐ Check if Correct

Question 2

What are the typical specialist's roles in a RE project?	

Answers:

Insurance and Risk management specialists.	☐ Check if Correct
Engineers including RE technology specialists.	☐ Check if Correct
Claims adjusters and forensic experts for claims process.	☐ Check if Correct
All of the above.	☑ Check if Correct

Question 3

Risk placing is traditionally a broker service. What are further typical services provided by the broker?	

Answers:

Brokers offer additional services, including claims administration, runoff services, and risk management.	☑ Check if Correct
Brokers offer additional services, including claims administration, banking services, and forensic expertise.	☐ Check if Correct
Risk placing is the core offering of the broker, providing access to insurance capacity, pricing and underwriting. Typically they do not offer other services.	☐ Check if Correct
None of the above.	☐ Check if Correct

Question 4

What are Insurance facilities, such as the Global Renewable Energy Insurance Facility, offering project developers in developing countries in the context of RE development?

Answers:

All of the below.	☐ Check if Correct
Facilities offer financial funds and provide grants to developing countries for RE projects.	☐ Check if Correct
Facilities are claims and forensic knowledge portals for RE projects in developing countries.	☐ Check if Correct
Facilities offer access to insurance covers and expertise for RE projects in developing countries.	☑ Check if Correct