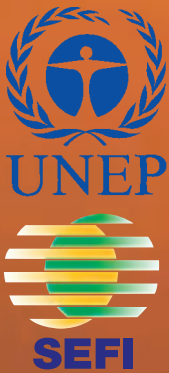


EXECUTIVE briefing



Making it Happen: Renewable Energy Finance and the Role of Export Credit Agencies

With a mandate to facilitate exports from their respective countries, Export Credit Agencies (ECAs) can play an important role for sustainable development by facilitating the financing of renewable energy products and services.

This role is important in an increasingly globalized economy where two billion “energy poor” people have little or no access to modern energy services, particularly those in rural areas of developing countries. These people are exposed to severe health risks caused by indoor and local air pollution due to heating and cooking with poor quality biomass fuels such as wood, dung, and crop wastes.

Further, the global demand for energy is projected to rise by two thirds between 2001 and 2030, with most of this demand occurring in developing countries. Total investment in energy infrastructure during this period is projected to be US\$16 trillion, of which US\$10 trillion will be needed for the global electricity sector.

This expanding demand for energy in connection with the current dependence on fossil fuels poses substantial risks for economic and environmental security. In addition to being a large drain on national budgets, the dependence of imported fossil fuels contributes to climate change and poses a major risk to the global economy. Worldwide economic losses due to natural disasters, for example, appear to be doubling every 10 years, and if current trends continue, annual weather and climate related losses will reach almost \$150 billion by the next decade. Climate change impacts – intensified desertification, droughts and flooding – will be most acutely felt by poor people living in developing countries.

Renewable energy can reduce greenhouse gas emissions and thereby help mitigate climate change impacts, address regional and local environmental and health concerns, contribute to poverty reduction, and improve energy security by reducing reliance on fossil fuels. Yet, renewable energy currently represents only two percent of current world electric power generation capacity. The challenge for governments and policy makers is to install policy frameworks and financial tools that enable renewable energy products and services to achieve a greater market share and move from the margins into the mainstream. ■

Policy frameworks can create a positive climate for equity and debt investment in renewable energy projects and encourage exports of renewable energy products and services. These frameworks can also provide direction and stimulation to Export Credit Agencies, making it possible for them to better respond to the changing needs of their exporters and global customers.

Although all Export Credit Agencies support and facilitate exports from their respective countries, they vary widely in structure, size and specific activities. In general, ECAs function to take risks or cover others against certain political and/or commercial risks resulting from the export of goods or services. ECAs are required to work on a self-sustaining basis without displacing or competing with the private sector. In this respect, ECAs work closely with commercial banks, insurers and multi-lateral development banks to fill potential finance gaps or complement support available from these institutions. ECAs also have to take into account the relevant WTO rules and especially the Anti-Subsidy rules.



country markets where their capacity to assume risk is often needed to provide finance that would otherwise not be available from commercial banks and insurers.

The level of export support to mainly non-OECD countries on non-concessional terms is considerable. The Berne Union reported that the aggregate export credit business of its members was US\$455 billion in 2001, US\$60 billion in form of medium and long-term support and US\$395 billion in form of short-term cover.

However, only a very small portion of current ECA business supports renewable energy projects and/or the sales of renewable energy technology (equipment and services):

EXPORT CREDIT AGENCIES: Insuring Against Risk

ECA support usually takes the form of:

- Export credit guarantees or insurance (political and/or commercial risk);
- Investment insurance (political risk insurance only); or
- Direct loans.

Some ECAs provide cover for transactions that benefit from their government's tied aid programme. When cover is provided to such aid tied to purchase of certain products and services from the nation giving the aid it must adhere to strict rules established under the *OECD Arrangement on Officially Supported Export Credit*.

By the very nature of their mandate to facilitate exports, ECAs are most active in developing

- From 2000 to 2003 support to renewable energy projects was less than 1% of total support by most ECAs;
- Support was mainly for small exports of renewable energy technology equipment and/or services, and not limited recourse financing for projects;
- Despite modest programmes for supporting renewable energy projects - most ECAs face little demand for their support by potential exporters in the renewable energy sector. ECA activity has been higher in OECD countries with a longer history of domestic renewable energy development and/or relatively strong domestic renewable energy support programmes. These programmes appear to have helped to develop a strong renewable energy sector capable of exporting products and services. ■

The OECD Arrangement: Leveling the Playing Field

The Arrangement is an agreement between most OECD member countries, which sets out terms and conditions for official support. It applies to export credit support provided by official ECAs, including insurance cover, guarantees and loans, and aid financing conditional upon procurement from the donor country (so-called 'tied aid').

The basic objective of the Arrangement is to minimize trade distortions and to level the "playing field" so that exporters can compete and win business on the basis of price, quality, and delivery of their goods and services.

Arrangement guidelines cover such areas as minimum interest rates, minimum premium levels for country risk, maximum repayment terms, fixed repayment structures and maximum amount of finance (including limitations on local costs support). The Arrangement also has a special scheme for project finance transactions and several special Sector Understandings for ships, aircraft and nuclear power plants that provide for longer repayment terms. Extended repayment terms of up to 12 years are also available for power plants (it is assumed that this includes renewable energy).

ECAs have the capacity to:

- Assess economic and political risks in non-OECD countries;
- Provide significant capacity to assume risk through relatively larger exposure limits than commercial banks and insurers;
- Offer longer-term repayment schedules than commercial banks and insurers in the more difficult/higher risk non-OECD countries.

ECAs can therefore play a significant role supporting the export of renewable energy products and services to non-OECD countries, helping these countries to meet growing energy needs in a sustainable manner.



Renewable energy sources are those that produce electricity or thermal energy without depleting resources. Renewable energy includes solar, wind, water, geothermal and biomass power, and energy from waste.

However, some renewable energy sources under this large definition can have considerable environmental and social impacts.

Although the current annual world power generation capacity is about 3,500 GW, only about two percent of this capacity is produced from renewable energy sources.

RENEWABLE ENERGY MARKETS Have Huge Potential

However, growth rates of different renewable energy technologies show that there is significant market potential:

- Over 39,000 MW of wind power has been installed in more than 30 countries as of January 2004. The wind energy industry is growing by 32% annual rate, and new installations around the world were valued at about US\$ 7 billion per year in 2001 and 2002.
- About 9,000 MWe of geothermal capacity is currently installed worldwide. Total investment in geothermal energy from 1973 to 1995 was about \$22 billion and the industry continues to grow at about 16% per annum.
- 15,000 MW of biomass-fired power generation is currently in operation with about half this capacity in the US. The US Department of Energy expects world bio-power generation to grow to over 30,000 MW by 2020.
- Over 560 MWp of photovoltaic modules were manufactured and sold worldwide in 2002. The average growth rate of the industry at the beginning of this century has been 37%, representing more than a doubling every two years. The value of worldwide PV sales was US\$ 3.5 billion in 2002.

- 4,500 MW of new small-scale hydro (SSH) capacity will be installed in 2004 with the greatest potential for growth in China, Southeast Asia and Latin America. China has over 25,000 MW of installed SSH capacity and plans to add 1,500 to 2,000 MW per year.

Current export flows by major renewable energy technology developers/producers are to a large extent within OECD countries. However, with a maturing industry wishing to expand new sites with good resource availability will be explored – and massive expansion into developing country markets can be projected. ■



BARRIERS HINDER Renewable Energy Finance...

A number of barriers currently hinder the growth of the renewable energy sector. These can be categorized as:

- *Cognitive barriers*, which relate to the low level of awareness, understanding and attention to renewable energy financing and risk management instruments;
- *Political barriers*, associated with regulatory and policy issues and governmental leadership;
- *Analytical barriers*, relating to the quality and availability of information necessary for prudent renewable energy investments and the development of renewable energy projects by investors, lenders, insurers and other key stakeholders;
- *Market barriers*, associated with the lack of financial, legal and institutional frameworks to support the uptake of renewable energy projects in different regions, particularly non-OECD markets.

Barriers to renewable energy project finance can also be categorized by the type of risk during the evolution of the project from initial technology development, to marketing, award of contract, construction, commissioning and operation. These barriers include:

- *Technical risk*;
- *Commercial risk*, including supply risk and market risk;
- *Political risk*, including regulatory risk; and
- *Legal and Documentation risk*.
- *Financial risk*, generally due to the high initial capital cost of renewable energy projects relative to the initial capital cost of conventional energy projects. ■

Over the past 50 years, Export Credit Agencies have helped break down similar barriers that hindered the export of other goods and services.

...ECAS CAN HELP Break Them Down

Breaking down barriers to the financing renewable energy projects requires an interface between the various financing players and risk takers to ensure the critical risks are identified, considered and directed towards the most appropriate institution.

There are five key players in the mitigation and management of renewable energy project risks:

- Governments, both from the exporting and buyer countries;
- Export Credit Agencies;
- Multilateral lending institutions;
- Private Sector financial institutions; and
- Renewable energy technology exporters and project sponsors.

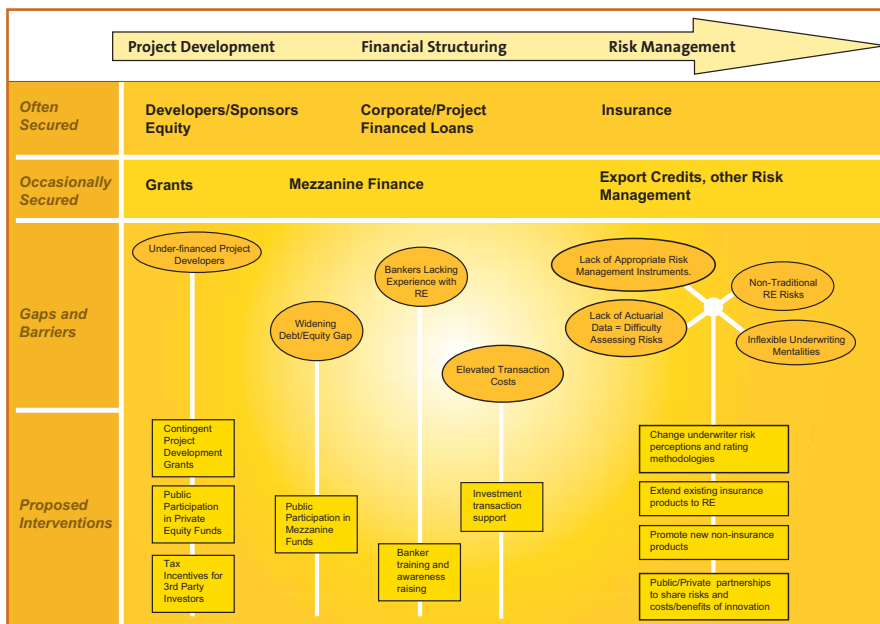
This paper is focused on the role of ECAs and not possible measures by other risk takers. However, ECAs cannot operate in isolation from the other players.

With clear direction from their governments and shareholders, ECAs can develop new risk management tools, new models for financing, and new products designed to address the specific requirements of renewable energy projects, products and services. Projections of renewable energy market development show a sharp upward trend - providing specific tools to help overcome some of the financing constraints could thus enable ECAs to be prepared for this demand.

ECAs are constrained from supporting renewable energy projects because such projects are disadvantaged when compared to projects using conventional energy technologies.

In many cases, renewable energy is more expensive in the short-term, which causes governments faced with a choice between different energy technologies to choose the lowest cost energy, regardless of source and environmental impact.

With their current structure, products, international agreements and mandates, ECAs are the most able agency to provide support during the financing, construction, and operation phases of renewable energy projects. ECAs are not mandated to provide grants and venture capital during initial project development stages, subordinated debt (debt that is either unsecured or has a lower priority than that of another debt claim on the same asset or property), or take residential consumer risk (if consumers cannot or do not pay for energy service consumed).



Changes to the Arrangement could help level the playing field. For example, longer repayment periods than currently permitted under the Arrangement would:

- reduce the annual debt servicing amount and reduce the cost of energy by 0.5 to 1.5 cents per kilowatt-hour;
- allow that repayment periods are the same between OECD and non-OECD markets. Under current practice similar renewable energy projects in OECD markets are often funded on longer repayment terms than permitted under the Arrangement for ECA support to projects in non-OECD markets;
- allow time alignment with long-term concession and power purchase agreements, as well as economic life of projects (for example 25 years or longer for "run of river" hydro).

Specific sector understandings have been created for aircraft and nuclear power – a similar exception for renewable energy technologies could be agreed or special sector understandings in favour of nuclear power and fossil fuel power plants could be abolished. ■

One of the main obstacles to the wider uptake of renewable energy is the price of generated energy. The following two case studies demonstrate that changes in ECA policies for renewable energy projects can help increase their competitiveness with conventional energy projects.

Case Study I – Geothermal Project in Guatemala

A special purpose project company, ORTITLAN Limitada, was set up under Guatemaltecan laws to build, own and operate a geothermal power plant of approximately 20 MW in the Amatitlan geothermal field. A 20-year Power Purchase Agreement is to be agreed with the national utility. The sponsors seek a limited recourse 12-year loan of USD 41.2 million, equal to 75% of the project cost, with a **7% interest rate**.

The project generates a healthy rate of return with sufficient cash flow to service senior debt for a fixed price of **6.6 US cents per kWh**.

With the following changes to ECAs terms and conditions, the price of energy generated by this project would decrease while maintaining the same internal rate of return (IRR) and a good average debt-service coverage ratio.

Repayment Tenor:

The sponsors have signed a 20-year Power Purchase Agreement with the national utility, and may in the second phase expand the plant to a total capacity of 50 MW. Assuming that the loan repayment term is extended to 15 or 18 years, the energy tariff would drop by **4.6% or 8%** respectively to 6.3 cents or 6.1 cents per kWh produced.

Premium and Interest Rates:

The main sponsor has extensive experience in design, production, and construction of geothermal power plants. The payments from the national utility company will be backed by a trust fund. Both points would justify lower risk assumption. For each 1% reduction in the interest rate, the energy tariff decreases by 2.5%. **With an interest rate of 5%, the kWh price would be 6.2 cents.**

Calculations based on a case study provided by ORMAT, USA.

The following table categorizes barriers and issues with regard to ECA support for renewable energy projects and proposes possible responses. It is divided into three parts:

- 1) issues in which the respective ECA guardian authorities would have to collectively change relevant international agreements,
- 2) areas in which ECAs can already develop new financing products and tools for renewable energy projects, and
- 3) areas covered by the Arrangement but in which ECAs themselves can seek solutions if given direction by their shareholders and governments.

POSSIBLE RESPONSES REQUIRING COLLECTIVE CHANGE TO INTERNATIONAL AGREEMENTS

Area of intervention/Barrier/Issue	Possible responses
<p>Local Content Most RET projects in non- OECD countries are required by the host country to transfer RE technology and to boost local content in the project. For many RET projects local content is about 20-35 percent depending on the technology. Conditions are negotiated between the project developer and the host government.</p> <p>While there is no limit to how much third-country content an ECA can support, the Arrangement limits how much local cost can be covered. A change in the Arrangement would be required to permit greater than 15 percent local cost support.</p>	<p>A change in the Arrangement would be required to permit greater than 15 percent local cost support.</p>
<p>Repayment Tenor Most host governments seek the lowest cost energy regardless of source. Longer debt repayment terms for energy infrastructure projects can reduce the cost of energy by lowering the annual debt servicing amounts.</p>	<p>A change in the Arrangement would be required to permit ECAs to offer repayment terms longer than a maximum of 10 or 12 years (if RE is interpreted to be covered by the power sector understanding) from project completion.</p>
<p>Premium and Interest Rates Minimum premium rates for political risk are set in the Arrangement based on the length of the repayment term.</p> <p>Minimum interest rates are set in the Arrangement based on the average life of the credit. Longer repayment terms mean higher interest rates.</p>	<p>A change in the Arrangement would be required to permit ECAs to adjust political risk premium and interest rate to reflect the extended repayment terms.</p> <p>The risk perception could be changed by ECAs themselves without changes to the Arrangement. This would reflect that the inherent political risk is reduced for RE projects as they tend to be more localised.</p>
<p>RE Projects Subsidies ECAs do not normally consider aid or subsidy support except under special criteria under the Arrangement.</p>	<p>Where there is an aid or subsidy component for a RE project, it should be separated from the commercial component supported by an ECA.</p>
<p>Tied Aid Allowance for tied aid has proven insufficient as no significant amounts have been transferred to RE. This is largely due to concessionality levels and country restrictions.</p>	<p>A change in the Arrangement relaxing tied aid rules would be required to permit exports credits being bundled with grants below the 35%/50% concessionality level.</p>

POSSIBLE RESPONSES BY ECAs INVOLVING DEVELOPMENT OF NEW PRODUCTS AND PROCESSES

Areas of intervention/Barrier/Issue	Possible response
<p>Transaction Cost Certain transaction costs are fixed regardless of project size. As RE projects are often smaller than conventional energy projects, transaction costs are relatively higher.</p>	<p>"Bundling" or pulling together several smaller RE projects might be a means to spread transaction costs and make RE projects more competitive relative to larger conventional energy projects. ECAs could develop guidance on conditions and modalities to provide financing support for "bundled" projects.</p>
<p>Emission Trading Certain risks linked to trading of certificates gained with projects under the Kyoto mechanisms CDM and JI, can act as a barrier for further uptake of emission trading.</p>	<p>Based on their experience in political and commercial risk coverage ECAs could develop new products related to emissions trading of GHG emissions reductions occurring under the CDM and JI.</p>
<p>Limited or Non-Recourse "Project Finance" Structure RE project developers may seek to structure the financing for the project on a limited recourse or non-recourse basis.</p>	<p>ECAs could work with project developers, and other stakeholders to develop acceptable RET project financing models.</p>
<p>Carbon Intensity High carbon intensity of a project could present an additional risk. Premia accounting for carbon intensity, based on carbon intensity analysis and portfolio impact assessments, can help level the playing field between relatively low carbon intensive RE and generally higher carbon intensive conventional energy projects.</p>	<p>ECAs could develop portfolio risk management tools based on carbon intensity and demonstrate leadership in the use of such tools.</p>
<p>Portfolio Targets for RE Investors' confidence in RE has to be gained. Reliable incentives would help secure a stable growth.</p>	<p>Targets or "set-asides" for RE exports in the annual ECA budget would give a strong signal.</p>



POSSIBLE RESPONSES BY ECAs IF GIVEN DIRECTION FROM SHAREHOLDERS AND GOVERNMENTS

Area of intervention/Barrier/Issue	Possible responses
<p>Local Currency RE projects, like most infrastructure projects, generate revenues in local currencies. Currency volatility therefore poses an additional risk in terms of financial viability of the project.</p>	<p>ECAs can provide cover in local currency for RET projects. This is already done by some ECAs on a case-by-case basis.</p>
<p>ECA Co-financing¹ Renewable energy projects often require equipment to be sourced from more than one country.</p>	<p>ECAs can offer a “one-stop-shop”² to project sponsors through the use of co-financing and re-insurance arrangements with other ECAs that are providing goods and services to the project.</p>
<p>Co-financing with Multilateral Development Banks ECAs have less experience with RET projects than do Multilateral Development Banks, a number of which have established so-called carbon funds.</p>	<p>ECAs can build on past co-financing experience with Multilateral Development Banks in supporting infrastructure projects, including energy projects.</p>
<p>Alternative Risk Criteria RET Projects are relatively new and may not meet standard ECA underwriting criteria, e.g. track history of successful trading.</p>	<p>ECAs could develop alternative criteria against which to review renewable energy buyers when they do not meet standard underwriting criteria, with the goal of determining whether the buyer is able to repay the financing.</p>
<p>Repayment Flexibility RE projects generally are characterised by high upfront cost and relatively low operating cost. Greater flexibility to deviate from the traditional ECAs terms of equal semi-annual principal repayments commencing six months from project commissioning could help reduce renewable energy cost.</p>	<p>ECAs can provide more flexible repayment schedules to accommodate the unique project economics of renewable energy.</p>
<p>Demand ECAs face relatively little demand for support of RET projects from exporters and project developers in their home countries.</p>	<p>ECAs can analyse the underlying cause(s) for this lack of demand and take measures to generate demand, e.g. more aggressive marketing to SME project developers and outreach to potential foreign buyers.</p>
<p>Premium and Interest Rates Political risk premium levels are harmonized under the Arrangement, but the surcharge for commercial risk can be set freely by the individual ECAs.</p>	<p>ECAs can adjust rates for commercial risk premium for RET projects, provided that they operate on a self-sustaining, non-subsidization basis.</p>

1/ Co-financing can be defined as financing mobilised from sources other than the borrower or project sponsors.

2/ “One-stop-shop” arrangements offer administrative ease to foreign buyers seeking a single financing package for the whole deal when an export sale transaction involves sourcing from more than one country. The location of the Main Contractor and/or the country with the largest share of the sourcing generally will determine which agency will be the Lead ECA. The Lead ECA will ask the Follower ECA if it wishes to cover its portion of the exports.

Case Study II – Wind Energy Project in Ecuador

The development of this 13.5 MW wind farm in Ecuador requires a total investment of USD 16.7 million. The sponsors seek a limited recourse loan of USD 11.7 million, equal to 70% of the total project cost. The loan term is 10 years, with one year grace period, at 8% interest rate. The local costs represent 25% of the total project cost. A fixed feed-in-tariff is guaranteed for 10 years by the national utility company. If some terms of ECA support for this wind energy project were changed, the price of energy produced would drop significantly while maintaining the project's IRR:

Local Cost Support: if the sponsors were to comply with current ECA limitation of local cost to 15%, project cost would go up and imply an increase of the sales price of the produced kWh by **0.25 cents to 11.50 cents**. In addition to this increase of the energy price by 2.25%, fewer employment would be created in Ecuador, which would in turn limit the project's acceptability and receptiveness on the side of local stakeholders.

Repayment Flexibility: if a **2 year grace period** were authorised for this 10 year loan with a secure yearly debt service coverage ratio, the price of the energy would be lowered by **0.45 cents per kWh** to 10.80 cents per kWh.

Repayment Tenor: if the loan repayment term were increased to **15 or 20 years**, the energy price would be reduced respectively by 0.63 cent or 1.04 cents per kWh. Longer repayment terms, as granted for example for nuclear power plants, would take into account this project's high up-front capital cost.

Premium and Interest Rates: if renewable energy projects had their own ECA risk category, this project's interest rate of 8% could be lowered. A loan at 6% with an adjusted commercial risk premium would reduce the energy price by **0.54 cents per kWh**, equivalent to a 5% decrease.

« ECAs Made it Happen » scenario (modified conditions, same IRR) leading to a decrease of 2.19 cents per kWh:

	With ACTUAL ECA Conditions	With MODIFIED ECA Conditions
Loan Term	10 years	15 years
Repayment Flexibility	1 year grace period with semi-annual repayments	2 years grace period with semi-annual repayments
Local Cost Support	15%	25%
Premium and Interest Rate	8%	6%
Acceptable Feed-In Tariff	11.50 US cents / kWh	9.31 US cents / kWh

Governments Have Many Options

- Establish clear policies favouring renewable energy, such as increase of overall credit in support of renewable energy projects (i.e., a specific quantity of support available for support of renewable energy projects as done by the British Government in the case of ECGD), or setting alternative criteria against which to review renewable energy buyers when they do not meet standard credit criteria.

Such general policies would enable ECAs to take near term unilateral steps to support RE projects, such as:

- Providing more cover for local currency financing;
- Providing more flexible premium and interest rates than currently charged;
- Undertaking more RE Projects through co-financing and multi-sourcing arrangements with other ECAS and Multilateral Institutions;
- Developing alternative credit criteria;
- Promoting and supporting RE Technology development through exports;
- Considering more flexible premiums and fees for support of RE projects.

- If not yet done so, provide support to renewable energy technology development by renewable energy feed-in requirements or non-fossil obligations, and other activities that help development of home country markets - a precondition for exports. Similarly, such measures undertaken by host country governments would help generate more demand for ECA services in the renewable energy area.

- Consider changes to the OECD Arrangement, including:
 - Longer repayment terms than currently permitted;
 - More flexible cover for local costs than currently permitted; and
 - Relaxed tied aid rules.

ECAs Can Take Immediate Action



- Prepare material on availability and implications of the above mentioned unilateral steps to help decision making by guardian authorities regarding renewable energy favouring policies.
- Share experiences amongst each other on barriers and due diligence in actual deals closed.
- Help create demand for renewable energy technology exports by:
 - Analysing why existing modest renewable energy project support programmes haven't been more successful;
 - Consulting with potential renewable energy technology exporters, especially SMEs, with the aim of developing tailored support services;
 - Marketing such services more aggressively.
- Start asap the thinking process on development of:
 - New financing structure models, e.g. "bundling";
 - New ECA products to support Emissions Trading in CDM and JI RE projects;
 - New limited recourse financing models uniquely suited for RE projects;
 - New portfolio risk management tools to assess risks and impact on GHG of all projects (i.e., additional risk expressed in higher premia for projects emitting more GHG).

This paper was developed in consultation with a multi-stakeholder Working Group involving representatives of Export Credit Agencies, renewable energy industry associations, project developers and NGOs. The views and conclusions expressed in this brief do not necessarily reflect the views, opinions or current policies of individual working group members or their organisations.