The role of the insurance sector in climate change mitigation

By Agostino Galvagni
Chief Executive Officer, Swiss Re Corporate Solutions

Both the energy and insurance industries are heavily affected by the increasing concentration of greenhouse gases in the atmosphere. In the case of the energy industry, the political decision-making directed at reducing greenhouse gas emissions has fundamentally changed the markets. In Europe, for example, targets set for the development of renewable energy resources and the related subsidy-driven boom in solar and wind power generation have affected the profitability of fossil fuel power plants. In the case of the insurance industry, natural catastrophe losses have increased significantly (see graph below) and – assuming this trend will continue – there is the risk that insurance coverage may become unaffordable for certain coastal areas. Hence, both industry sectors are keenly interested in climate change mitigation. What follows is a closer look into the role of insurance in fostering the development of renewable energy.

Annual investments in renewable energy have risen from US$33 billion in 2004 to US$211 billion in 2010. This trend is likely to continue: Bloomberg New Energy Finance (BNEF) estimates that the annual investments in renewable energy will reach US$ 450 billion by 2030. This view is also confirmed by a recent survey conducted by the Economist Intelligence Unit, in which 61 per cent of power companies reported that renewable power production will become highly significant within the next three years.

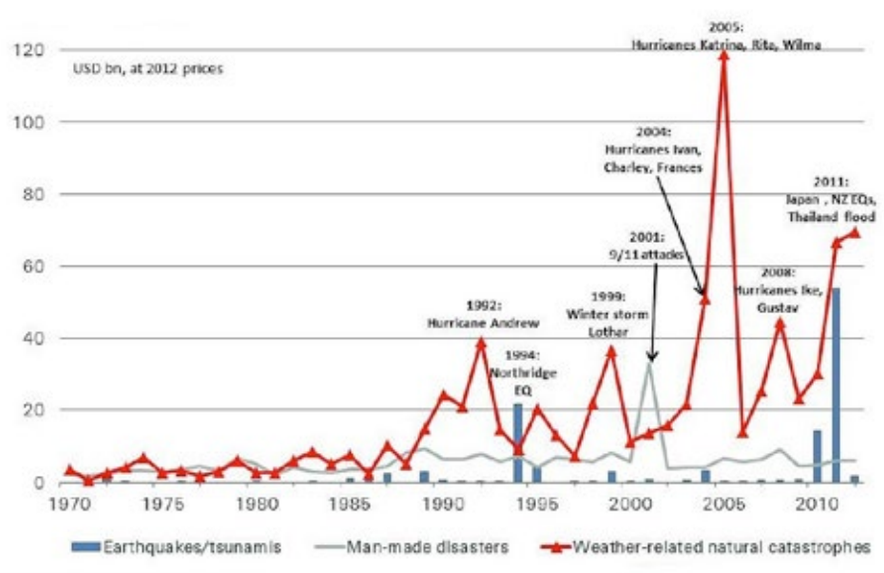
Renewable energy is a vital asset in the efforts to reduce carbon emissions and mitigate climate change. The publication "*Building a Sustainable Energy Future*"[1], authored by Swiss Re and partners from the public and private sector, shows that low-carbon technologies contributed 23 per cent to the global power supply mix in 2010, while fossil fuels accounted for 77 per cent. With this outlook for substantial investments in renewable energy, this gap will be further reduced.

The insurance sector has a key role to play in supporting the further growth of renewable energy. Not surprisingly, the demand for construction and operational risk coverage grows in line with investments into renewable energy assets and installed capacity, respectively. But a recent study by BNEF, commissioned by Swiss Re Corporate Solutions, revealed further interesting dynamics:

Firstly, there is an increasing need to finance renewable energy assets through debt from institutional investors (such as insurers), who are looking for a long-term, stable yield. Their risk appetite differs from that of current investors (such as utilities, private equity). Institutional investors commonly allocate only five per cent of their assets to so-called alternative investments, a class encompassing renewable energy projects, while typically reserving about 40 per cent for bonds. To allow institutional investors to provide debt financing at scale, it therefore becomes important to shape the risk/return profile of renewable energy investments, such that they can be considered bond-type investments. This can be achieved through de-risking the cashflow volatility of renewable energy assets.

A volatile cashflow pattern can be split into a safer and a less-safe part. The latter can be hedged in insurance or derivatives markets. For a share of the return in the form of a premium, risk takers can put boundaries on the cashflow volatility. In the example of a wind farm, this would mean putting a floor on the power production through a contract that pays the owner or the lender when

Insured catastrophe losses 1970-2012



the wind fails to materialise or production suffers from a shortfall due to other insurable causes. Investors benefitting from that protection would be willing to fund projects that generate uncertain cashflows because they are protected when that flow goes against them. Potentially, this could attract enough new investments to make a real difference in closing the funding gap in renewables financing.

Secondly, there are prevailing weaknesses in the insurance coverage during the construction phase of renewable energy projects, mainly relating to project downtimes (e.g. wave heights interrupting off-shore construction). Currently, these risks are dealt with as part of negotiated contracts amongst investors, developers, construction companies and manufacturers, but they are often not explicitly assessed, nor are they insured. However, project delays significantly reduce the expected returns on investment. It is essential that the insurance industry addresses these risks despite their complexity.

Construction contracts need to deal explicitly with this "shut down" risk, for example, by setting terms that assume an agreed number of shut-in days, defined as critical days, triggered when the waves are too high and/or the wind is too strong for vessels to operate and construction to proceed. To cover the days that exceed contractually agreed thresholds, insurance protection would be secured and also included in the contract. By putting this cost into the contract, the parties fix an element that would otherwise be variable, and the insurer takes over the risk of unpredictable weather events causing delays.

While the reserves for project downtimes currently built into construction contracts are difficult to assess, it is fair to assume that explicit pricing for insurance will increase transparency and reduce overall project costs. This would be a welcome benefit in view of the substantial investment required to build the numerous offshore wind farms that are currently in project planning stages.

A final dynamic to be highlighted pertains to grid regions with a substantial share of renewable power capacity, where production volatility has an impact on all market participants. In such regions (e.g. Germany and neighbouring countries) traders and grid operators are faced with very low and sometimes even negative power prices, as well as high production volatility and related issues of balancing the grid. In markets with fixed feed-in tariffs, the burden of low power prices and balancing the grid is imposed upon thermal power generators, making it increasingly difficult for them to operate profitably.

These rules for energy uptake are in the process of changing, and regulators will be working to make the costs more open and explicitly enforced. The parties who bear the balancing costs will have an interest in managing the cost of intermittent renewable energy production. Regulators currently face a dilemma of energy source prioritisation. Thermal power generation capacity stands uneconomically idle when the grid predominantly takes on wind power. However, power generation from other fuel sources is still needed to ensure stable power supply, available in all weather conditions. There is therefore a need for products or market designs that balance the playing field while still allowing renewable energy to be prioritised.

Insurance can de-risk both the construction phase of projects, which suffers from delays due to inclement weather or physical accidents, as well as the operational phase, which is exposed to the volatility of the natural energy resource's availability (i.e. sunshine, wind), fluctuating energy prices in the market, and physical damage of the power generation components. During the construction phase, Construction and Erection All Risk covers can be enhanced through complementary solutions addressing project downtimes and delays in start-up, both of which can materially affect expected return on investments. During the operational phase, Property Damage covers can be complemented by solutions addressing the monthly and annual variability in power production. Reducing the uncertainty surrounding start-up and operating variability is a key pre-requisite for attracting and unlocking the institutional investments needed to fund future renewable energy assets. Finally, there will be a range of insurance-type derivatives available for addressing volume and price risks, to assist traders in managing the supply volatility and related market risks in grid areas with a significant share of renewable energy supply.

In summary, we can draw the following conclusions. The generation capacity from renewable sources of energy will continue to grow significantly. For funding these assets, developers and utilities will increasingly rely on institutional investors, in order to reach the US$ 450 billion of investments expected annually by 2030. Insurers have a dual role to play, acting both as lenders but also as risk moderators, shaping the profile of income streams, such that projects are attractive for institutional investors who require a long-term, stable yield. ❑

[1] *www.swissre.com/sustainable_energy_future*