



In view of the above, the Brazilian Government and sector agents engaged in research and development projects have undertaken initiatives that aim to improve the regulation of solar power use. The initiatives specifically cover on-site generation (distributed generation) by solar sources.

During a meeting of its board of directors on 17 April 2012, ANEEL (the Brazilian energy regulator) approved the regulatory cornerstone for the development of new distributed generation projects from renewable sources, including solar sources (both photovoltaic and solar thermal). In addition, power consumers who implement a renewable on-site generation system (up to 1 MW in size) will be authorised to use net metering systems and receive compensation (through a credit) for any excess energy they generate.

The new regulation authorises the use of the energy credit (generated from an on-site renewable power unit) against future energy consumption or any related consumption under the same ownership chain, within a 36-month period. One important, undecided issue is whether compensation will be classified by tax authorities as a sale of energy, and, therefore, subject to the ICMS (sales tax). ANEEL has left this issue for the Treasury Department to address. The issue of the tax levied (or not) on the use of credits will be a crucially important factor in the financial attractiveness of renewable projects.

A second regulation was also approved at the meeting of 17 April. According to this regulation, the tariff charged for the transport of energy from a solar source to the interconnected system will be reduced by 80 per cent, for a ten-year period, applicable to projects entering into commercial operation up to December 2017.

The above regulations are considered ground-breaking and show an important move from the Brazilian regulator towards the accommodation of solar projects in Brazil's energy mix. The final factor for the acceptance of solar energy in Brazil may be the grant of special tax benefits for solar projects; however, the Brazilian Government has not yet granted these benefits.

Another strong indicator of the successful implementation of solar energy in the country is how the market reacts. In Brazil, some investors, seduced by expectations of a growing solar market, have already begun to register their intention to develop solar energy projects with ANEEL. This demonstrates a strong interest in this energy source on the part of private investors.

It is clear that Brazil has only just begun the process to facilitate improvements in the regulations required for the development of solar power generation. In order to create an attractive regulatory environment for investors in this sector, there remains much to be resolved. However, Brazil is on the right track.

Sustainable Japan

Fukushima disaster and its influences on TEPCO

On 11 March 2011, both a magnitude 9.0 earthquake and a tsunami hit east Japan's Pacific coast. These natural disasters caused the Fukushima Daiichi Nuclear Plant, on the Pacific coast of Fukushima Prefecture, to lose all connection to the power grid causing a full meltdown and multiple hydrogen explosions ('the accident').

The damage was considerable and widespread: at the time of writing, officials have ordered or recommended the evacuation of over 160,000 residents from the environs of the Fukushima plant, and in the two years following the accident, damages

are anticipated to total 40bn yen. The high cost of damages can be attributed to the fact that Japanese law uniquely regards damages resulting from misinformation and libel as part of 'nuclear damages'. Additionally, because radioactivity continues to give rise to a host of scientific uncertainties, it is impossible to predict or estimate the definitive extent and cost of damages.

Tokyo Electric Power Company (TEPCO), which built and operated the Fukushima Daiichi Nuclear Plant, is no longer able to issue bonds in the money markets, thereby impairing its ability to maintain adequate cashflows. Despite the fact that the company is de facto insolvent, the Japanese Government will not

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permit it to file for bankruptcy and become legally insolvent, to ensure full compensation to victims and a stable supply of electricity.

The Act on Compensation for Nuclear Damage ('the Act') provides that electrical utilities shall, on a no-fault basis and without limitation, fully compensate victims for all damages suffered from nuclear accidents. Regardless of such statutory provisions, protection for victims of the accident remains inadequate. The Act provides that electric power companies operating nuclear power plants must create a common fund worth 120bn yen. The fund is to be funded by the owners of nuclear power plant sites and allocated preferentially towards payment to victims of a nuclear accident. However, the assets of the fund can only be paid out for limited purposes and cannot be allocated towards any of the business costs incurred by an insolvent utility. As a result, on 12 September 2011, the Japanese Government established the Nuclear Damage Liability Facilitation Fund ('the Fund'). The Fund ensures that, in the event TEPCO is not capable of fully discharging its debt obligations, it can provide the necessary compensation to victims of the accident. TEPCO is therefore receiving finance from the Japanese Government, under the premise that it will return these amounts to the Fund once the company recovers its finances in the future.

Nuclear power generation

Since the accident, Japanese nuclear power plants have been periodically shut down for inspection. The plants, once shut down, have not been permitted to restart, in large part because of the inspectors' alleged inability to confirm their safety. By May 2012, all of the nuclear power plants in Japan had ceased to generate electricity altogether. The power plants have been forced to use resources that are more expensive than nuclear power to generate electricity, such as thermal power stations fuelled by liquefied natural gas. As a result, almost all Japanese electrical utilities are operating in fiscal deficit.

In view of this, the Japanese Government has attempted to persuade residents living near nuclear power plants to support the resurrection of some nuclear power plants. Initially, the Government proposed restarting two reactors at the Ohi plant in the western Fukui Prefecture. Prime Minister Noda stated that the Ohi plant was confirmed safe and should be restarted to avoid a shortage of

electricity in the Osaka area. Following this announcement, the Government decided to restart the Ohi plant. The two reactors are to be restarted and operate under newly mandated safety regulations.

Additionally, for the past two summers, the Government has asked electricity users to curtail their use of electricity. Without cutbacks in usage, a serious electricity shortfall is predicted for central Japan, including Osaka and Kyoto. Central Japan is particularly vulnerable because of its dependence on nuclear power generation.

Outlook for the future

As a result of the accident, there has been a significant backlash against the use of nuclear reactors. Despite the current sentiment towards the abolition of nuclear energy, Japan's need for a stable and uninterrupted supply of electricity necessitates the use of nuclear plants. Although the accident had several negative repercussions, the Government continues to stress the importance of restarting Japan's nuclear power plants.

The Government also continues in earnest to discuss effective energy policy, including renewable alternatives, through the Deliberation Council. The purpose of the Deliberation Council is to consider:

1. whether to separate the generation of power from the supply of power under two administrative and ownership structures;
2. deregulation of the electricity industry; and
3. whether to increase renewable energy sources of power generation.

The promotion of renewable energy signals a major shift in policy for Japan. This focus on renewables has resulted in the introduction of a feed-in tariff programme for renewable energy. However, owing to technical realities and economic considerations, measures that focus only on renewable energy growth may be inadequate to meet Japan's need for electricity.

As a result of the accident, it is now likely that Japan's nuclear energy capacity will never exceed pre-accident levels. The need for a continuous supply of electricity for Japan's growing population will require some dependence on nuclear energy. Restarting Japan's nuclear power plants will be necessary to maintain a critical minimum of generation capacity in both peak and off-peak seasons.