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Developing the UHV-Based Energy Supply Center – The Fukushima Nuclear Incident and its Implication to the Deployment of Concentrated Solar Thermal Power in Asia

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With events still unfolding in Japan following this month's devastating earthquake and subsequent tsunami and radiation leaks, our hearts go out to the victims and their families at this difficult time.

As the world watches in dismay, many question what could have been done to avoid or lessen the impact of the tragedy. As we all try to assist the Japanese in their time of need, we should also seek to learn from the tragedy and collectively reconsider the future of nuclear power worldwide.

In the wake of the disaster, countries around the world have suspended their nuclear plant programmes. China has shelved all nuclear power plant construction plans and ordered a review of safety measures at all nuclear plants and its overall nuclear energy development plan. The disaster has sent shockwaves across the globe and fear of a similar accident has put global nuclear policy on hold.

As we look ahead, we should seek to determine the broader implications of this tragedy, which has revived the ongoing debate over nuclear safety and the issue of safe energy supplies. We must wake up to the fact that we need to look for safer and more sustainable sources of energy than nuclear power. And we shouldn't forget that there is still a pressing need to protect the climate by making deep cuts in carbon dioxide emissions.

To tackle the challenge of developing and building a secure and sustainable supply of energy to meet rising global demand while at the same time mitigating the effects of



climate change, we should look to the sky for answers. The sun is our infinite energy source.

The DESERTEC Concept offers a solution that provides plentiful supplies of safe and clean energy using technologies that are available today: Within 6 hours deserts receive more energy from the sun than mankind consumes within a year. The idea is to harness the sun's power in deserts where it is most abundant and transmit it through an integrated grid. CSP technology is used to capture heat from the sun with specialised mirrors to boil water and generate electricity with a steam turbine. And with the help of Ultra High Voltage Direct Current (UHVDC) transmission lines, this energy can be transmitted over thousands of kilometers to centers of demand. By linking up a multitude of different types of renewable energy sources – some of which provide power on demand – across long distances, the DESERTEC Concept offers high levels of robustness and resilience in energy supplies.

In 2009 this concept gained a lot of attention when the DESERTEC Foundation founded the industrial initiative Dii GmbH together with partners from the industrial and finance sectors to accelerate the implementation of the DESERTEC Concept in the Mediterranean region. But this genuine sustainable energy concept can be implemented on all inhabited continents. Both China and Mongolia have large areas of desert that would be suitable for building CSP power plants. The energy potential offered by these desert areas would be enough to support the energy needs of not only China and Mongolia, but also some neighbouring countries.

Ambitious and yet achievable, the DESERTEC Foundation promotes an energy concept which aims to include various forms of renewable energies, but particularly focuses on using CSP technology because of its dispatchability and the energy storage capability that allows continuous generation of electricity even at night or when there is a shortage of sunlight.

China, with its green revolution being spurred by the enormous power needs to support its fast expanding economy, is experimenting with the use of Concentrated Solar Thermal Power (CSP) which taps into sun's energy.

Although China is still lagging behind in the development and implementation of CSP technology, the country's unique knowledge and experiences in large scale UHVDC deployment have laid a solid foundation for it to become a leading solution to fill the energy gaps for China as well as the region.

The Greater East Asia region – China, Mongolia, Japan, South Korea plus five ASEAN nations in the Mekong region all have great potential to push ahead with CSP technology. While the concept is originated from Europe, North Africa and the Middle



East, this region will see even bigger benefits from the DESERTEC Concept in terms of bringing overall benefits to their communities.

It is in everyone's interest that China becomes an active player in the DESERTEC vision and thus the central government and the industry should push China in this direction by promoting the implementation of the DESERTEC Concept and accelerating the construction of the required infrastructure as well as supporting financing and acceptance by key players.

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