

# DESERTEC Foundation: 110331-01 Plug into the power of China's deserts

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by Jerry Li

With events still unfolding in Japan following this month's devastating earthquake and subsequent tsunami and radiation leaks, many people are asking what could have been done to avoid or lessen the impact of the tragedy. Countries around the world have suspended their nuclear plant programmes. China has put plant construction plans on hold, and ordered a safety review of all facilities and its overall nuclear energy plan. As we look ahead, we should determine the broader implications of this tragedy, which has revived the debate over nuclear safety and 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 should not forget that there is still a pressing need to prevent climate change by making deep cuts in carbon dioxide emissions.

To meet these challenges, we should look to the sky: The sun is our infinite energy source. The DESERTEC Concept offers a solution that provides plentiful supplies of safe and clean energy using technologies available today: The idea is to harness the sun's power in deserts and transmit it through an integrated grid. It is a powerful concept, given that within six hours, deserts receive more energy from the sun than humankind consumes within a year. Concentrating Solar-Thermal Power (CSP) technology captures this heat 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 kilometres to centres of demand.

Both China and Mongolia have large areas of desert that would be suitable for building such power plants. If realized, the potential in these areas would be enough to support the energy needs not only of these two countries, but also some neighbouring countries. China's green revolution is being spurred by the enormous amounts of power it needs to support its fast expanding economy. The country is experimenting with CSP and, although it lags behind in the development and implementation of the technology, its unique knowledge of large-scale UHVDC deployment lays a solid basis for this technology to become a leading energy solution for China as well as the region.

There is great potential for the whole Greater East Asia region – China, Mongolia, Japan, South Korea plus the five ASEAN nations in the Mekong region – to push ahead with this technology. While the DESERTEC Concept originated in Europe, North Africa and the Middle East, the region's communities could see even bigger benefits. It is in everyone's interest that China is an active player in this area. Beijing, together with industry, should promote the concept, and accelerate construction of the necessary infrastructure while supporting financing and acceptance by key players.

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依靠特高压作为亚洲能源供应中心----日本核电危机对亚洲区内太阳能热电发展的启示

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这个月内，日本首先饱受地震和随之引发的海啸蹂躏，继而惨被核辐射污染，灾祸不断，至今情况还未稳定下来。在这个艰难时刻，我们为死伤者和他们的家人感到难过，并致以无限的祝福。

对于核辐射意外的发展，全世界都看到目瞪口呆。很多人不禁问：要做甚么才可避免这个核灾难的发生或减轻灾情呢？大家都在设法向需要协助的日本人伸出援手，但与此同时，我们也应该从不幸中学习，一同反思为甚么发生核辐射意外，并应再三考虑核能在全球的未来方向。

各国政府惊觉到核灾的可怕，纷纷暂停所有兴建核电厂计划。中国政府除了暂缓了兴建核电厂计划外，也下令检讨全国核电厂的安全措施，以及整体的核能发展计划。日本的灾难震惊全球，大家为怕发生类似意外，都暂停推行核电政策。

为未来着想，我们必须认清这场核灾难的深远影响：「究竟核安全重要，还是安全的能源重要呢？」这个议题已再次引起连串的辩论。这是我们醒觉的时候了，事实上最重要的，是要找安全而持久的能源，而并非核能。请勿忘记，为保护气候，尽量减少二氧化碳的排放，仍是当前的急务。

要发展安全和持久的能源，并要减少对气候变化的影响，以满足全球对电力不断上升的需求，这实在是个挑战。要应付这个挑战，答案是仰望天空。其实，太阳就是取之不尽的能源。

DESERTEC「沙漠太阳能发电」的概念，只需要利用现行的科技，便能提供源源不断安全和干净的能源：地球上的沙漠每六小时所接收到的太阳能，就足够人类用上一年。DESERTEC这个构思就是在最多阳光的地方－沙漠－收集太阳能，然后透过电网作长距离传送。太阳能热发电 (Concentrated Solar-Thermal Power, CSP) 技术是利用特制的镜面收集太阳的热能，把水烧沸成蒸气直接推动涡轮发电，然后通过特高压直流输电系统(Ultra High Voltage Direct Current, UHVDC) 输送至远在千万公里以外的各国城市。加上传送路线上的各种可分离再生能源，DESERTEC可以提供稳定而可靠的能源。

在2009年DESERTEC概念引起了极大的注意，而DESERTEC Foundation更与工业及金融界的合作伙伴成立了Dii GmbH，在地中海区域加快实践DESERTEC概念。而这个可持续发电模式更足可在任何有人居住的地方推展：中国和蒙古有大量沙漠，适合兴建太阳能热电站。估计从中可生产的电量，足够满足中国和蒙古之余，还可以满足邻近国家的需求。

DESERTEC Foundation所倡议的能源概念，是在揉合各种可再生能源的同时，特别强调太阳能热发电的应用。这是因为太阳能热发电具有可分离性，而其储能能力更让其可以在夜间或缺乏阳光时仍然继续发电。因此，我们认为这种倡议是既进取而又务实的。

经济正高速增长的中国，亟需庞大的绿色电力来支持。目前，中国亦已在积极试验太阳能热发电技术。

中国在太阳能热发电方面的技术和发展，虽然尚在发展阶段。但由于中国拥有非常独特的特高压输电的智识和经验，为使用太阳能热发电打下坚实的基础，相信中国未来的太阳能热发电技术将为中国及周边地区提供优秀的能源解决方案。

泛东亚地区中的中国、蒙古、日本、韩国、及湄公河流域的东盟五国等等，都有具有潜力推动太阳能热发电在区内的发展。DESERTEC概念是起源于非洲和中东地区，但相信它能为泛东亚地区带来同样或更大的利益。

中国成为DESERTEC的主要参与者，将为区内能源的稳定发展十分有利。中央政府和业界应推动中国向这方向发展，包括推广和实践DESERTEC的构思，加快兴建所需的基础设施，为工业界和财金界的参与者提供支援等。

新闻关键词：特高压，日本核电危机