

Clean Energy

Factsheet 2010

At a Glance

As the world moves towards addressing the issues of anthropogenic climate change, fossil fuel depletion and rapid urbanization, the need for more eco-friendly products and solutions is set to accelerate, especially in Asia which has more than half the world's population. Singapore has thus identified the Cleantech industry as a strategic economic growth area.

We are committed to growing the Cleantech industry. Singapore has allocated nearly S\$700 million to develop five key pillars: R&D, developing manpower, grooming Singapore-based enterprises, branding our industry internationally and growing a vibrant industry ecosystem. The city also welcomes Cleantech companies to use Singapore as a 'Living Lab' to testbed and demonstrate innovative solutions before exporting them to the Asia-Pacific region.

Clean Energy is an important sector in the Cleantech industry. Singapore's Clean Energy push centres on solar energy, given its strategic location in the tropical sunbelt. Besides solar energy, resources are also being channeled towards fuel cells, biomass, wind energy, tidal energy, energy efficiency and carbon services. By 2015, the Clean Energy sector is expected to contribute S\$1.7 billion to Singapore's gross domestic product and employ 7,000. Other sectors in the Cleantech industry include the Environment and Water sector.

Clean Energy Programme Office

To synergise our efforts to grow this industry, the multi-agency Clean Energy Programme Office (CEPO) was established in 2007. Besides the Economic Development Board (EDB), other government agencies like the Building and Construction Authority, National Environment Agency (NEA) and Energy Market Authority (EMA) are part of CEPO. CEPO is responsible for planning and executing strategies to develop Singapore into a Global Clean Energy Hub where clean energy products and solutions are developed here and exported globally.

Since inception, CEPO has launched several key initiatives, including the S\$50 million Clean Energy Research Programme to support R&D efforts, the S\$25 million graduate scholarships programme to groom top-notch talent for the industry and the S\$17 million Clean Energy Research and Testbedding programme to testbed innovative Clean Energy solutions.

CEPO's executive director is the Managing Director of EDB, Dr Beh Swan Gin, while its co-executive director is Dr John Keung, CEO of BCA.

Key Strategies of CEPO:

Cluster Development

- Attract & anchor major international companies
- Groom local-based companies to be world class players
- Proliferate startup companies

Technology Development

- Initiate Clean Energy Research Programme (CERP)
- Build R&D competence centers & global linkages
- Making Singapore a global test-bed and site of early adoption
- Grooming talent & manpower

Internationalization

- Exporting Clean Energy products and solutions by Singapore-based companies
- Marketing & Branding of Singapore's Clean Energy industry

Our Competitive Advantages

Existing Strengths in Electronics, Precision Engineering and Chemicals Industries

The manufacturing of solar wafers, cells and modules is similar to the semiconductor and other high-end electronics manufacturing processes. Today, Singapore is already a major semiconductor hub and also has all-round capabilities from the precision engineering and chemicals industries which can all be applied to the solar and wider clean energy industry.

Strategic Location in the Asian Sunbelt

Singapore is located on the sunbelt which gets about 50% more radiation than the temperate regions such as Germany and Japan which are major hubs for solar technology today. When the price of solar drops to parity with conventional electricity, the sunbelt region has been identified as one of the first solar markets to experience strong growth. Our excellent supply chain capabilities and extensive linkages to the region make us an efficient base for companies to serve the Asian sunbelt. In addition, there are about 1 billion people in the region without access to grid electricity. Singapore-based companies can develop off-grid clean energy solutions tailored to this huge under-served market.

Positioning for the Future

The global clean energy industry will continue to experience robust global growth due to rising energy demand, climate change concerns and rapid technological advances. Singapore has distinct competitive advantages to play a strong role in this industry to capitalize and contribute to its continued growth.

Companies come to us because they trust us; they trust that Singapore delivers on its promises. Our strong capabilities in electronics, precision engineering and chemicals, our mass manufacturing know-how (which in turn increases economies of scale and reduces manufacturing cost), and extensive supplier base, puts us in good stead to woo clean energy companies. Singapore's trusted intellectual property protection regime is also a key consideration for clean energy companies which rely on innovation as a growth driver.

Singapore also has the right infrastructure, logistics capability and connectivity to serve the markets in Asia, with more than half of the world population including some one billion people without access to electricity. Our connectivity to the region will help Singapore-based companies meet the huge demand for clean energy products.

Leading Industry Players

Renewable Energy Corporation

In 2007, REC announced it would be establishing the world's largest integrated solar manufacturing complex in Singapore. The first phase is about S\$3 billion in investment value and will hire about 1,300 employees when it begins operations in early 2010 to produce solar wafers, cells and modules. When the complex is fully developed, REC could produce up to 1.5GW of solar products in Singapore for global markets.

SolarWorld Group

The SolarWorld Group, one of the largest solar companies globally, has established SolarWorld Asia Pacific in Singapore to extend the company's reach into Asia. SolarWorld Asia Pacific will provide strategic business planning, general management, technical support and sales and marketing for the entire Asia Pacific region.

Vestas Wind Systems

Vestas is the world's largest supplier of wind power systems and a driving force behind the development of the world wind power industry. Vestas chose Singapore as the base for its largest R&D centre outside Denmark which will employ up to 300 research scientists and engineers by 2012, as well as its Asia-Pacific headquarters.

Research Centre

SERIS, or the Solar Energy Research Institute of Singapore was launched at the National University of Singapore in 2008. It is led by Professor Joachim Luther, the former Director of the world renowned Fraunhofer Institute of Solar Energy Systems. With an investment of S\$130 million over five years, this new institute will conduct world-class industry-oriented R&D and train specialist manpower for the solar energy sector.

About the Singapore Economic Development Board

EDB is the lead government agency for planning and executing strategies to enhance Singapore's position as a global business centre and grow the Singapore economy. We dream, design and deliver solutions that create value for investors and companies in Singapore. In so doing, we generate economic opportunities and jobs for the people of Singapore; and help shape Singapore's economic future.

'Host to Home' articulates how EDB is sharpening its economic development strategies to position Singapore for the future. It is about extending Singapore's value proposition to businesses not just in helping them improve their bottom line, but also in helping them grow their top line. EDB plans to build on existing strengths and add new layers of capabilities to enable Singapore to become a *'Home for Business'*, a *'Home for Innovation'* and a *'Home for Talent'*.

For more information on EDB, please visit www.sedb.com

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