GERMANY



Fig. 11 Result analysis of Germany

Country Result & Analysis

The overall score for Germany is above average (57/100) in ASEI. Germany demonstrates above average level in all four examined criteria. Germany's "eco-innovation capacity" is well supported with the country's high "level of economic competitiveness", strong "general innovation capacity" and high "level of awareness on sustainability management". In regards to the country's "eco-innovation activities", Germany shows relatively large "number of green patents" and high "level of commercialized green technology SMEs". There are more SMEs with already widely commercialized green technology solutions of which over 33 percent of the companies have commercialized technology solutions.⁴⁸ Germany does not stand out in the "eco-innovation supporting environment" however, the green investment environment is well formed within the country and the German government's R&D expenditure in green industry is quite large. Germany scores higher than the average in "eco-innovation performance", backed with its large size of green industry market, low carbon emission, and relatively low level of environmental impact on society. Overall, Germany ranks above average on the ASEI index.

Germany's Key Eco-Innovation Environment

Germany has national program and roadmaps such as ProgRess (German Program on Resource Efficiency), the Sustainable Development Strategy and the High-tech Strategy that directly stimulate the growth of ecoinnovation at the national level. Eco-innovation in Germany is mostly associated with enhancing material productivity and renewable energy via development of green technology.

⁴⁸ Cleantech Group Data, as of November 2012

Overcoming Resource Scarcity through Focus on Resource Efficiency

In 2010, Raw Materials Strategy was announced with the plan to develop a national resource efficiency program. As a follow up action, in February 2012, the Federal Cabinet adopted the ProgRess (German Resource Efficiency Program). Germany became one of the first EU countries to announce a comprehensive resource efficiency program. The aim of this national program is to systematically extract and use natural resources in a sustainable way so that environmental damage is reduced. The program pushes German companies to reduce material and energy inputs, and encourages the sustainable use of abiotic, non-energy resources, biotic resources and natural resources such as water, air, land, soil, biodiversity and ecosystems. The new agenda for resource efficiency policy announced this year, is expected to push further to secure supply of raw material, raise resource efficiency in production, make consumption more resource-efficient and enhance resource-efficient closed cycle management.⁴⁹ It is expected that such national efforts will further encourage German companies to integrate the concept of eco-innovation into their business processes.

Toward Nuclear-Free Nation

In 2011, Germany has declared its plan toward nuclear-free nation by 2022. This plan was named the Nuclear Power Phase-out plan. Under this plan, the German government believes a 'renewable era' will open for Germany. Germany already demonstrates relatively high share of electricity generated from renewable sources. There have been a number of suitable policy measures and supporting programs to promote development of critical renewable technologies such as the Renewable Energy Sources Act, market incentive program to promote the utilization of heat and power from renewable sources. In fact, with the enforcement of German Renewable Energy Act in 2000, the share of electricity generated from renewable sources jumped from 6.5 percent in 2000 to 25 percent in the first half of 2012.⁵⁰ This Act has been a success in decentralizing energy production and bringing great economic benefits with around 340,000 jobs in the renewable energy will project a larger amount of the total energy supply to come from renewable sources in the future.

Emphasizing the Collaboration to Stimulate Eco-innovation

In 2006, the High-Tech Strategy was adopted. The strategy was reaffirmed by the Federal Government in 2009 and expanded into the High-Tech Strategy 2020 in 2010. The High-Tech Strategy is the first national innovation strategy that aims to improve the framework conditions for innovation by increasing cooperation between different policy areas and departments, science, research and industry. This national innovation strategy expects to trigger the development of new technologies and pioneer solutions in defined five areas that represent global challenges including climate/energy and mobility. The High-Tech Strategy 2020 newly set in 2010 emphasizes to implement "forward-looking" projects such as carbon-neutral, energy-efficient and climate-friendly city, intelligent reorganization of the energy supply system, renewable raw materials as an alternative to oil, one million electric vehicles in Germany by 2020, achieving higher internet use with lower energy consumption. Through the High-Tech Strategy, there have been several successful cases where businesses have been supported to perform eco-innovation. As an example, eco-innovative SMEs in Mittelstand are currently receiving technology funding to increase research partnerships.

⁴⁹ Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety

⁵⁰ http://www.spiegel.de/international/crossing-the-20-percent-mark-green-energy-use-jumps-in-germany-a-783314.html

⁵¹ DEBRIV. Der Wirtschaftsfaktor Braunkohle. Ausgabe (2010), www.braunkohle-wissen.de/#arbeitspl%20

CASE STUDY 1

Compact Power Motors

Compact Power Motors (CPM), manufactures small, light and energy efficient brushless electric motors. CPM's brushless electric motor was developed in response to the climate change, rising energy costs and limited resources, and CPM's all 'Made in Germany' product is used in all types of vehicles including hybrid and electrical ones, and all battery-driven appliances. This patented solution from CPM can provide efficiencies of up to 97 percent reduced energy, save space and weight of up to 7 kW/kg, and at the same time, offer high-quality performance.CPM was listed in

the 2012 Global Cleantech 100 and is in relationship with various companies based in multi nations, many of them in Asia. The company is in development partnership with an Indian company, Lucas TVS, and its various multinational customers include China South Motorcycles and Suzuki, a Japanese automobile company.



Source: http://www.cpmotors.eu

CASE STUDY 2

Micro Combined Heat and Power

Micro Combined Heat and Power (Micro-CHP) is so-called 'power-generating heating systems' which directly provides electricity as well as heating and hot water in detached houses, single and two-family houses. With the power rating of up to 3kW, micro-CHP is not only economical but also environmentally friendly. The less fuel is consumed by using waste heat from power generation as a heating source at home. Moreover, micro-CHP can convert up to 90 percent of the used energy into useful energy. There are a number of German enterprises involved in Micro-CHP retrofits at homes. E.ON, one of the world's largest German investor-owned power and gas companies, works with several manufacturers such as Brötje, Remeha, Senertec, Vaillant and Viessmann to commercialise micro-CHP systems in the market. The company provides a support program in which it provides a subsidy of 1,000 EUR per micro-CHP unit. Another

German company, Vaillant, a manufacturer of heating, ventilation and air-conditioning technology, works with Honda, a Japanese technology company, in installing micro-CHP systems throughout the nation.

Source: http://www.eon.com/en/media/news/pressreleases/2011/7/22/e-dot-on-supports-microcogeneration.html; http://www.vaillant.de/Presse/ Press-Releases/article/Vaillant_and_Honda_ install_micro-CHP_systems_throughout_Germany. html



CASE STUDY 3 Bayerische Motoren Werke AG

Bayerische Motoren Werke AG (BMW) is a well-known automobile, motorcycle and engine manufacturing multinational company headquartered in Munich, Bavaria, Germany. Began in the 1970's, BMW has pursued sustainability and environmental protection in its process chain, from the development of energy-saving alternative vehicle concepts and environmentally sound production processes to environmentally friendly recycling. Recycling End of Life Vehicles (ELV) has become a mandatory process in EU member states since 2000. Following such regulation, it is notable that BMW has put lots of efforts in recycling of vehicles by establishing a wide spread network of centers in the EU for the acceptance and recycling and Dismantling Center (RDC). As of 2009, the company disclosed that 15 percent of plastic parts in BMW vehicles were made of recycled materials. The recovery process of BMW ELV starts from vehicle acceptance to shredding process and finally preparation of individual materials using post-shredder technologies. The company's future recovery target is 95 percent, and its final goal is to "close the gaps in the material cycle" through technological innovation.

Source: BMW Group (2009), Vehicle Recycling: Focusing on Sustainability