



Cement — the key ingredient of concrete — is the world’s most widely used building material. It’s also the product of an energy-intensive process that accounts for about 5% of global greenhouse gases. These emissions threaten to increase as developing countries urbanize and build roads, buildings, and other infrastructure in the decades ahead. To pursue a low carbon growth path, the industry needs to adopt the most efficient technologies including waste-heat recovery (WHR).

Waste-heat recovery involves capturing the excess heat of an industrial process and using it to generate electric power. The technology can be used in a number of heavy industries, including steel and chemicals, but has not been applied extensively outside of China despite its potential to increase energy efficiency and mitigate climate change. Of the more than 850 waste-heat recovery installations in the cement industry globally, China has 739, followed by India with 26 and Japan with 24.

A report by the World Bank Group’s private sector arm, International Finance Corporation (IFC), and the Institute for Industrial Productivity (IIP) says cement plants can supply up to 30% of their own electricity needs through the waste-heat recovery process and thereby improve their bottom line by up to 10-15%.

“Cement companies can get more reliable and cheaper energy and at the same time cut their greenhouse gas emissions,” says IFC Chief Industry Specialist Michel Folliet.

## Exploring business opportunities in Asia and beyond

The report analyzes 11 country-markets in five regions where the cement industry is expected to grow. It estimates \$5 billion in investment could introduce about 2 gigawatts (GW) of WHR technology in developing countries. To put that amount in perspective, 2 GW of electric power produced by WHR would be enough to power about 1.3 million to 1.5 million homes.

IFC will explore opportunities to partner with major equipment manufacturers and vendors and otherwise help promote waste-heat recovery, drawing on Asia's experience with the technology.

Spearheaded by Japan in the '80s, waste heat recovery was introduced to China through a joint venture between Kawasaki Engineering Co. (Japan) and Anhui Conch (China). The technology has greatly expanded in China since 1998 in response to escalating energy costs and government policy, including tax breaks and 2011 national energy efficiency regulations, which mandated the technology's use at newly constructed cement plants.

The report provides a comprehensive analysis of country-specific business enabling environments to deploy the technology. It takes into account the state of the cement industry, industrial electricity tariffs and concerns over reliability of grid-supplied electricity, regulatory and sustainability drivers as well as political stability.

One of the major issues IFC hopes to address is the need to reduce the financial risk of waste heat recovery. IFC will build on its experience in structuring project finance to offer new ways to promote WHR, including off-balance sheet finance models, says Folliet.

IFC has already supported a number of waste heat recovery projects. The China Utility Based Energy Efficiency Finance Program provided access to finance through commercial banks to numerous WHR projects. The World Bank's China Energy Efficiency Financing Program also supported energy efficiency development. In FY14, IFC provided a \$40 million loan and helped to mobilize \$25 million for a WHR project in Turkey at Cimko Cimento ve Beton Sanayi ve Ticaret A.S. ("Cimko").

"IFC focuses on helping the market realize the WHR opportunities by putting together innovative financial structures that will satisfy cement producers, WHR operators, and bankers, and then financing such projects," says Folliet.

Source: [The World Bank](#)