China faces hurdles to developing shale gas

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A coal-fired power station in Huaibei, in east China's Anhui province is seen in August 2011. Energy-hungry China is tapping its vast shale gas reserves to reduce its reliance on dirty coal and imports, but experts warn its lack of technical expertise and scarce water supplies pose challenges.

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Beijing is investing billions of dollars to develop clean energy as it seeks to meet a target of generating 10 percent of its energy needs from natural gas and 15 percent from renewable sources by 2020.

The world's biggest emitter of greenhouse gases relies on coal for nearly 70 percent of its energy needs and is heavily dependent on imports of oil, gas and coal to meet growing demand as millions leave the countryside for urban areas.

But shale gas extraction -- developed in the United States and Canada -- is more complicated and expensive than tapping conventional gas and experts say it could take several years before commercial production starts in China.

Huge amounts of water, sand and chemicals are injected deep underground to break up shale formations and release the gas trapped inside.

The process can contaminate aquifers and gobbles up fresh water, which

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"The technical conditions appear relatively challenging and... large amounts of water are essential to shale gas development," said Tom Grieder, an analyst for IHS Global Insight.

He noted that the country's southwest -- where drilling is currently under way -- is prone to droughts.

A leading environmental group has also expressed concern that shale gas development could lead to reduced investment in energy efficiency and even replace renewable resources, which are key to tackling climate change.

"It is the cleanest fossil fuel compared to coal and oil, but it is still a fossil fuel," said Stephan Singer, head of WWF's Climate and Energy

Policy Unit in Brussels.

Singer said he understood why China, the world's second-largest economy and biggest energy consumer, wanted to develop shale gas but he hoped that it was "only for replacing coal and not for replacing renewables".

The US Energy Information Administration estimates China has nearly 50 percent more "technically recoverable" shale gas than the United States, but analysts cautioned that the quality of such reserves was still not known.

"China has very large gas reserves, but how much of that is recoverable is a big question," said Grieder.

"There are also questions on the actual gas content (quality) which is believed to be lower than in the US."

So far China has auctioned off two shale gas blocks in southwest China to two Chinese companies, including state-owned giant Sinopec, and plans to hold a second auction later this year or early in 2012.

Foreign companies are not allowed to bid but they are teaming up with Chinese players seeking their technical expertise.

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Royal Dutch Shell and PetroChina are currently building wells while ExxonMobil has partnered with Sinopec to undergo exploration for shale gas.

Commercial production in China is expected to start as early as 2015, analysts and companies say.

China is also expected to finish a nationwide survey of the country's shale gas resources by the end of 2013, which could open up more opportunities for exploration.

Xinjiang in the northwest and Inner Mongolia in the north are also believed to have significant reserves.

"The rewards for the foreign firms would be to get a slice of the Chinese market," said Victor Shum, a Singapore-based analyst for Purvin & Gertz.

"The Chinese have no experience... so the foreign firms contribute know-how."

Chinese companies are also reaching out overseas to gather much-needed knowledge and experience which can be used to develop the embryonic domestic market.

In January, Chinese oil giant CNOOC agreed to pay $570 million for one-third of US firm Chesapeake Energy's shale oil and gas drilling project in the American states of Colorado and Wyoming.

PetroChina and Canadian energy giant Encana also tried to tie up, but abandoned talks in June on a joint venture to develop a major shale gas project in British Colombia and Alberta after failing to agree on terms.

"Foreign firms will be indispensable for Chinese firms," said Michal Meidan, an analyst at research firm Eurasia Group in New York.

"But foreign firms may only be short-term partners as their Chinese counterparts will try to digest foreign technologies and know-how."