

CHINA

Education a weapon in fight against record pollution

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In the battle against worsening air pollution, China's government has made clean and renewable energy a priority, with education and research being an integral part of the campaign, according to specialists in the sector. In the battle against worsening air pollution, China's government has made clean and renewable energy a priority, with education and research being an integral part of the campaign, according to specialists in the sector.

"The new record pollution level...is highlighting the fact that there is no way for China except moving towards clean and renewable energy to progressively replace energy coming from coal (70%)," said Michel Farine, European dean of the Institute for Clean and Renewable Energy, ICARE.

The problem is about the pace at which to move, and in ways that do not slow down economic development.

Set up in 2011, ICARE is a joint venture between China and the European Union (EU) and is currently funded by the European Commission's development and cooperation directorate.

The highly rated French multi-institution group Paris Tech (Paris Institute of Technology) is in charge of coordination, and the institute is based at Huazhong University of Science and Technology in Wuhan. Subjects taught include solar, wind and geothermal energy, biomass, energy storage and energy efficiency, with both European and Chinese faculty.

At ICARE's first vocational training organised in January, 10 Chinese companies participated – a clear sign that corporations are interested in the government's plan to reduce carbon dioxide emissions, said ICARE Project Manager Guillaume Macaux. The government's aim is to have non-fossil energy comprising 11.5% of the energy mix by 2015, while the United Nations wants renewables to form 30% of the mix by 2030.

China is currently the world's largest consumer of energy and, according to a World Bank report, the country is home to seven of the 10 most polluted cities in the world. Over the past month there have been record levels of pollution. In late January, the smog was so thick in Beijing that flights had to be cancelled because of poor visibility, even as people got ready to travel for the Chinese New Year holidays.

The government has been trying to do a massive cleanup since 2010 by attempting to limit the use of coal for heating, but it has also invested heavily in renewable energy.

Training for a 'green' future

China is currently the biggest investor in the 'green' sector, ahead of the United States, according to the latest industry figures. Of the US\$268 billion global market in renewables last year, China accounted for nearly US\$68 billion, according to the International Renewable Energy Agency, an intergovernmental body based in Abu Dhabi.

Next month ICARE will award diplomas to its first 37 masters students, according to Didier Mayer, director of research for *École des Mines de Paris*, one of the constituent Paris Tech institutions.

Mayer, who is also director of the Center for Energy and Processes, which leads ICARE, said that the institute is training engineers "who will have a global understanding of the functioning" of the new technologies. He said that up to now, universities have been producing engineers with very specific skills, but much broader expertise is required for the renewable energy sector.

"It's not only the installation of solar or wind farms that's the challenge, but also the running and maintenance," Mayer told *University World News*.

The current joint research and educational projects between China and Europe come against the backdrop of tensions related to the marketing of Chinese solar panels in EU member states.

Two years ago, France imposed a three-month moratorium on new solar projects, with then minister of ecology Nathalie Kosciusko-Morizet saying that most of the photovoltaic panels installed in France were made in China with a "highly questionable carbon footprint". She said that the industry should be about generating jobs in France.

But the new government under President Francois Hollande has been pushing ahead with renewables. Hollande, a socialist, has proposed reducing the amount of electricity generated from nuclear power in France to 50% from the current 75% by 2030. This would mean shutting down about half of the country's 58 reactors.

International collaboration

He and other leaders have been highlighting the need to work together in the sector.

At the World Future Energy Summit in Abu Dhabi last month, Chinese Premier Wen Jiabao said that China planned to "increase policy support to accelerate clean energy development" and would gradually boost the share of renewable and nuclear power in the energy mix. He also called for the sharing and transfer of technologies between countries.

China also announced that it would join the International Renewable Energy Agency, IRENA, which currently has 160 members, including the EU. "The decision by China

to join IRENA is a milestone in international efforts to promote renewable energy,” said Adnan Amin, IRENA’s director general.

The agency, which offers scholarships in the sector, is already working with Abu Dhabi’s Masdar Institute – a research-oriented university focused on sustainable energy – and there are steps to establish links with ICARE as well.

Meanwhile, Europe is hoping to “build a network with Chinese partners and with companies” through ICARE, Macaux said. Alongside France, the other countries that are already participating in the project include Spain, Italy, the United Kingdom and Greece.

This consortium comprises 50 European ‘flying professors’ who generally stay in Wuhan for two weeks at a time, teaching masters students and meeting with Chinese researchers. But to make the programme sustainable, there is a desire on the part of the EU and ICARE’s Chinese counterparts for the professors to spend a longer time on each trip, said Macaux.

“The project is evolving and the length of time will change,” he told *University World News*. “The EU faculty who go to Wuhan to teach have contact with Chinese research labs and collaborate on Chinese research projects. This element in the project is among the most interesting things for EU teachers who travel to Wuhan.”

ICARE says that its research support platform is to “foster scientific cooperation and ideas exchange, and to prepare common projects in the field of clean and renewable energy”. With an estimated 8,000 premature deaths linked to air pollution in 2012 in several Chinese cities, the need for action and education cannot be underestimated.

“Producing engineers for the photovoltaic sector and providing vocational training is the key goal now,” said Macaux.

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