

700 million pigs not so smelly thanks to Australian science

Australian science is helping to solve one of China's biggest and smelliest problems – what to do with the waste produced by its 700 million pigs.



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Working with Chinese scientists and the technology firm HLM Asia Ltd, Australia's [CRC for Contamination Assessment and Remediation of the Environment](#) (CRC CARE) has helped develop novel digester technology to help deal with the estimated 1.4 million tonnes of manure and 7 million tonnes of urine produced each year by the burgeoning Chinese pork industry.

The new technology can produce clean energy (biogas), fertiliser and other valuable products from nutrient-rich waste, in a system with potential for application in other industries.

China has 700 million pigs in 1.8 million farms, which supply two thirds of the country's rapidly-growing meat consumption.

'However these piggeries also produce enormous volumes of waste, only a tenth of which is currently being treated,' says CRC CARE managing director Professor Ravi Naidu.

'Despite tightened regulations, large amounts of nitrogen, phosphorous and contaminants are still being discharged into the environment where they damage ecosystems and pose a threat to human health. The nutrients lost in the waste of one pig alone are worth about \$50 a year, but there is no technology in place yet to recover and use this vital resource.'

The project has developed a two-step underground anaerobic bioreactor for treating piggery waste, and the settings for load and digestion time have been established. The project has identified a particular combination of anaerobic treatments that can recover the nutrients and produce clean biogas energy as well.

Prof. Naidu explains that among the scientific and technical challenges addressed by this project are the high nitrogen and phosphorus loads in pig waste compared with domestic sewage, the current small size of biogas reactors, their slow rate of digestion, the limiting influence of temperature, and the presence of heavy metal contaminants which restrict the use of residues as fertiliser.

‘The technology has been demonstrated in the field and is now being scaled up to treat large volumes of wastes from a number of piggery farms,’ says Prof. Naidu.

The technology is may have widespread application wherever animals are farmed intensively, and may also create fresh export opportunities for Australian technology solutions to similar contamination problems.

‘The market for a successfully packaged solution to this suite of problems is clearly very large – both in Asia and around the world. Besides handling livestock wastes, similar bioreactor technology can be used to manage and cleanse the runoff from urban landfills and organic waste streams from other industries,’ says Prof. Naidu.

‘At the same time we are producing a new source of clean energy for industry or domestic use, and a vital supply of nutrients to help secure the future of food production.’

Source: CRC CARE

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