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03 December 2015

A waste of energy - climate action communiqué to COP21 leaders

Over 60 per cent of energy in heavy industry is wasted, making it a prime target for climate action by leaders at COP21 in Paris this week - according to the Institution of Chemical Engineers (IChemE) Energy Centre board representative and Queensland University of Technology (QUT) associate professor, Gareth Forde.

IChemE Energy Centre will also present its statement on energy efficiency for decision-makers attending COP21. The communiqué proposes five energy policy priorities: efficiency and conservation; fuel switching; renewable energy and energy storage; carbon capture and storage (CCS) and nuclear power; and improved land management and afforestation.

Forde works on bioenergy and energy strategy for private industry and lectures in advanced process modelling – how to make energy more efficient - with the QUT School of Chemistry, Physics and Mechanical Engineering.

He says that businesses within the oil and gas, manufacturing, food, water treatment and mining sectors, represent huge opportunities for saving energy and money, whilst reducing emissions.

"While the average energy efficiency investment achieves a 12 to 19 per cent internal rate of return, smart and innovative businesses can get this figure much higher.

"Membranes for gas, liquid and solid separations instead of thermal distillation, for example, can achieve returns upwards of 109 per cent – think desalination, petroleum refining and bio-crude refining.

"Motor efficiencies, heating systems and catalyst efficiencies also show investment returns between 27 per cent and 35 per cent.

"Incentivising this kind of innovation will provide a framework for industry to achieve a cohesive approach to energy efficiency, production and consumption that benefits all communities.

"We all need to be smarter about how we incentivise and fund cleaner technologies."

Forde anticipates that the discussion in Paris this week will turn leaders' attention to solutions. This includes achieving the best rate of return, or "bang for their buck" in saving energy and reducing emissions.

"If governments get levies or schemes wrong, they are missing an opportunity to innovate to achieve positive environmental outcomes.

"As chemical engineers we can help improve these decisions.

"We make decisions on fuel use, equipment procurement and technical strategies for industry, as well as how to educate future decision makers.

"Australia has amongst the weakest carbon emissions policy in the developed world. It is not placing a price on the impact emissions have on society and the wider environment.

"Six of the world's largest oil companies wrote an open letter to the UN calling for the introduction of a carbon price where it does not exist at a national, or regional level. They also called for an international framework to connect national systems.

"Reinstitution of a carbon price would save international embarrassment by putting a price-point on higher emissions, fuel usage and high emissions products."

Forde also highlights that by keeping degradable waste out of landfill, would also help Australia reduce greenhouse gas emissions.

"Degradable waste generates methane and nitrous oxide that may also result in the leaching of contaminants into the surrounding area or water table.

"Reinstating a landfill levy has the potential to reduce emissions by diverting organics from landfills.

'Also, by setting a price-point, waste management businesses and local Councils will become more innovative in their disposal solutions.

"A system that processes waste in a controlled environment to produce a value-added product - like energy and fertiliser - can make a dramatic improvement on the lifecycle outcomes of organic wastes.

"Reusing or recycling waste is better still."

In 2013, IChemE identified energy as one of the four priority areas in its policy document, *Chemical Engineering Matters*. The document is intended to provoke debate and engagement on how the profession can '*create, maintain and improve quality of life now and into the future*'.

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The IChemE Energy Centre Climate Communiqué

COP21/CMP11

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About IChemE

IChemE (Institution of Chemical Engineers) is the hub for chemical, biochemical and process engineering professionals worldwide. With a growing global membership of nearly 42,000, the Institution is at the heart of the process community, promoting competence and a commitment to best practice, advancing the discipline for the benefit of society, encouraging young people in science and engineering and supporting the professional development of its members. IChemE is the only organisation to award Chartered Chemical Engineer and Professional Process Safety Engineer status.

For more information visit IChemE's website

About IChemE Energy Centre

Launched in March 2015, the IChemE Energy Centre provides the chemical and process engineering community with a coherent voice on energy policy issues.

The IChemE Energy Centre is a forum for the chemical and process engineering community to provide decision makers around the world with expert advice on energy issues, while highlighting the role of chemical engineers in meeting the energy challenges that society faces.

IChemE members work across the energy space: from developing new sources of energy, moving it to where it's needed, improving the efficiency of the processes that use it, and mitigating the environmental effects of its production and consumption. The systems-thinking approach of chemical engineers has a lot to offer to the energy challenges of the 21st century.

Examples of how chemical engineers are responding to the climate challenge can be found on the ChemEng Blog

For more information visit the IChemE Energy Centre

QUT energy and process engineering

QUT energy and process engineering researchers work to refine, renew and modify raw materials to produce useful products and by-products. We develop efficient and sustainable processes to improve business operations and profitability.

For more information visit QUT