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Need for better access to low-emission energy technologies

By JOHN KEMP

DEVELOPING countries have become the world's largest as well as fastest-growing energy consumers, ensuring they will play the decisive role in shaping the future energy system and greenhouse emissions.

Some policymakers and industrialists in North America and Europe have presented development and deployment of zero-emissions technologies as a source of comparative advantage.

But unless these technologies are deployed extensively on a worldwide basis they will not be enough to alter the shape of the future energy system and the trajectory of emissions.

The speed and extent of diffusion of new technologies to the developing world will be critical – whether it happens through foreign investment, voluntary and compulsory technology licensing, reverse engineering or industrial espionage.

In terms of total energy consumption, developing countries overtook their more advanced counterparts as long ago as 2007, and the gap has been widening steadily since then, according to estimates prepared by BP.

By 2019, non-Organisation for Economic Co-operation and Development (OECD) economies accounted for 347 exajoules (EJ) of primary energy consumption compared with 234 EJ in OECD countries (Statistical review of world energy, BP, 2021).

OECD economies have been responsible for most of the extra greenhouse gases released into the atmosphere in the past, but non-OECD economies will be responsible for most emissions in the future.

Greater total energy consumption in non-OECD economies is attributable to their much larger population combined with a steadily rising level of urbanisation, industrialisation and average income.

Non-OECD economies accounted for 83% of the world's population but only 60% of global energy consumption in 2019, the last year before the pandemic.

By contrast, OECD economies accounted for just 17% of population but as much as 40% of global energy consumption (World population prospects, UN, 2021).

Per capita consumption in non-OECD economies was still only 32% of the OECD level in 2019, but the gap had shrunk from 26% in 2009 and 17% in 1999.

The gap is narrowing as developing countries catch up with their more economically advanced counterparts and demand for energy services such as heating, cooling, refrigeration, power and transportation converges.

Non-OECD economies' energy consumption increased at a compound annual rate of 3.1% per year between 2009 and 2019 compared with compound growth of only 0.4% per year in the OECD.

As a result, non-OECD economies accounted for more than 90% of the total worldwide increase in energy consumption between 2009 and 2019.

Technology diffusion

Converging per capita energy consumption has already reshaped the global energy system over the last quarter century, but the process still has a long way to run and will continue to play a dominant role through at least 2050.

If non-OECD countries had consumed energy at the same per capita level as their OECD counterparts, total primary consumption would have been 1,332 EJ rather than 582 EJ in 2019, more than twice as much.

That would be equivalent to global oil consumption of 223 million barrels per day rather than 98 million; annual gas consumption of 8,900 billion cubic m rather than 3,900; and annual coal use of 19 billion tonnes rather than eight billion.

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Though consumption is now flattening, OECD economies are still responsible for much more energy consumption per person, while non-OECD economies have low consumption per capita, but it is growing fast.

That raises some politically awkward issues.

OECD economies have a political and moral responsibility to take the lead in energy conservation and reducing emissions, but decisions made by non-OECD economies will have a bigger practical impact in future.

The future of the global energy system and emissions will be determined primarily by choices about technology made in China, India, Indonesia, Vietnam and other populous, fast-growing emerging markets.

Ensuring low-emission technologies diffuse quickly in developing economies will be essential if policymakers want to achieve a worldwide peak and then reduction in emissions.

Some OECD policymakers and industrialists have started to promote low-emission technologies, carbon pricing and carbon border adjustments as a source of competitive advantage against non-OECD economies.

This protectionist and neo-colonialist approach assumes the existing global distribution of income and energy consumption can be frozen in place while policymakers prioritise tackling climate change.

But non-OECD policymakers are likely to reject any trade-off between raising incomes and energy consumption on the one hand, and lowering emissions on the other.

The only way to reconcile rapidly rising energy consumption with reducing emissions will be ensuring non-OECD countries have access to new energy technologies as quickly and cheaply as possible.

If OECD policymakers are serious about reducing global emissions rapidly – and that's a big if – they will have to embrace policies to diffuse low-emission technologies to their non-OECD counterparts. — Reuters

John Kemp is a Reuters market analyst. The views expressed here are the writer's own.