

Hydro beats nuclear and coal, beats oil and gas

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Researchers in Italy and the UK have reviewed the economic, social and environmental impact of hydro, coal, oil, gas and nuclear power. Each has its advantages and disadvantages, but of these conventional electricity generation technologies, hydroelectric power appears to be the most sustainable and acceptable environmentally and economically. Nuclear and coal run a close second place but oil or gas-fired power stations are revealed to be the worst choice when considering the various factors overall.

Giorgio Locatelli of the University of Lincoln and Mauro Mancini of Milan Polytechnic explain that the research literature has offered several studies of the economics of power plants but these are commonly based on cash flow considerations whereas sustainability factors, such as environmental and social considerations have moved higher up the agenda when investment in this area of technology is considered.

Writing in the *International Journal of Business Innovation and Research*, the team explains that as [worldwide demand](#) for electricity grows, new power plants must be built. However, the "green" options of solar, wind, tidal and other newer forms of electricity generation simply cannot maintain pace with demand. "Worldwide population growth combined with growing [electricity demand](#) requires the construction of more power plants," the team says. [Carbon emissions](#), [environmental pollution](#), energy security, ever-changing fossil fuel prices and supply, as well as the [societal impact](#) of power plant location must now be considered as part of the multitude of considerations in building new infrastructure.

Moreover, investors must now consider sustainability.

The team has considered various factors: fuel supply security, environmental impact, public acceptance, volatility of fuel price, risk of severe accident and emergency planning zone (EPZ) consideration - in assessing each classification of power generation. Each factor carries a certain weight in their calculations of which power source is most sustainable overall. These factors are in the broad sense beyond the control of investor or users.

Given that many regions do not have the potential to use hydroelectric power generation, nuclear and coal-fired [power plants](#) are the next obvious choice, but each has many pros and many cons. The next stage in their research will be to provide a balanced review of each of these with a view to offering a possibly definitive answer on sustainability of power generation.

More information: "Sustainability in the power plant choice" in *Int. J. Business Innovation and Research*, 2013, 7, 209-227.

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