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ENERGY'S THIRST FOR WATER CHALLENGES CARBON DEBATE

Water usage will influence the business of future energy production as much as carbon output, according to Lux Research

Boston, MA – July 15, 2009 – The immediate need to reduce carbon emissions has dominated public debate around clean energy production. But the singular focus on carbon has distracted from energy's growing impact on the planet's dwindling water sources, according to the latest report from Lux Research.

The report, titled "Global Energy: Unshackling Carbon from Water," observes that while new energy sources and extraction methods may reduce carbon intensity – kilograms of CO₂ emitted per kilowatt-hour (kWh) of useful energy – they often impose increased water usage.

"On a planet where only 0.008% of the water is renewable, such trade-offs will become an increasingly important consideration for executives and policymakers," said Michael LoCascio, a Senior Analyst at Lux Research, and the report's lead author. "Fortunately, many of the technologies and approaches needed to reduce water intensity are here today, or on the horizon."

Lux Research's report provides the most comprehensive analysis to date of how all the major conventional and alternative fuel and electricity sources balance their CO₂ and water intensity, as well as other important factors like cost and scalability. It also rigorously analyzes how alternative energy sources, improved extraction and efficiency, water recycling technologies, and improved energy distribution could help increase the environmental and economic viability for given energy technologies. The report finds that:

- **Coal and natural gas electricity sources will continue to dominate in the near term.** But expect to see more retrofits and upgrades of existing facilities to make them more water and/or energy efficient. Representative solutions include boiler water treatments, like electrocoagulation, advanced ion exchange and membrane electrolysis, as well as dry condensers and cooling tower water recapture.
- **Conventional fossil fuels remain leaders for the next few decades, but expect new extraction technologies.** Exploitation of oil sands and improved deep sea extraction will continue to make oil the cheapest, if dirtiest source of energy for automotive drivetrains. But water recycling technologies like desalination and hydrocarbon recovery could reduce the water- and carbon-intensity of oil extraction from new sources like the tar sands.
- **Alternative energy sources will grow rapidly, but remain limited overall.** The slow roll-out of transcontinental high-voltage DC transmission lines will hinder low-carbon, low-water energy sources like solar and wind. Biofuels use far too much water and are capable of providing too little energy to make up more than a few percent of global needs.

- **The future may belong to advanced nuclear electricity.** Nuclear is the only low-carbon, low-cost energy source that can reliably meet future electricity needs – but water is its Achilles’ heel. However, advanced designs promise to increase efficiency and reduce water intensity, while placing plants on the coasts decouples them from increasingly scarce fresh water sources.

“Without a clear perspective on the trade-offs between carbon, water and other factors that this report covers, executives risk making short-sighted business decisions,” said LoCascio. “Particularly if they are expanding into global economies like India or China where water is a comparatively rare resource.”

“Global Energy: Unshackling Carbon from Water” is part of the Lux Water Intelligence service. Clients subscribing to this service receive ongoing research on water industry market trends and forecasts, continuous technology scouting reports and proprietary data points in the weekly Lux Research Water Journal, and on-demand inquiry with Lux Research analysts.

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