

China is on the way to displace US as global leader In Renewable Energy enabling strategic military advantage

US president Trump's budget contain significant cuts in government spending on clean energy development, while he pursues policies to bring back coal. The administration's 2018 budget proposes to slash funding for the Office of Energy Efficiency and Renewable Energy by a stunning 71.9%. "We are unified that cuts of this magnitude...will do serious harm to this office's critical work and America's energy future," the former officials wrote in a letter to members of Congress.

Investments made by that office are critical to "creating good-paying jobs, cutting pollution and ensuring American global competitiveness," the letter said. Solar employment expanded last year 17 times faster than the total U.S. jobs market, according to the Solar Foundation. Overall, taxpayer investment of \$12 billion in the DOE's renewable division has generated an estimated net economic benefit to the U.S. of more than \$230 billion, according to its website.

Meanwhile China has put almost \$88 billion into renewables in 2016—one-third more than the U.S. pointing to its new role as the world leader in renewable energy investment. China has vaulted to the top of the world in solar power capacity in 2016, passing Germany, which had been the long-standing leader. The country added more than 34 gigawatts of solar capacity last year—nearly 1.5 times the amount the U.S. has installed in its entire history. China also installed more than 23 gigawatts of wind power in 2016, almost three times as much as the U.S. added that year.

Earlier, President Donald Trump announced withdrawal of the United States from the Paris climate accord. In a speech from the White House Rose Garden, Trump made a largely economic case for withdrawing from the agreement, arguing the nonbinding accord was unfair to American workers and U.S. competitiveness.

China said its CO2 emissions in 2017 will drop 1 percent from 2016, making it the fourth consecutive year of either zero growth or a decline in the country's emissions. The forecast by China's National Energy Administration is encouraging news in the effort to slow climate change. China is on track to meet its pledge to get 15 percent of its energy from clean energy sources including renewables, nuclear and hydropower, and to reduce the energy intensity of its economy by 40 to 45 percent from 2005 levels by 2020.

"As Trump's rhetoric leaves the world in doubt over what his plan is to tackle climate change, China is being thrust into a leadership role," Li Shuo, a global policy advisor for Greenpeace, said in a statement.

China has announced that it will invest \$361 billion in renewable energy by 2020. The investment will create over 13 million jobs in the sector, the National Energy Administration (NEA) said in a blueprint document that lays out its plan to develop the nation's energy sector during the five-year 2016 to 2020 period. The NEA said installed renewable power capacity including wind, hydro, solar, and nuclear power will contribute to about half of new electricity generation by 2020.

The Energy Information Administration (EIA), the statistical arm of the U.S. Department of Energy, in its International Energy Outlook 2016 estimates China's oil imports in 2015 amounted to about 6.6 million barrels per day (b/d), representing 59 percent of the country's total oil consumption. By 2035, the EIA projects China's oil imports

will rise to about 9.7 million b/d, accounting for about 62 percent of total oil consumption.

China's reliance on imported natural gas is also significant. According to the EIA, China's natural gas imports, which amounted to 1.4 trillion cubic feet (Tcf) in 2015 (about 24 percent of consumption), are expected to rise to 6 Tcf (about 26 percent of consumption) in 2035. The EIA forecast on China's energy imports implies a rather modest annual growth rate of about 2 percent for oil imports and a more robust 7.5 percent annual growth rate for gas imports.

China majority of oil and gas imports is over sea lines of communication (SLOCs) and through maritime choke points are controlled by U.S. navy and are susceptible to naval blockade.

China is developing alternate land routes to bypass current maritime routes. Earlier in May Last year, China had entered into a historic contract with Russia, an estimated \$400 billion gas deal to supply 38 billion cubic meters of gas annually over three decades starting in 2018. Per EIA's base case projection, in 2035 Russia could satisfy about 85 percent of China's oil import requirements (8.1 of 9.7 million b/d) and all of China's needs for natural gas imports (6 Tcf). China shares a 4,179 kilometers (km) land border with Russia, so pipelines connecting Russian oil and gas fields to northeastern China would be secure and energy flows could not be effectively shut down by the United States.

China's thrust in renewable energy shall also reduce the vulnerability of its oil and gas imports over sea lines of communication (SLOCs) and through maritime choke points. Advanced energy systems will temper rising global demand for oil, impacting global diplomacy and influence, with direct national security implications for the U.S., says CNA report.

The United States must lead in the global transition to clean energy or risk losing influence in South Asia and Africa, a

coalition of retired U.S. generals and admirals said in a report.

Russia and Iran, two countries not always friendly to Washington, are positioning themselves to meet burgeoning oil and natural gas demand in India and China. For example, a nearly \$13 billion agreement giving Russian state oil firm Rosneft and its partners a 98 percent share of India's Essar oil company is expected to close this month.

Meanwhile, China and countries in Europe are leading the way in investing in clean energy in Africa and India, where energy demand is expected to grow strongly for decades.

The Global lead in Renewable technology shall enable strategic military advantage

Energy is also vital to Defence for war fighting capabilities, such as increased range, better endurance, longer time on station, and reduced requirements for resupply.

“Installations at home and abroad are increasingly dependent on energy for real-time command and control, remote operations of unmanned air and ground units, and intelligence analysis. In addition, the Defense Department is developing a new strategy—“The Third Offset Strategy”—that places specific focus on next-generation technologies, platforms, and weapons systems to sustain our competitive advantage. These new systems, such as rail guns and directed energy weapons (lasers), will be more dependent on reliable high-capacity electrical systems that will require advanced energy components. Secure power is essential now, and will be even more so in the future,” says CNA report.

Improved energy performance also can reduce the risk and

effects of attacks on supply lines and enable tactical and operational superiority. One in nearly 40 fuel convoys in Iraq in 2007 resulted in a death or serious injury, according to a study commissioned by the Defense Department. In Afghanistan the same year, one in 24 fuel convoys suffered casualties.

Advanced energy systems can lower vulnerable logistical requirements, extending missions by reducing the need for fuel resupply, and lowering the number of combat forces needed to protect fuel supplies for our warfighters in forward operations and installations. DoD should explore alternate and renewable energy sources that are reliable, cost effective, and can relieve the dependence of deployed forces on vulnerable fuel supply chains to better enable our primary mission to win in conflict. The purpose of such efforts should be to increase the readiness and reach of our forces." said James Mattis, U.S. Secretary of Defense.

The DOD has made advanced energy sources for installations a priority. This is being driven "to ensure the energy resilience and reliability of a large percentage of the energy it manages, reduce the amount of budget allocated to this energy, and treat installation energy as a force multiplier in the support of military readiness." To realize this objective, the DOD has set a goal to procure at least 25 percent of total facility energy from renewable energy sources, while installing 3 gigawatts of renewable energy directly on its installations, by FY 2025

The lack of emphasis on renewable may also impact US Department of Defense (DoD) that had embarked upon an ambitious program of expanded renewable energy generation on bases and in the field, with a goal of producing 25% of its energy from renewable sources by 2025. The armed forces nearly doubled renewable power generation between 2011 and 2015, to 10,534 billion British thermal units, or enough to power about 286,000 average U.S. homes, according to a Department of Defense report. The number of military renewable energy

projects nearly tripled to 1,390 between 2011 and 2015, department data showed, with a number of utilities and solar companies benefiting.

Zhao Keshi, a member of the CMC and director of the Logistics Department of the CMC, asserted that President Xi Jinping conceives of energy construction as an integral part of the national security plan to include expansion and construction of more renewable energy resources.

Additionally, Zhao identified two important and ongoing trends in his remarks: the revolution in national energy and the full integration of civilian and military (civ-mil) development that will enhance the Chinese “wartime ability to fight.” From Zhao’s comments, it would appear that China is securitizing renewable energy, as part of a broader energy strategy (能源安全).

Chinese leader Xi has repeatedly stressed the importance of “military-civilian integration” as a core component of the country’s military development strategy. China’s leaders believe this integration will help China continue its rapid defense modernization without creating too great a drag on its economy. “Through in-depth development of military-civilian integration, military technologies are gradually applied in civilian fields, making high-tech equipment available to commercial markets. At the same time, we have also emphasized the importance of encouraging more civilian product suppliers to actively participate in the defense-building process,” said Dai Hao, Director-General of China’s Institute of Command and Control.

According to The CNA Military Advisory Board, a Virginia-based think-tank, The US is falling behind other countries in advanced energy technologies, threatening national security and undermining its global influence. The CNA Military

Advisory Board, a Virginia-based think-tank, argues that the US should “take a leadership role in the transition to advanced energy” by stepping up research and development of technologies such as renewables, nuclear power, energy efficiency and electricity storage.

References and Resources also include:

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