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Reorganize economy to run on renewables

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For The Register-Guard

OCT. 22, 2015

The United Nations Climate Summit in Paris this December could be the world's last chance to develop a meaningful international agreement to prevent catastrophic climate disruption. Positive signs exist — 150 nations have pledged to cut their emissions. Yet success is far from certain.

One key obstacle is that the first draft of the proposed UN agreement relies on dangerous and unneeded forms of energy such as nuclear power and natural gas, and fails to emphasize renewable energy.

This is not surprising, given that the fossil fuel and nuclear power industries have much greater political clout than the renewables sector. But we now know it is possible to power society with safe and efficient sources of renewable energy.

A new study by researchers at Stanford University, "100 percent Clean and Renewable Wind, Water, and Sunlight All-Sector Roadmaps for the 50 United States," describes how each state can convert its entire energy system to meet demands for electricity, transportation, heating and cooling, and industry using only wind, water and sunlight. The assessment says that by 2030, it will be possible for renewables to meet 80 percent to 85 percent of energy demands. By mid-century, 100 percent of our energy needs can be met with renewables.

The United States is the world's second largest emitter of carbon dioxide, so this change would go far toward reducing the climate crisis to manageable levels. It would also provide a much-needed example for other nations.

How would such a dramatic shift happen? The Stanford report says that by 2050 the energy mix in the U.S. could consist of almost 31 percent onshore wind, more than 19 percent offshore wind, more than 1 percent geothermal, more than 3 percent hydroelectric power, more than 30 percent utility-scale photovoltaics, almost 4 percent residential solar, more than 3 percent commercial photovoltaics, more than 7 percent concentrated solar power with storage, and small amounts from wave and tidal power sources.

In Oregon, the future energy mix would be more than 32 percent onshore wind, 15 percent offshore wind, 5 percent geothermal, 27 percent hydro, 4 percent residential solar, 2 percent commercial solar, 8 percent utility-scale solar, 5 percent concentrated solar with storage, and 1 percent or less from wave and tidal energy.

This scale of change might seem hard to believe, but solar technologies are advancing rapidly and costs are quickly dropping. Electric-powered vehicles are already available, and Toyota recently announced that by 2050 it would produce few if any gas-powered vehicles. New technologies for trucking, industry and other uses are also emerging.

This shift would provide important benefits beyond reducing the effects of climate disruption.

For example, the report says that energy demand would be reduced by almost 40 percent because electrified systems are more efficient than burning fossil fuels. Approximately 62,000 annual premature deaths from air pollution will virtually disappear, saving Americans about \$600 billion annually by 2050.

Although jobs in the fossil fuel industry will disappear, the report says the loss will be offset by new manufacturing and maintenance jobs in the renewables industry, leading to a net overall gain of 2 million well-paying jobs.

Based on the results of their assessment, the authors unequivocally state that the barriers are political and social, not technical or economic.

The fossil fuel industry is fighting tooth and nail to prevent the shift. But if we are to avoid civilization-altering climate disruption, coal, oil, natural gas and other fossil fuels must be left in the ground. Anyone who claims otherwise is in total denial about the risks.

Many utilities are also likely to drag their feet because of fears of lost revenue and the different mindset and business model required by renewables. Mark Jacobson, lead author of the Stanford report, told me that some utilities will likely go out of business, and others will need to reinvent themselves.

Making these changes will require strong political will, bolstered by many new policies.

The Stanford study has implications beyond the U.N. climate agreement. For one, it renders moot the 20 percent to 40 percent emission cuts included in most state and municipal climate action plans. We can do far better.

It also means that proposals such as the proposed Jordan Cove liquefied natural gas export terminal in Coos Bay should be denied. Building a project that would expand natural gas production will only delay the compulsory shift to renewables.

A credible roadmap now exists to reorganize the entire U.S. economy to run on renewables.

Secretary of State John Kerry should use it to insist that renewables become front and center in the proposed UN agreement, and that nuclear, natural gas and other dangerous forms of energy be dropped.

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