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EUROPE'S EMBRACE

With Apologies, Nuclear Power Gets a Second Look

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FEW subjects seem less suited to the intoxicating air of the World Economic Forum's annual conference than nuclear energy. Aging, expensive, unpopular, and still vulnerable to catastrophic accidents, it is the antithesis of the kinds of cutting-edge solutions that beguile the wealthy and well intentioned, who gather each winter in this Alpine ski resort.

And yet nuclear energy is suddenly back on the agenda — and not just here. Spurred on by politicians interested in energy independence and scientists who specialize in the field of climate change, Germany is reconsidering a commitment to shut down its nuclear power plants. France, Europe's leading nuclear power producer, is increasing its investment, as is Finland.

At a time when industrialized countries are wrestling with how to curb carbon dioxide emissions, nuclear energy has one indisputable advantage: unlike coal, oil, natural gas, or even biological fuels, it emits no carbon dioxide. That virtue, in the view of advocates, is enough to offset its well-documented shortcomings.

"It has put nuclear back into the mix," said Daniel C. Esty, director of the Center for Environmental Law and Policy at Yale University. "We're seeing a new balancing of the costs and benefits."

But being in the mix does not mean nuclear energy will shove aside fossil fuels any time soon. In a way, the revival of interest in nuclear power illustrates the lack of palatable choices to combat global warming.

Renewable energy, while growing steadily, has limitations. Windmills don't turn when the wind isn't blowing; solar power and geothermal energy are not yet economical enough; hydroelectric dams can be disruptive themselves.

That leaves nuclear power as a "clean" alternative to fossil fuels. It already generates one-sixth of the world's electricity, but it fell out of favor in the West two decades ago after the Chernobyl and Three Mile Island accidents. The previous German government, in fact, pledged to shut down its last nuclear power station by 2022.

But now Germany has also committed to deep reductions in carbon dioxide emissions in the next decade, and its new chancellor, Angela Merkel, rekindled the debate over nuclear energy by saying, "We should consider what consequences it will have if we shut off our nuclear power plants."

That comment was a reference to Europe's increasing vulnerability as an importer of foreign fossil fuels. Just as the United States worries about disruptions in the supply of Middle East oil, Europe worries about

Russia's penchant for using its gas and oil pipelines as a political weapon.

In a recent report, Deutsche Bank declared that Germany's energy policy was untenable. "Far from reducing carbon emissions and securing future energy supplies," it concluded, "current policies would increase both emissions and Germany's dependence on foreign gas imports."

Even in the United States, which has not ordered cuts in carbon dioxide emissions, there are more voices in favor of building nuclear plants. "The question is, how do we produce enough electricity?" said James E. Rogers, the chief executive of Duke Energy Corporation, a major energy supplier. "We need to put our money on nuclear."

Critics point out that nuclear reactors are astronomically expensive, and take a decade or more to build, even if environmental groups fail to block construction altogether.

Given the entrenched opposition in parts of Western Europe and America, some experts say that if the world does turn to nuclear power, most of the new plants will be in China, India and other developing countries.

They also point out that the issue of security cuts both ways. Building more plants may reduce a country's reliance on imported oil and gas, but it also creates more targets for terrorist attacks. And there is the nuclear fuel cycle: North Korea and other countries are already suspected of diverting enriched uranium to try to make nuclear weapons. Those dangers would only multiply with an increase in the global demand for nuclear power.

John P. Holdren, the director of the Woods Hole Research Center, said that if current economic predictions held, nuclear energy would have to generate one-third of the world's electricity by 2100 to curb the rise in carbon dioxide emissions. That would require a tenfold increase in the number of plants, to more than 3,000.

To manage such a risk, Mr. Holdren said, the world would need a radically new regime for policing nuclear technology. One option would be international supervision of all nuclear plants. But is that realistic? Could all countries be treated equally?

Right now, the United Nations is demanding that Iran suspend its enrichment of uranium, to forestall the possibility that it might be used for a weapons program. It would be, at the least, awkward for European countries to plunge back into nuclear energy at the same time that European diplomats are demanding that the Iranians scale back their nuclear ambitions.

With so many downsides, even advocates acknowledge that nuclear power should play only a partial role in the energy mix — and then only for an interim period, until it is replaced by newer technologies.

Of course, there is another alternative: energy efficiency. But under the snow-capped peaks of Davos, the idea of simply turning down the thermostat has not yet caught on.