



O. POPOV/REUTERS

exploit. Even so, the report concluded, in the United States alone, enhanced geothermal electrical capacity could reach 100 gigawatts in the next 50 years — enough to fill about 10% of the country's electricity needs.

An important benefit of such systems is their flexibility, Tester says. They could prove to be economical from a very large scale, all the way down to a relatively small, 1-megawatt plant that also provides direct heating to buildings. As in Iceland, this combined heat-and-power approach greatly enhances the economics of geothermal power. But it requires building communities that can make use of the heat.

Powerful exchanges

Another geothermal option is the use of heat pumps. These use a vapour-compression cycle — the same principle that makes a refrigerator work — to transfer heat from below the ground in the winter, and to transfer excess heat out from buildings in the summer.

Tester says that geothermal power will make economic sense even without special incentives or restrictions on carbon emissions. As governments move to restrict greenhouse-gas emissions, geothermal power is set to look even better.

King adds that the standards for renewable energy being set by individual states have kicked off a flurry of interest in geothermal power. "It's clean, it's close to zero emissions, and it's baseload power that runs 24 hours a day, 7 days a week. And a well-managed reservoir can keep going practically forever," he says. ■

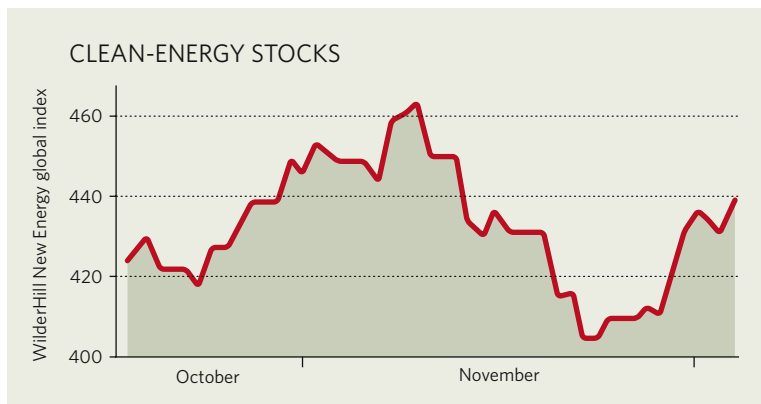
IN BRIEF

EURO TIE-UP Swiss drug giant Novartis has extended its partnership with MorphoSys, a German biotechnology firm, saying it will pay at least US\$600 million over 10 years as the price of working with the smaller company to help it discover and develop antibody-based medicines. If Munich-based MorphoSys meets milestones for clinical development and market approval, the payments could exceed \$1 billion, the companies said on 2 December. Novartis will gain almost exclusive access to the smaller firm's libraries of human antibodies, copies of which will be transferred to Novartis research sites.

MUTUAL MOUSE Sanofi-Aventis has struck a deal with US biotech firm Regeneron Pharmaceuticals to discover and develop therapies with a genetically engineered 'super-mouse' that can make human antibodies. Under a deal announced on 29 November, the Paris-based drugmaker will pay Regeneron, based in Tarrytown, New York, \$85 million up front, and up to \$475 million in research and development costs over the next 5 years. Sanofi will buy \$312 million of stock in the smaller firm, boosting its stake from 4% to 19%.

NO APPROVAL An advisory panel to the US Food and Drug Administration has ruled that the cancer drug Avastin (bevacizumab) should not be approved for the treatment of advanced breast cancer. Shares in Genentech, the California-based biotechnology company that makes the drug, fell by \$10 to \$66 as news of the decision emerged last week. European regulators approved the drug for breast cancer use earlier in the year, but the FDA panel heard that although the drug helped some patients there was insufficient evidence that it improved their long-term survival prospects, and voted 5-4 against its approval.

MARKET WATCH



The inexorable rise of global renewable energy stocks — as measured by the WilderHill New Energy Global Innovation Index (symbol NEX on the US stock exchange) juddered to a halt last month.

Specialists attribute the reverse to doubts about pending US energy legislation as well as to the global credit crunch, which has hit stock markets in general.

The US Congress is currently considering an energy bill that will provide tax credits for renewable energy. But growing doubts about the extent of the subsidies have worried investors who had hoped that the bill would spur demand for wind and solar-power equipment, says Robert Wilder, founder of WilderShares, a Californian consultancy that co-compiles the index with New Energy Finance of London. He adds that biofuels stocks have "crashed and burned" as doubts

grow about the commercial usefulness of the technology.

However it is concern about the availability of credit in the economy that has hit shares hardest, says Michael Leibreich, founder of New Energy Finance. He says that the market has been on "a bit of a roller-coaster ride", but notes that when all is said and done, it is still up 50% since the start of the year. "This reflects the extraordinary level of interest in the sector, evidenced by the continuing wave of money washing into it," he says.

A huge initial public offering planned for 13 December by Iberdrola Renewables, the renewables arm of Madrid-based utility Iberdrola, could raise up to €6 billion (US\$8.8 billion), reminding the markets of this strength, Leibreich says.

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