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The Power of Cooperation

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The 4,300 residents of Samsø, an island off the coast of Denmark, have set an example for communities everywhere: energy independence without adding carbon dioxide to the atmosphere. In the late 1990s, islanders began switching from oil- and coal-generated electricity imported from the mainland to alternatives such as solar and wind power. By 2005, Samsø was producing enough energy to meet all its needs and exporting surplus wind-generated electricity back to the mainland. How did they do it?

The answer might be: ''Cooperative action achieves community goals.'' In an article in *The New Yorker*, environmental writer Elizabeth Kolbert (2008) describes how Denmark recognized windy Samsø as a prime site for renewable energy projects and hired Søren Hermansen, who taught environmental studies at a local boarding school, to guide their development. To get islanders involved, Hermansen attended local meetings on a variety of community topics and turned the discussion to wind power and the goal of island energy independence. Sometimes he brought free beer to facilitate conversations on energy. Hermansen encouraged people to devise their own ways to reduce fossil-fuel use and to cooperate in developing larger scale projects. Now, Samsø has two cooperatively owned wind farms (one on land, one offshore) that produce more power than the islanders consume, plus a variety of small-scale alternative energy projects developed by individuals. For example, some farmers have converted their cars and tractors to run on canola oil pressed from seeds grown on their own land. A farmer who now heats his house with a straw-burning furnace and solar-heated water told Kolbert that for the people of Samsø, thinking about energy ''became a kind of sport.''

It was a sport in which people could gain both social and financial rewards. Local meetings provided encouragement and approval by neighbors and friends for attending and getting involved. People exchanged ideas about alternative energy projects that individuals could try out, and received personal satisfaction and community recognition when the projects worked. There were also monetary rewards: Once the wind farms were in place, residents saved money by using heat pumps rather than oil to heat their homes, and shareholders received dividends based on the sale of electricity both on and off the island. In addition, the island has received a lot of attention from environmental activists in Europe and the U.S., and Kolbert reports that islanders were obviously proud of their accomplishment.

A partial replication of the Samsø model is underway on Martha's Vineyard, an island off the southeast coast of Massachusetts. Although best known for presidential vacations and celebrity summer homes, the Vineyard has a year-round population of about 15,000 ordinary people who try to conserve energy because of the unusually high cost of oil and gasoline shipped from the mainland. Many also worry about the adverse effects of global warming, such as increasing hurricane intensity, shorefront erosion, and eventual submer-

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sion of coastal villages as sea levels rise. A number of households have small wind turbines or solar water heaters, and some businesses and municipal buildings have photovoltaic panels, so a lot of islanders were ready to consider a proposal to establish a cooperatively owned offshore wind farm. The project, if successful, could generate enough power to meet the needs of all coop members and perhaps be expanded to supply the entire island. The eventual goal, inspired by Samsø, is energy independence for the Vineyard.

The project was launched at a series of small meetings, some in town halls, and some in living rooms. My wife and I attended one early meeting with 24 other people (and we stayed even though there was no beer). One of the project's originators, an engineer named Paul Pimentel, presented some background information on its scale, financing, and timetable, and went on to describe some intriguing wind-power applications. In winter, for example, when there is more wind and fewer users, homes could be warmed with heat pumps and surplus power used to charge electric car batteries. The audience was caught up in the project's possibilities and asked questions that led to lively exchanges; several people noted that self-sufficiency and cooperation were ''the Island way.'' When my wife pulled out her checkbook to buy a share in the coop, three others followed suit at once, and now, several meetings and 6 months later, there are about 750 members.

Why might people join an alternative energy venture in its early stages, with no guarantee of success, regulatory and licensing hurdles to be overcome, several million dollars to be raised, and a long delay before it can begin to replace electricity generated by fossil fuels? Once again, the answer is that people can obtain both social and financial rewards. First, it's fun to attend meetings with like-minded folks to discuss how best to increase community support for the project, and membership commitments by a few can prompt others to join. Also, future decisions, such as the siting of the turbines, will be made collectively, by members only, using the coop's Web site to express individual priorities—an intriguing experiment in participatory decision making. Second, there are monetary incentives: If the project works as planned, members can expect stabilized electricity prices when the wind turbines go on line in about 5 years, and significantly lower prices when loans are paid off; if the project expands and becomes profitable, members will receive dividends. For early joiners, a share in the cooperative cost only $50, but the fee increases every 3 months to $1,000 per share after 5 years. The rising fee schedule encourages early commitment to a risky outcome (the project could fail), but also compensates more expensive buy-ins later with lowered risk and a shorter delay to cheaper power. Also, coop membership yields an immediate cash value: big discounts on energy-saving appliances and on a home energy manager (HEM) that continuously monitors the cost of electricity and turns appliances such as water heaters and freezers off when the cost is high and on when the cost is low. (Incidentally, HEMs help homeowners exhibit self-control by revealing the cost of cranking up the furnace or the air conditioner.) Evidently, this mix of social and monetary consequences can attract members despite the long delay between joining and actually receiving clean power.

There is solid evidence that simply being in an environment in which favorable consequences are available, whether or not they depend on one's own behavior, enhances the persistence of ongoing action. Nevin (2005) showed how this process might account for environmentally harmful activities such as the persistent use of

private autos despite high costs; perhaps the same process might apply to participation in an environmentally beneficial cooperative endeavor.

But an energy coop doesn't just spring up on its own; some individual or group has to get the process started and coordinate its growth. Samsø had Søren Hermansen, Martha's Vineyard has Paul Pimentel, and nearly every community has a few activists committed to local well-being who could work together if conditions were favorable. Suppose, for example, that a town's planning board must review wind-power installations at individual homes, which are far less efficient than larger turbines with shared output. Recognizing the economies of scale, the planning board may propose zoning changes that encourage people to pool their resources in order to develop a cooperatively owned energy project on leased land. If none of the interested parties has the time or the expertise required to develop such a project, they could pool their personal funds and hire a project director. (Allen Neuringer, a contributor to this special section, notes that this sort of problem often arises in volunteer organizations; personal communication, May, 2010.) Contributions from people who wish to pursue a power cooperative would make them founding board members, with shared responsibilities, risks, and benefits. The director, given a chance to work with a supportive community group and develop the project from its inception, might prove to be another Søren Hermansen.

When Kolbert (2008) asked Hermansen for the key message from Samsø to other communities, he said "Think locally, act locally." This makes sense; the problems posed by global warming are so enormous that thinking globally, as usually prescribed, can be paralyzing. Moreover, a single local project has virtually no global impact; that is, the benefits in terms of climate change are just too small to be felt by those who produce them. For example, Paul Pimentel estimates that the Vineyard project will reduce CO_2 emissions by 81,700 tons per year, whereas the United States produces about two billion tons of CO_2 per year (Pew Center on Global Climate Change, 2010); Kolbert notes that all the CO_2 emissions avoided by Samsø over 10 years are overwhelmed by a single coal-fired plant in just 3 weeks.

If the relation between local action and global consequences is so remote, why bother? The answer is that small steps toward successful completion of a local project can maintain environmentally desirable behavior. By thinking and acting locally, people can identify and engage in small-scale cooperative energy projects, celebrate their successes, and take pride in the fact that they are ameliorating rather than exacerbating global warming. If projects like those on Samsø and Martha's Vineyard prove to be contagious, their cumulative impact could be significant.

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