

Assessing Sustainability Claims: Key Factors in Case Studies

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Sustainability as a concept and ideal has become the new baggage-free version of environmentalism. “Green” practices, buildings, energy sources, agriculture, even shopping bags have become widespread, but their claims to help save the planet are often mistaken and misconstrued. The sweet vagueness of sustainability must be confronted and questioned with a strict assessment of practices which truly deliver what they promise. Sustainability initiatives and projects must be fully reviewed and assessed for their costs and benefits to earth’s climate and ecosystems, and their ability to provide a real “greening.”

Sustainability is differently described, and understood in diverse ways. It is therefore a challenge to extract the exact premises from the proliferation of claims. In his book *The Sustainability Revolution*, Andres Edwards succinctly identifies sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”(Edwards, 2005, 17). This definition comes from the 1987 Bruntlandt report *Our Common Future* which outlined the framework for action in protecting the environment, while promoting both economic and social goals (The World Commission on Environment and Development, 1987). The report also stressed the importance of evaluating any proposed sustainability initiative using three essential criteria: ecology/environment, economy/employment and equity/equality (known collectively as the Three E’s). Edwards argues a significant fourth “E,” that of public education should be added to this assessment (Edwards, 2005, 23). These criteria form the essential components for evaluation.

Sustainability movements can be viewed as the newest incarnation of environmental consciousness. The environmental movement itself can trace its early roots back to the Romantic or Transcendental Movement, and writers such as Thoreau and Emerson. Subsequently, John Muir, George Perkins Marsh, Aldo Leopold, Theodore Roosevelt were pioneers in conservation. Environmentalism in the mid-twentieth century was energized by Rachel Carson's *Silent Spring* which is credited for radical changes in thinking about human impacts on natural systems, and spurred the establishment of the Council on Environmental Quality and the adoption of the National Environmental Policy Act in 1969. In the 1970s, landmark Clean Air and Clean Water Acts were passed, establishing standards. Although government interest in regulating environmental degradation has been fitful since these mileposts, there have been a growing number of movements, initiatives and writers charting the winds of change and aching for a more thoughtful relationship with the environment since then. Al Gore's film *An Inconvenient Truth* awoke an understanding among the wider public to the dangers of climate change. Most recently the disastrous oil rig explosion in the Gulf of Mexico and the tortuous process of trying to stem the oil and its devastating and long-lasting effects highlights both our lust for oil and the irreversible implications for the environment.

In contrast to the late twentieth century, when protecting the environment was often seen as perhaps a radical choice, today environmental issues are more widely embraced. Indeed, many activities are "greenwashed" making them seem far more important and far-reaching, and environmentally sensitive than they really are. Truly sustainable programs must examine fully all their inputs and impacts, dealing with carbon outputs, implications for climate change, and thus all the interconnected natural cycles that are involved in their

practice. Because there are so many actions and practices that are defined as sustainable, it is often hard to focus the debate and avoid sweeping generalities. This paper will use three case studies of “sustainable” initiatives to examine their claims and premises, and assess what makes them possible partial solutions to our planet’s dilemma. Concrete examples help to ground the discussion in reality. The three examples are drawn from diverse places, with different scales of action and practice. They provide food for thought in discovering similarities and differences.

Renewable Energy in Samsø, Denmark

The first example is the energy transformation that has taken place on the Danish island of Samsø. Samsø is a windswept small island located in the Kattegat, the strait that links the Baltic with the North Sea. Most of its inhabitants are farmers, raising cows, sheep, wheat, rye, potatoes, beets, strawberries and pumpkins. In the 1990s most of the 4,300 residents depended on electricity generated by burning coal on the mainland and imported by under-sea cable, and heated their houses with imported oil. Roughly speaking, each resident “released” nearly eleven tons of carbon dioxide. In 1997, the Danish Government launched a competition for communities to move to renewable energy sources. Although Samsø’s plan won the competition, it received no money or government assistance. Nothing really happened until an environmental studies teacher, Søren Hermansen, started talking to his neighbors. Hermansen later became the single government-funded employee of the initiative, and saw the renewable energy project as a matter of “social relations.” He understood the conservative nature of the islanders, and that he needed to convince them to

move towards a co-operative approach in renewable energy. This understanding drew on the long-standing Danish co-operative tradition of working together to build community facilities (Biello, 2010). He began a dogged, years' long campaign to recruit the island's opinion leaders, bringing free coffee, apple juice and even beer to community meetings and tirelessly explaining the benefits of replacing fossil fuels with renewable resources, particularly wind turbines. His persistence, combined with the closure of a slaughterhouse that put 100 residents out of work, finally convinced the Samsingers to invest in alternative energy sources.

The islanders formed energy co-operatives, and by 2008 at least 900 residents owned shares in the turbines, equally divided between the ten offshore units and eleven large land-based ones. Shareholders, including non-residents, receive an annual dividend based on the current price of electricity and how much their turbine has produced. The land-based turbines, which cost the equivalent of \$850,000, are about 150 feet tall while the offshore turbines are taller at 195 feet high, and more expensive at three million dollars each. The land-based turbines generate 26 million kilowatt hours a year, enough to fill the island's electricity demands. The offshore turbines provide enough energy to compensate for all the fossil fuels still used on the island, and about ten percent more power than is consumed. Excess energy is exported to the mainland. The Samsingers' collective energy venture is supported by a Danish government policy, adopted in the 1990s, which requires utilities to offer ten-year fixed contracts for wind power, which can be sold to other customers. Without break-downs, shareholders can recoup their investment in about 8 years (Kolbert, 2008).

The Danish government learned valuable lessons from the 1973 oil crisis, when almost 90% of its energy came from imported petroleum. It began conservation policies,

including car-free Sundays. Even after North Sea natural gas and petroleum became available and Denmark was self-sufficient in energy, the government kept pursuing greater energy efficiency and a range of sources. Energy taxes were raised to spur conservation, and building standards stressed energy efficiency. As a result, today Denmark is the world leader in energy efficiency, earning more GDP per watt than any other E.U. country. Carbon emissions are 13.3% below 1990 levels, but Denmark's economy continues to grow at a healthy pace (Walsh, 2009).

The Samsingers have drawn on more than the wind to meet their energy needs. There are four large non-polluting biomass burning heating plants on Samsø, three fueled by wheat or rye straw grown by the farmers and one powered by wood chips and solar panels. These heat the island homes (Samsø Energy Academy, 2010). Biomass fuels are considered carbon neutral. Ash from the furnaces is returned to the fields as fertilizer. Solar panels and small scale windmills add additional energy sources. Rapeseed is grown to be pressed into canola oil which substitutes for gasoline in the island's cars (Williams, 2007). Some dairy farmers even employ a special pump to extract heat from their cows' milk and use it to heat their homes (Tagliabue, 2009).

However, the residents of Samsø see themselves as a conservative farming community, and not particularly special in achieving this goal. Catalyst Hermansen cites the Danish cultural tendency for community organization which reinforced their mission for lowering carbon emissions as a reason for success. "To us, going for lower energy use is like a sport," he says (Walsh, 2009). He also realizes Samsø's experiment is a social, not really a technological revolution. A specific requirement was that only existing, off-the-shelf technology could be used, and even second-hand items are pressed into service. Hermansen

noted “This is only a pilot project to show the world what could be done. We are not suggesting everyone makes the sweeping changes we have. People should cherry pick from what we have done to make modest, but still meaningful carbon emission cuts. The crucial point is that we have shown that if you want to change how we generate energy, you have to start at the community level and not impose technology on people. For example, Shell heard about what we were doing and asked to be involved—but only on the condition they ended up owning the turbines. We told them to go away. We are a nation of farmers, of course. We believe in self-sufficiency”(McKie, 2008).

England’s Eco-town Initiative

In stark contrast to the grass-roots example of Samsø, is the story of England’s top-down Eco-towns program. In May 2007, the then new Labour Prime Minister Gordon Brown announced a bold new initiative for England to address the twin challenges of climate change and a growing shortage of housing. He launched a competition to win government funding for new Eco-towns to be built in the countryside. These “sustainable” new towns were envisioned to be exemplars in environmental technology, with net zero carbon emissions, and innovative energy, recycling and water systems. Green space, parks, and gardens would cover 40% of the town. They would provide good public transportation, a range of schools, shopping, business and community services, and include 5,000 to 10,000 homes, 30-50% of them affordable, with a mixture of sizes and tenure. Eco-towns would be built by an agency that would oversee the towns’ development and management. The original target was to

build five eco-towns by 2016, later raised to a potential ten by 2020 (DCLG, Eco-towns Prospectus, 2007).

This proposal followed a restructuring of England's complex planning process, which moved decisions from local authorities to a regional level, in an attempt to speed up the construction of new housing units. A 2007 government report identified the reasons for the housing situation as an increase in the number of households, particularly due to an increasing number of single person and elderly households. The housing shortfall was predominantly located in the South and East of England. There was a 30% increase in housing unit completion between 2002 and 2007, but at rate of 185,00 units a year with a projected household annual increase of 223,000, the widening gap required a policy solution (DCLG, Homes for the Future, 2007).

The planning process contributed to the slow rates of construction because in England planning requires many more governmental approvals than are typical in the U.S., and involves far more public participation. The core of development plans still follows the general structure established by the Town and Country Planning Act (1947) and New Towns Act (1946), together with amendments to the Town and Country Planning Act. These laws established greenbelts around existing settlements and required development permission from the local authority (city, borough, or district council). These local authorities created plans for future housing which then moved up to the county planning agency. However, political differences between these layers of bureaucracy stalled many plans. As a result, recent housing policy has shifted future housing decisions from local councils and counties to regional and national bodies. In 2004, the Planning and Compulsory Purchase Act gave new regional assemblies the power to decide future housing provision. It replaced Local and

Structure plans with Local Development Frameworks (LDFs) which are developed from Community Strategy prepared by Local Strategic Partnerships. Such LDFs must be in conformity with national and regional policy as set out in national PPS (Planning Policy Statements) and RSS (Regional Spatial Strategies). County Councils now only have planning powers for dealing with minerals and waste issues. The Housing and Regeneration Act of 2008 aimed to improve the supply and quality of housing and to secure and support the regeneration or development of land or infrastructure in England, as well as contributing to the achievement of sustainable development. This Act created two new government agencies, for Housing and Communities (HCA) and Tenant Services (TSA). Their mandate was to address the shortage of affordable housing, make new housing environmentally friendly and provide better conditions for social (public) housing tenants (HCA/CLGA, 2008, Joint Protocol).

Brown's Eco-town proposal drew historic inspiration from Ebenezer Howard's seminal 1902 book *Garden Cities of Tomorrow*, written in reaction to England's urban conditions at the turn of the twentieth century (Howard). Howard proposed new settlements which united the best qualities of the city and countryside, and provided large expanses of green space, some in agricultural uses, in a community served by public transportation and linked to a system of cities. Howard's dream became reality in the pioneer communities of Letchworth and Welwyn Garden City built in 1903 and 1920 respectively. After World War II Britain built twenty-three New Towns between 1947 and 1967 using Howard's planning ideas to replace bombed housing and accommodate returning veterans and their families. Howard's concepts have been employed throughout the world in creating carefully planned urban places, although in the U.S. only Columbia, Maryland and Reston, Virginia and a few

others can be found. Brown's initiative perhaps owed a more recent debt to the brownfield site in Hammarby Sjöstad, Stockholm where 10,000 homes were built on a formerly polluted and semi-derelict industrial area close to the city center. Its regeneration was a key element in Stockholm's bid for the 2004 Olympics. Even though the city lost the competition, it kept the commitment to redevelopment. This project was included in the Eco-towns Prospectus as an exemplar. Another prospectus illustration of new communities was Vauban, a neighborhood of 5,000 homes south of Freiburg in Germany. Designed and developed with the participation of the local community it has good public transportation and stresses alternatives to car ownership and use. At least 100 of its buildings produce more energy than they need, so it is recycled into others (DCLG, Eco-towns Prospectus, 2007).

Eco-towns would be selected from a pool of potential proposals, using a complex sustainability rating system. As soon as the first list of 57 proposals was released, a growing list of questions were raised by opponents. Why were many of the sites proposed for greenfield sites without existing infrastructure? What about the wildlife habitats that would be eliminated? Why did the national government's proposals ignore detailed regional structure plans for new developments which had taken years to develop and included brownfield sites with a "greener" development footprint? How would the ten eco-towns truly address a housing shortage when their plans could only accommodate perhaps 3% of the required units that England needed? Was technology sufficiently developed to achieve the net zero carbon goal? The ultimate query pointed out urban extensions, town center regeneration and brownfield redevelopment were far more effective in reducing energy use than isolated "new" towns in the countryside. Embattled by armies of vociferous protestors and environmental organizations, as well as the global economic crisis, Brown's government

delayed releasing the chosen proposed sites until July 2009, when four were designated in the long-awaited Eco-towns Planning Policy Statement (DCLG, 2009). By then many of the original eco-town sites had been withdrawn due to local public opposition.

The four proposals that scored enough points in the Government's strict assessment to be designated for Eco-town development were Whitehill-Borden in Hampshire, St. Austell in Cornwall, North West Bicester in Oxford and Rackheath in Norfolk. The last two sites were both local alternatives to previous proposals. Rackheath was a substitute for Coltishall, a former airforce base, and Bicester replaced Weston-Otmoor. Both winners could be considered expansions of urban areas, with existing accessible transportation links. St. Austell and Whitehill-Borden are both brownfield sites and survivors from the original 15 sites chosen in April 2008. St. Austell encompasses former china clay pits and neighboring industrial sites and is a prime candidate for regeneration, in an area with extreme affordable housing needs. While there are challenges in protecting groundwater and managing drainage and well as upgrading transportation links, it is an appropriate choice. Whitehill-Borden is another brownfield site, comprising a former Ministry of Defense base with existing housing. The local government authority had long planned to redevelop the area, and has support from community, voluntary and environmental stakeholders in addressing very high affordable local housing needs. It also must address transportation supply, protect water resources, and remediate contaminated land effectively. The chosen sites thus reflected the public opinion that greenfield or countryside were not appropriate in a proclaimed sustainable housing program (Ecotowns: Living a Greener Future, 2008). Urban extensions limit incursion of greenbelt areas, and use existing infrastructure and linkages. Town centre regeneration and

infill development also represent a “greener” choice and ultimately could provide more units than a handful of demonstration towns.

England’s government inspired scheme for Eco-towns may fall victim to Labour’s recent loss in the spring 2010 elections and the effects of economic recession. While there was a plan to fund a second round of Eco-town sites, it may not survive a change in government, and national budget constraints. The program also illustrates how top-down policies that do not address local concerns are fatally flawed. Redevelopment or regeneration schemes that have worked their way through extensive regional planning processes are more environmentally sound. Eco-towns provide a model of what not to do in the name of sustainability.

Community Supported Agriculture in Ulster County, NY

The third example examines the work of local Community Supported Agriculture organizations in New York’s mid-Hudson Valley. A CSA links a local farmer and customers who buy a “share” at the beginning of the season in the farms’ produce and receive a weekly distribution of produce during the growing season, usually from May to November. This means that farmers get paid at the start of the season rather than waiting for the harvest, and CSA members share the economic risks associated with farming, as well as the benefits of knowing where their food comes from. CSAs are examples of sustainable agriculture which has three overlapping objectives-- social, economic and environmental. Environmentally based agriculture mimics natural systems rather than using an industrial model. “Sustainable agriculture can be viewed as ecosystem management of complex interactions among soil,

water, plants, animals, climate, and people. The goal is to integrate all these factors into a production system that is appropriate for the environment, the people, and the economic conditions where the farm is located” (Sullivan, 2003). Farmers use a variety of practices to protect and nurture soil quality including no-till or low-till, planting cover crops, like alfalfa which fixes nitrogen, using sod crops to restore soil fertility, crop rotation and intercropping, and other such methods for reducing weeds and pests. These sustainable practices are the opposite of “industrial” farming which relies on high inputs of fertilizer and pesticides. Sustainable agriculture may or may not be “certified” organic. The organic certification process is a costly one, and farmers may opt to identify themselves as sustainable, “certified naturally grown” or even “climate friendly” (meaning they use practices to minimize greenhouse gas emissions, including using solar powered equipment). The key element is that CSA participants get to know and trust their farmer and this builds community and social relationships, while protecting small farms.

The CSA movement came to the New England area in the mid-1980s from Europe, where it had begun when women's neighborhood groups developed direct partnerships with farmers. At first, CSAs appealed particular to young, urban professionals who wanted a connection to both the land and community, and sought social justice by providing food for disadvantaged groups. Non-profit organizations such as the Hartford Food Project and Western Massachusetts Food Bank CSAs provide training and work for the unemployed, fresh produce for the food bank and a local farm market (Adam, 2006). The movement has grown substantially, mainly in the last five years as Americans have become increasingly aware of the benefits of organic, sustainable and/or locally grown food, and the hazards of factory farming and food contamination. In December 2001, there were 761 CSAs registered

with the USDA. By March 2004, an Iowa State University study counted 1,034 and by July 2005 the USDA database recorded 1,144 (Adam, 2006). Local Harvest, an organization which maintains it has the most comprehensive US directory of CSA farms, listed over 2,500 in its database in early 2009, with 857 additions to its website since January 2008 (Local Harvest, 2010). Over time, CSAs have developed two different structures: either subscription (farmer-directed) or shareholder (consumer-directed). Subscription types account for about 75% of all CSAs and in this model the farmer does most of the organization and management, and farm work is usually not required of the subscribers, although it is often encouraged. A variation of this model is where two or more farmers co-operate to grow different products. Shareholder CSAs are run by a core group that makes decisions, recruits subscribers and hires the farmer. The group can be a not-for-profit organization and they may purchase, lease, or rent the farmland (Local Harvest, 2010). Some CSAs have also introduced different ways for subscribers to select their weekly share. Instead of getting a standard box of vegetables each week, members have more personal choice. Other CSAs have begun to incorporate a wider selection of farm products, including fruits, in the weekly share. Some CSA farmers also supply local restaurants and farm markets, and may donate extra produce to a food bank. Increasingly, CSAs are widening the menu, co-operating with other farmers and offering eggs, homemade baked goods, meat, cheese, fruit, flowers or other farm products along with their vegetables and offering off-farm drop-off points for subscribers.

Ulster County is on the north-west periphery of the greater New York metropolitan exurban area. Its southern border is about 80 miles north of New York City. Increasingly, it has attracted New York City part-time commuters and second-homers, as well as migrants from the more expensive suburbs to the south seeking less expensive housing. Over the last

several decades, many small farmers have gone out of business when selling their land for residential development became the only option as farm product prices fell and costs rose. Ulster County is just one example, replicated in many places across the US. The rural farm landscape was disappearing. Local initiatives to support and protect local farmers are now a major part of Ulster County's planning, and CSAs play a part in this strategy. Mirroring nationwide trends, Ulster County CSAs have more than doubled over the last five years and they illustrate the variety of CSA types. Several of the CSAs also partner with local schools and the State University of New York at New Paltz to educate students about farming and sustainable practices through hands-on experiences. These activities include diverse and even surprising college majors which are invited to participate in the farming experience. The SUNY environmental studies program requires students to put in a certain number of volunteer hours in environmental organizations, and this can be achieved by hours working in the fields for a CSA. This is a valuable experience for those who may often have not thought about where the food they eat originates, or the implications of where it is grown. One of the CSAs in Ulster County is run by a farming couple who have worked with the UN-FAO since 2002 to develop international criteria for certified naturally grown products, and has developed technological innovations like solar-powered tractors, low-energy radiant heated growing systems and energy-efficient coolers for produce storage (Huguenot Street Farm, 2010). CSAs address all four of the sustainability criteria: ecology/ environment, economy/employment, equity/equality and education. Thus CSAs represent an effective sustainable initiative without any governmental program or tax incentive.

Key Issues in Sustainability Initiatives

These case studies all deal with sustainable practices, but with different levels of government action or intervention. What levels of government stimulus are appropriate? How do we assess and measure sustainability? What are the components that lead to a real change in how we use resources sustainably so that we can maintain or even improve the real quality of life for a community? One successful tactic is to make sure the practice evolves from a grassroots concern, for top-down government action that does not resonate with a shared community vision is sure to alienate the public. Governmental policies need to be carefully constructed to assure a positive economic outcome, and consistent over the long term. A major factor in the success of Samsø's program can be traced to the economic incentive put in place by the Danish government to support wind power production by requiring utilities to offer 10 year fixed contracts for wind power. This meant that community investors had a clear understanding of their long term profits, for an expensive commitment. Governmental policies are unfortunately subject to political change. Progress towards renewable energy sources can only make effective progress with reliable, dependable policies and incentives, grants and tax breaks.

There are obviously geographical differences between the case studies, in terms of physical characteristics and cultural history, and there would be many more if the assessment dealt with more than three examples. There are clear advantages for concerted action in cultures that have a community-centered history in comparison with a culture with a competitive, individualistic motivation. Environmental conditions also play a role, since wind power is most productive in areas with strong, and consistent winds. Solar power has

somewhat similar constraints, although as solar-powered technology is making strides in efficiency, its potential for fulfilling energy needs is projected to increase significantly. Geothermal power, harnessing the difference in below and above ground temperatures, has high initial costs, but is applicable in many climate types. Biomass power is less climate-friendly, but can also be utilized in a wide variety of locations.

As many environmentalist and sustainability authors acknowledge, change is hard and slow. But in terms of energy choice and climate change it is now inevitable. Indeed, as NASA scientist James Hansen has warned, we have lost any slack time in the scenario and must move quickly to prevent disaster. Can we learn to employ the four Es? That is the ultimate question. One way to start is to begin at home. Examining these examples suggests we change the old mantra to one suggested by Samsø's pioneer Hermansen "Think locally, act locally."

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