



CHAPTER 6

Seeking Pathways to Sustainable Food

You look at the labels and you see farmer this, farmer that. It's really just three or four companies that are controlling the meat. We've never had food companies this big and this powerful in our history.

— Eric Schlosser, *Fast Food Nation*

Only farming that nourishes Nature and supports biological activities, efficient use of water, climate, seeds, breeds and naturally developed soils — rather than industrial agricultural that creates deserted monotonous landscapes and relies on external energy — can guarantee food for all: now and in the future”

— Laureates of the Right Livelihood Award,
“Declaration for Living Change”

IF ONE CLIMBED TO THE CHURCH BELL TOWER in most European villages in 1789, one could approximate a bird's eye view of a local landscape that produced 95 percent of the food necessary to sustain local villagers. Even 150 years later, the change was not that dramatic. In *The Right to Useful Employment*, Ivan Illich pointed out that, as the Second World War was breaking out, 96 percent of food consumed was a mix of local and regional production. So where are we now, only 70 years later? In 2009, only 5 percent of the food consumed by the 750,000 inhabitants on Vancouver Island (a 300-mile-long island that sits off the southwest coast of British Columbia) was produced on the island. The balance was transported by truck across North America and across the globe by ship and air.

In less than a lifetime, food production has been transformed from a local affair into a complex web of supply chains crisscrossing the planet that miraculously deliver a multitude of foodstuffs right to our doorstep. Today,

farming, including crop and pasture land, covers 40 percent of the globe, accounts for 70 percent of consumptive water use, and employs approximately 40 percent of the population worldwide. By contrast, less than 2 percent of the US population lives on productive farms today.

Cheap Food and Its Price

The army of humans who used to work on farms has been replaced by cheap oil, wondrous in its flexibility and possessing uniquely high energy values. Imagine: a single barrel of oil has been estimated to be equivalent to approximately 25,000 hours of human labor, or one person working 12.5 years at 40 hours per week. It is little wonder we struggle to sober up from our oil addiction. Oil is so integral to our economy, society, and culture that disentangling ourselves from our dependence on it is a hugely complex challenge. This is particularly so when it comes to the food system. From the plowing of the fields to the weekly big-box grocery run, we rely on an oil-dependent global supply chain, controlled by multinational corporations, for our food. Fertilizers, pesticides, manufacturing, and machinery of all kinds — pumps for water-hungry irrigation schemes, processing equipment, plastic packaging, right through to the energy-sucking open freezers of big box supermarkets — are all links in a chain feeding the global cafeteria.



Fig. 6.1: *Cheap oil delivers cheap food. The commodity-based food system depends on it so much that when the price of oil soars, so too does the price we pay for our groceries.*

Source: © Julien Tromeur | Dreamstime.com

Agricultural Emissions — Greenhouse Gases and Nitrogen

In the United States, 10 to 15 calories of fossil-fuel energy is used to create 1 calorie of food. This adds up to the equivalent of 1,500 litres of oil (20.3 barrels) to feed each American per year. Natural gas is a key component in this mix. As the main feedstock for nitrogen fertilizer, it has been responsible for raising global crop yields approximately 35 to 50 percent over the last half century. For cereal crops it accounts for 80 percent of the increase in productivity.

Unfortunately, nitrogen used on the land seeps into rivers and is carried to river deltas and oceans. Nitrogen destroys oxygen, creating an effect known as hypoxia. As a result of the extensive use of nitrogen, and the resulting runoff, rivers and oceans are suffering from the accumulated deposits to the point of death. In an August 2008 article for *Scientific American*, David Biello reported that over 212,000 metric tons of human food was lost to hypoxia each year in the northern Gulf of Mexico, much of which has become a dead zone. Nitrogen and other oil-based agricultural inputs were originally heralded as innovations supporting the “green revolution” that would feed the world. They have now become part of the problem.

Agriculture is also a major contributor to greenhouse gas (GHG) emissions. A 2006 report from the UN’s Food and Agriculture Organization, *Livestock’s Long Shadow: Environmental Issues and Options*, estimated the meat and livestock industry alone contributed 9 percent of total carbon dioxide emissions, 37 percent of methane, and 65 percent of nitrous oxide. In New Zealand, 50 percent of daily GHG emissions came from the farting, burping, and breathing of 40 million sheep, 9 million cattle, and 2 million roe deer. (The emissions of methane and nitrous oxide are particularly disturbing. Nitrous oxide has 296 times the global warming potential of carbon. Methane is 23 times more potent than carbon, though it lasts a shorter time — four years to carbon’s 100. However, given the worry about a tipping point at which GHGs will reach concentrations that create self-reinforcing feedback loops, these more powerful gases are a big problem.)

The UN predicts that the number of livestock will double by 2050. Food expert Felicity Lawrence, in a 2011 article in the *Guardian* newspaper, counters that this is impossible because the meat industry in Europe already requires an area of vegetation seven times the size of the European continent to feed the animals. If everyone in the world ate meat at a North American rate of intake, we would need to raise cattle on the moon.

Corporate Concentration and the Price of Food

Oil use in food production has also delivered something many of us in our everyday lives take for granted — cheap food. In the United States today, an

average of 9.9 percent of disposable income is spent on food; 80 years ago it was 25 percent. German consumers on average spend 10.9 percent of their disposable income on food at home, followed, among high-income countries by Japan (13.4 percent), South Korea (13.4 percent), and France (13.6 percent), and in middle-income countries by South Africa (17.5 percent) and Mexico (21.7 percent). China (28.3 percent) and Russia (36.7 percent) are seeing rapid decreases, but the percentage of income spent on food is still relatively high. India (39.4 percent) and Indonesia (49.9 percent) are among the highest when it comes to the amount of disposable income spent on food.

The linkage between oil and food and narrowly defined commercial efficiencies appears to be one key factor in the low price of food. According to the US Department of Agriculture, labor accounted for almost 40 percent of the value of resources used in farming in 1950; by 1993 it had declined to 9.5 percent. In contrast, machinery and chemical use in agriculture increased from 25 to 43 percent during the same period. Fertilizer use increased five-fold since 1950. It seems logical that as the price of fossil fuels escalates in the years ahead, agriculture is going to become more labor intensive again. The need for an increased supply of labor at a wage that can sustain workers may push up the cost of food, which will squeeze consumers, especially those with lower and moderate incomes.

Ironically, while the low percentage of disposable income currently spent on food is good news for consumers, it has not necessarily translated well for the producer. On average, US farmers get back less than 20 cents of every dollar spent on food. Sixty years ago they received almost 40 cents, and as recently as 1981 the figure was still 31 cents on the dollar. The striking implication cannot be ignored by any citizen concerned with basic notions of fair trade, sustainable livelihoods for farmers, or long-term food security. If 10 percent of consumers' disposable income goes for food purchases, and 20 percent of that amount gets to farmers, only 2 percent of a consumer dollar actually ends up with the farmer.

Meanwhile, many farmers cannot make a living, require off-farm income, and suffer from debt levels and cost increases that drive them off the land. Recent Statistics Canada data makes the point: net farm income, net of government support payments and adjusted for inflation, reveals 2010 as the third-worst year of losses since 1926, and the years 2003 to 2010 stand out as the worst period yet.

The profits are being captured by the colossal corporate concentration of production right through the value chain. For example, three companies retail and distribute the bulk of Canadian oil, gasoline, and diesel; a few corporations control Canada's nitrogen fertilizer capacity; and a small handful control the chemical and seed sectors. Three dominate the farm machinery

sector. Farmers face similar concentration among processors and retailers. Cargill, for example, now controls about 50 percent of Canadian beef-packing capacity, and when one adds Tyson, these two companies alone control 80 percent. Four companies mill most of the flour; three make Canadian soft drinks; and six control the food retail sector.

Corporate concentration and energy-intensive agriculture fit hand in glove. Some argue the result is a highly efficient process. But they do not weigh the ecological and health costs. For example, consider the impact of housing a million pigs in a multi-story production center where each pig produces as much manure per day as eight people — the total is equivalent to the amount of sewage generated by the entire population of London.

The lopsided energy equation of these types of production is equally disturbing. Traditional farming yields 10 units of energy output in food compared to every one unit of energy input. According to C. Tudge in *Feeding People Is Easy*, industrial farming turns this thermodynamically

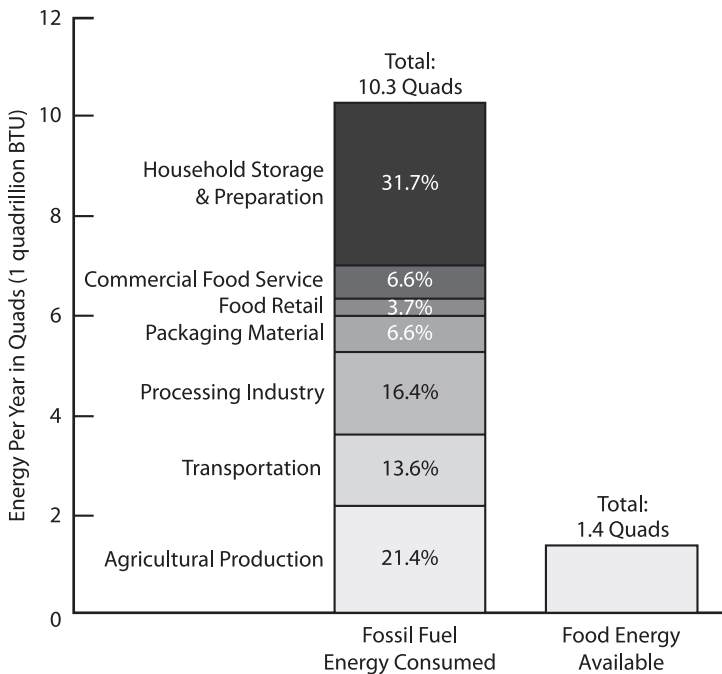


Fig. 6.2: We are spending more and more fossil fuel to produce less food on more land. Thus we emit more and more carbon, which is becoming more and more of a threat to a food system that grows less and less resilient. Source: Center for Sustainable Systems, University of Michigan, "U.S. Food System Factsheet," Pub. No. CSS01-06, 2011.

efficient energy equation on its head, squandering 10 to 15 units of energy inputs to achieve just one unit of energy output in food (see Figure 6.2).

It makes one think about what one eats. Perhaps returning to a traditional mixed-farming practice that combines grains, vegetables, and a bit of meat production might make more common sense. As Tudge argues, the diverse cuisines of the world have evolved in sync with such practices — plenty of vegetables, not much meat, and a mix of grains. Certainly such a diet would significantly reduce carbon emissions and water shortages, especially if meat consumption was sharply cut. Beef, for example, requires an estimated 100,000 liters of water to produce one kilogram of meat (about 26,500 gallons for two pounds).

So it seems there are a lot of downsides to the so-called productivity of the industrial food system that delivers our cheap food supply. Any thoughtful reflection on the conundrum must pay attention to the provocative question of ecological economist Hazel Henderson. Commenting on the oft-repeated appeal to increase economic efficiency and productivity, a common refrain of economists and politicians, she argues that the question that must be asked is: Productivity for whom and for what? One might additionally ask: And at what cost?

Climate Change

Climate change is the other major challenge to our long-term food security as fertile land dries up at an alarming rate. China, Australia, South America, and the United States, which together contribute two-thirds of the world's agricultural production, experienced unprecedented drought conditions through 2009. In some areas, the drought continues. For example, northern China in 2010 experienced its worst drought in 50 years, and conditions had become dire, threatening over half the wheat crops in eight provinces. From 2004 to 2010, Australia had an unrelenting drought — the worst on record in 117 years. La Nina—fed rains came in 2010 but pockets of drought remain, and 41 percent of the country's agriculture is threatened due to dried-up rivers, toxic lakes, and abandoned farms. In California, thousands of acres of row crops have been fallowed. Argentina, the world's fourth-largest wheat exporter, was in a state of emergency in 2009 as the worst drought in half a century turned fertile land into dust. The country halted all exports for the first time when yield for 2009 dropped 50 percent.

Decreasing yields due to drought are being exacerbated by two other factors — water shortages and the rise in temperatures. Agriculture is the largest consumer of fresh water, with approximately 70 percent of all freshwater withdrawals going to irrigated agriculture, which today covers 275 million hectares (about 20 percent of cultivated land) and accounts for 40 percent

of global food production, according to the World Water Assessment Programme's *Water in a Changing World* report. Renewable sources of water for irrigation, such as glacier-fed rivers, are now at severe risk due to climate change. Gigantic aquifers such as the 450,000-square-kilometre Ogalla aquifer, which underlies eight midwestern US states, are being depleted more rapidly than they can be replenished, despite stringent conservation efforts.

When crops are exposed to high temperatures, crop development slows. In the United States, a study by W. Schlenker and M.J. Roberts suggests that a 1.2°C increase from the current mean (which is what the Intergovernmental Panel on Climate Change predicts will occur over the next three decades) would cause yield decreases of 4 percent in corn, 6.7 percent in wheat, 12 percent in rice and 5.7 percent in cotton.

Weed, disease, and pest pressures will likely also increase. Pests that thrive in warm weather will gain a foothold in regions previously too cool to support their growth, and increased carbon dioxide levels will likely benefit weeds more than food crops. Monoculture crop systems, which make up the bulk of US agriculture, will be particularly at risk from increases in weed and pest pressures, as well as changing microclimates. Unlike polyculture systems, where a diversity of crop types are planted in close proximity, thus ensuring some protection against devastation from pests or weather, monocultures are highly vulnerable systems that can be wiped out entirely from a single pest, blight, or weather event.

Navigating Transition to a Resilient Food System

So from whither will come our food? The short and rather oblique answer is that it depends on where you live; there is no global answer. However, no matter where we live, we have a common challenge: how can we radically shorten the food supply chain, decrease fossil-fuel dependency, conserve water, and reduce the carbon footprint of our current food system?

If we want to consciously create local and regional markets that pay fair prices for sustainably grown food, we must coordinate this with rebuilding the local and regional infrastructure — processing, warehousing, labor supply, investment, and local credit sources being prime examples (Figure 6.3). These elements existed in most localities 50 years ago but have been incrementally hollowed out by oil-greased production systems and long supply lines designed to compete for market share in the global marketplace.

Accomplishing such a transformation is anything but simple and has many parts. In the following sections we consider three pathways we could take to transform our food system. Each reclaims the commons in new and creative ways, and each forges effective partnerships and alliances that manifest the social-solidarity economy and economic democracy in action.

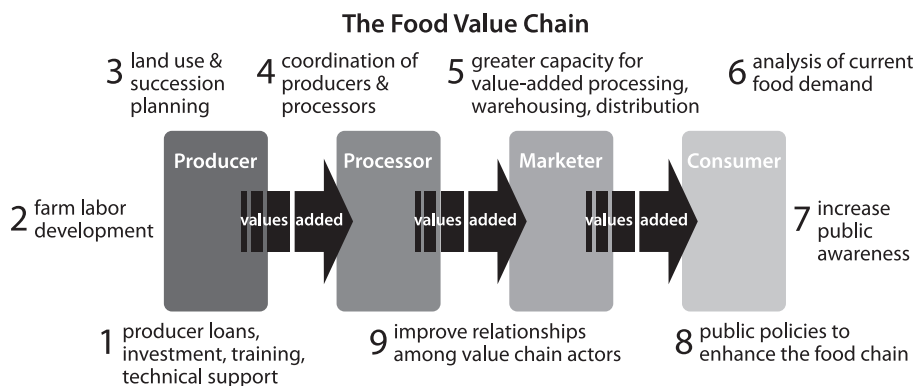


Fig. 6.3: *Hollowed out by globalization, local and regional infrastructure needs to be rebuilt if we are to secure a resilient food system. It is a puzzle with many pieces and an appetite for a ton of cooperation between diverse actors.*

Seikatsu: “Living People” Transforming their Relationship to Food and Each Other

“Seikatsu” means “living people.” The significance of this for members of Japan’s Seikatsu Consumer Co-operative is a down-to-earth story of transformation in process. The cooperative’s humble beginnings involved women sitting together at kitchen tables talking about food. Some disturbing trends in their region bothered them — an increase in imported foods, the consistent loss of farmland to development, and the accelerating migration of farmers to the cities. They were also worried about the quality and safety of their food, a concern closer to their kitchens that was deeply rooted in the privation so many suffered in the post-war years. Hunger from the period marked the consciousness of a broad swath of the population. It was from this fertile ground that cooperatives grew, aided by the introduction of legislation in 1948 and the rapid formation of the Japanese Consumer Cooperative Union in 1951.

In 1965, a group of women approached a local farm family with an idea to address the issues of concern to them. The essence of their proposal was that the farmer would provide their families with fresh milk, fresh fruits, and vegetables, and the families would guarantee to pay a negotiated fair price. The farmer agreed so long as they organized a large enough number of people willing to commit to purchasing the farm’s production. A contract was drawn and the *teikei* concept was born. Translated literally, *teikei* means “partnership,” but philosophically it means “food with the farmer’s face on it.” Twenty years later, the *teikei* idea migrated to the United States,

inspiring the first community-supported farm at Indian Line Farm (see the “Who Will Grow Our Food?” section in Massachusetts).

The heart and root of the Seikatsu movement is a collective purchasing model that seeks to make the co-op itself a “living instrument” for social and ecological change. The basic building block of Seikatsu is the *Han* (“small group”), which in local areas collectively plans and purchases food. The *Han* was not a new type of group. They were first used in 1956 as an organizing tool for member participation by the Tsuruoka Co-op in the northeast of Honshu, Japan’s largest island. They became a key strategy for distributing products within the burgeoning co-op movement and strengthening relations between members, both of which were important to the creation of a federated system for coordination across larger geographic areas. What emerged as an ideal *Han* consisted of seven to ten members, each representing a household that would participate on a voluntary basis. Today there are about 11 million members of *Hans* throughout Japan, most of them belonging to co-ops associated with the Japanese Consumer Cooperative Union.

Underpinning the *Han* concept within Seikatsu is a countercultural perspective on human time and how it can be used creatively to strengthen human connection with each other and with the environment. *Han* members consider time in relation to three forms of work: employed work, work for others (care and social support), and work for the collective good. For example, Seikatsu Club members view the time and energy required to shop in corporate supermarkets as a waste of time, better invested in realizing their goals of safe food, healthy farmland and farmers, and living more sustainably. Thus, through Seikatsu practice, cooperation has become incarnated as a “living instrument.”

Founded with the aim of acquiring safe food at a reasonable price, the Seikatsu *Hans* concretely express their values by specifying strict standards for materials, production processes, packing materials, and environmental practices, which are then negotiated with producers. The resulting agreements are the basis for the pre-order collective purchase system, which in turn enables a well-planned production and supply system. The purchase of safe food at reasonable prices, the minimization of waste of natural resources, and the reduction of environmental impacts are among the generative results. More than 350,000 members now operate through thousands of *Han* groups, aggregating their purchase plans within one or another of the 32 Seikatsu Consumer Cooperatives (SCC). These in turn are affiliated nationally into the Seikatsu Union Club (SUC).

The SUC has adopted the term “consumer materials” to describe the products they purchase. The language is indicative of the principles they operate under. Members see themselves as employing their collective

purchasing power to secure goods for their “use value,” not as “commercial goods.” Every month the SUC’s Consumption Committee meets to determine the items to be purchased collectively based on the demands and views of the members. Members participate in extensive testing of new consumer materials. Taste, packaging, and price preference are determined through member engagement, combined with market research to design draft specifications. These are then discussed with producers. A critical appraisal of the production process reviews what can be done; packaging, content, volumes, and price are among the key focus of such discussions.

Seikatsu gains efficiencies by limiting the number of regular items provided to 1,600 annually. (This is in contrast to the 9,000 items carried by the 600 other consumer co-ops in Japan, with 22 million members — and to the much larger number of products and brands in modern mega-supermarkets.) Keeping the system simple significantly reduces inventory costs, thus creating one source of savings that allows the co-op to increase the price to the farmer while keeping prices to the consumer reasonable. By concentrating on a narrower range of high-quality products, producers and processors also gain important efficiencies.

Further efficiencies are gained through adherence to some basic principles.

- Purchasing is viewed as an ethical responsibility. Seikatsu members regard mass production, consumption, and disposal as a negative, disconnecting consumption from ethics. By developing “consumer materials” for basic needs, they try at every stage to solve problems of health, environment, and safety.
- The well-planned production of a more limited selection of high-quality foods enables efficient shipment, thereby reducing unit costs for transportation.
- Goods are delivered directly to either the *Han* or the individual though member-run pickup depots. Delivery eliminates the financial risks of high retail overheads, huge inventories, and the waste they generate.
- The SUC has developed a standard of eight types of returnable bottles for a wide range of food products. This has helped reduce the price of this type of packaging and raises the efficiency of collection, sorting, and washing. Seikatsu has organized a Bottle Re-use Council, which in 2007 estimated its system was reducing carbon emissions by 2,121 tons a year.

To ensure its specifications are met, the SUC has established its own independent control and auditing system. Members and producers set the

standards together through sector committees for agriculture, fishery, livestock, processed food, packaging materials, etc. Between 2007 and 2010, 6,500 people participated in 790 unannounced spot inspections. This participatory approach to certification is much less bureaucratic and much less costly than the third-party audits most certification systems require. Moreover, the learning and relationship-building between members and producers is much more profound, a benefit the annual audit by an outside consultant or accountancy firm cannot achieve.

The relationship between the purchasers and the producers of food extends to the planned participation of consumers as a source of labor supply. Because the average age of a Japanese farmer is 67, planting and harvesting demands can limit their capacity to assure the supply of healthy, nutritious food. Organizing labor in solidarity with farmers began in 1995; its initial success was to secure stable production of tomatoes for organic juice for Seikatsu members.

In another example of solidarity, Seikatsu organized member capital, which, along with farmer investment, enabled the start-up of three milk-processing plants to supply urban consumers. One hundred producers owning 5,000 cows are now co-producing a product with a high level of raw milk, an alternative to the ultra-high-temperature (UHT) sterilized milk dominant on the Japanese market.

By 2010 the annual turnover based on the purchasing *Hans* was US\$1.1 billion. Accumulated equity was close to \$1 billion due mainly to each member voluntarily paying \$11 per month until he or she has contributed \$3,500. There is also a \$60 membership fee for the local SCC and another \$60 for the SUC. This equity underpins the financial stability of the system. It is indicative of the importance placed on members being co-responsible for the health of the system, a fundamental cornerstone of the “Living People” model that Seikatsu represents. By investing time and money in various parts of a mutually supportive relationship with producers, they realize a key value of their movement: their democratic autonomy as members.

Today, the SUC is not only implementing a “values added” strategy aimed at transforming the food system but has also taken up recycling, green energy development, and social services.

- SCC members have been encouraged to lobby their municipally owned utility to allocate 5 percent of the monthly utility bill to the Hokkaido Green Fund. These funds have been used to capitalize five “citizens wind turbines” — and the SCC is seeking to expand this model.

- To address the challenge of being the oldest population in the western world, SCCs are establishing day service centers and special nursing homes. About 10,000 people are now involved in providing home or institutional care services for the aged through 448 organizations. Home care, another feature of the evolving system, provided over 1.4 million hours of volunteer service. Since the start of the nursing care insurance system in Japan, these services have expanded and are now generating \$87.4 million per year. Parallel efforts targeting the needs of people with disabilities, infants, children, and mothers raising children are also evolving.
- Worker collectives are another Seikatsu manifestation of the innovation and drive for economic democracy. In 2006 there were 582 democratically owned and run businesses with 17,000 worker-owners operating across a wide range of sectors and generating \$126,300,000.
- Another fundamental principle of Seikatsu is the concept of citizens advancing their values by shaping the political discourse. Beyond ensuring high ethical and environmental standards in their own purchasing, they have actively campaigned to outlaw synthetic detergents and to foster a “genetically modified free” food movement in Japan. This civic participation has evolved further through the establishment of independent local political parties to press Seikatsu goals. By 2006 there were 120 network parties with about 10,000 members, who had succeeded in electing 141 local councillors.

It is little wonder that the Seikatsu movement received the honorary Right Livelihood Award in 1989. Considered to be the “alternative Nobel Prize,” the award was given to the “housewives’ movement” for its success in generating a form of “alternative economic activity against industrial society’s prioritization of efficiency.” The prize commended the movement for its continuing interest in human health and the environment through its production of essential materials for living.

“Living People” indeed.

Transition Factors: Transforming the Value Chain

Rooted in local communities, the Seikatsu movement builds from a base of intentional small groups with concrete objectives and mobilizes around a clear function (collective purchasing), thus embedding its values in actions grounded in meeting everyday needs. The evolution of the Seikatsu Club has secured a federated, multifunctional, democratic, profoundly local, but

strategically linked, national movement for transformative change that operates through horizontal networks and vertical production chains as appropriate. Every stage of the food value chain is subject to member reviews, principled evaluation, constant scrutiny, and regular adjustment. In this way members leverage their purchasing power to transform the food system and the production and distribution of other essential goods and services, supported by multi-tiered capacity to aggregate functions where effective.

The financial health of the movement is impressive. It is fed by the efficiencies gained through a strategic approach to product specification, principled negotiation with producers, guaranteed fair prices (which stabilize supply chains), and rationalized distribution directly to end-users. Producers and consumers share in the benefits of reduced costs through procedures that require constant dialogue to understand each other's position.

The relationship between ethical consumption and production is profound, standing in stark contrast to the mass merchandizing and mindless consumption perhaps most vividly exemplified by the just-in-time global supply chain of Walmart. Founded on getting the lowest price possible to the individual consumer, Walmart largely succeeds, but with no heed to the consequences for those who live along the chain. In contrast, SCC members view consumption as a social rather than an individual activity, hence their reliance on the *Han*, neighborhood-level organizing, and the investment of both financial and sweat equity.

Seikatsu is also a profound expression of the solidarity economy at work, particularly the cooperation and complementary exchange mechanisms forged between civil society and the private sector. The SUC is a comprehensive counterpoint to the so-called free market, where atomization, isolation, and competition among people predominate.

An outstanding feature of the Seikatsu movement is its democratic autonomy. Its grassroots democratic base, along with its financial self-sufficiency, protects it from being co-opted or manipulated by the state, and also enhances its capacity to advocate credibly its views and advance its goals. Seikatsu incarnates what Francis Moore Lappe argued, in *Democracy's Edge*, is central to transforming the food system: the practice of "living democracy." The voting booth is insufficient; we must live democracy through our daily choices of what we buy and how we live.

Forging such a path is profoundly countercultural. Consumers who depend on others, who buy services they have had no part in shaping, who slavishly choose between high-cost brands or cheap no-name brands, who mindlessly chatter about material desires, achieved or not, stand in contrast to people who cooperatively shape their own choices, ethically meet their needs, honor the dignity of all life, manage their exchanges with

consciousness and an eye to their transformative potential, and reclaim their deep cultural inheritance as gifted human beings capable of living actively, expressively, meaningfully — these are the characteristics of a living democracy. Katsumi Yokota, a founder of Seikatsu, has argued that this cooperative yet personally mediated change in lifestyle is what democratic transition entails.

Seikatsu — Living People. Seikatsu Club — a living instrument to shape social and ecological change. Living Democracy — conscious citizens choosing to act in favour of transformation.

All are incarnated in the Seikatsu experiment, an inspiring illustration of the possibilities of local innovation that is strategically federated into a powerful agent for profound change. “Living people” consume in a manner that aggressively and consciously considers the existence of planetary life, integrates ethical considerations into every aspect of their decision making, and, in so doing, points us toward practical transitional pathways.

Resilience Reflections

The Seikatsu system walks the talk; it addresses the resilience imperative in profound ways. The entire system incarnates a strategy to enhance social, economic, and environmental *diversity*. The *Han* groups, whose democratic decisions are aggregated at strategic points to enhance economic, social, and environmental benefits are a sterling example of *social capital* and *modularity* in play. Tight but flexible *feedback loops* are intricately built into the overall system of *overlapping governance* and communication functions, from the small *Han* groups to the federated Seikatsu Club. The result is that members, producers, and partners are fed a constant stream of data on the results being achieved. This tracking of results feeds ongoing *learning and innovation*, leading to new ways of reducing the *ecological impact* of food systems.

There are, however, warning signs with respect to the intergenerational resilience of the Seikatsu model, as pointed out by John Restakis in *Humanizing the Economy*:

The changing nature of Japanese society is having an impact on Han and the involvement of members in the work of the co-ops. Japan's consumer co-ops are contending with aging memberships and a base of volunteers that grew up in a very different age. The sense of communal purpose is waning in Japan. Young people are not joining the co-ops. The changing role of women means that the traditional housewives that stayed at home and were the backbone of Seikatsu Club are now entering the labour market and have less time for co-op activities in

the neighborhood and within the household. As with other consumer cultures, these factors have contributed to a growing individualization within the membership of Seikatsu Club as well as the other consumer co-ops. Communal distribution of food has declined sharply and has been replaced with home delivery.

Such trends are worrisome when one considers the intersection of aging demographics, changing cultural patterns, and the demands of time and energy on which the Seikatsu model was built, particularly the time and energy of women. Whether a new generation is positioned, economically and culturally, to rediscover the “values added” of collective action remains to be seen. Perhaps the depth of the challenges we face with respect to securing our food supply in the decades ahead will spark a consciousness among younger people of the wisdom of reclaiming the heritage of “Living People” invented by their forebears.

Community Supported Agriculture (CSA)

Community supported agriculture (CSA) migrated to North America via the concept of *teikei*, which arose from the Seikatsu movement.

A CSA in North America typically involves one or more farmers directly producing for local people, who become CSA members. The consumers advance the farmer cash well before the next growing season. This secures them fresh produce on a weekly basis during the following season. It can also involve meat products. The cash flow of the farmer is improved by this provision of non-interest-bearing working capital, and the members guarantee the farmer a market. Customers stipulate varying conditions related to the way food is grown, but they tend toward organic production. Fair price is usually an important consideration. More and more CSA members are connecting the dots between ethical consumption, fair price, local food, and long-term food security (see Figure 6.4).

One of the challenges for farmers establishing and running CSAs is that it appears they have to take on most of the responsibility for marketing, promotion, and servicing of CSA members. Experiments are underway to adapt this basic CSA model.

An urban pilot set up in 2009 in Edmonton, Alberta, illustrates an equitable means of co-production. A coalition of local groups contracted eight somewhat skeptical farmers, who were selected to secure a diverse but complementary line of fresh produce. Rather than having the farmers organize the membership, the local group marketed the pilot, and in 10 days 500 potential members came forward. Of these, 290 were selected for the service

Community Shared Agriculture (CSA)

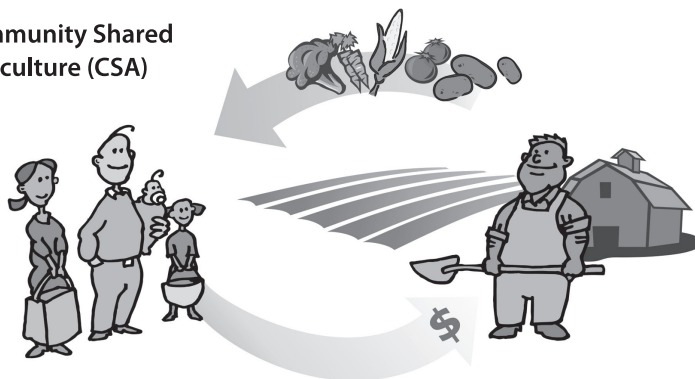


Fig. 6.4: CSA members pay a fee to the farmer at the end of a season. In return the farmer contracts to produce fresh food for them next season. This creates a local market that farmers can depend on, with a higher margin. The more food items and consumers the market includes, the greater is local/regional food security.

based on geographic proximity — a matter of some importance given the household distribution system they were designing. Delivery routes needed to be efficient and to minimize costs. The pilot was a significant success. The farmers' evaluation was that this was a quality market which yielded fair prices and significant efficiencies over selling through farm gate or farmers market outlets. Consumer members receiving the produce evaluated the fresh food and the service highly.

Based on the pilot, a feasibility analysis indicated that this basic system could be self-sufficient at a membership level of 1,000 people. It also showed that having members work closely with producers to maximize complementarity and diverse products was an important next step. By optimizing efficiencies through a greater degree of product specialization and coordination among individual farmers, more effective production and marketing could be possible. As well, the successful pilot showed the potential for servicing this emerging market with a broader range of products, including meats and locally processed food products.

Who Will Grow Our Food? The Problem of Succession

Farmers in many OECD countries are getting old; in Canada the average age is 52. In Japan it is a startling 66. Many are asset rich but cash poor. Most have few options to secure their retirement except by selling their farms. Sometimes this can be arranged within a family, but often it cannot. Land is expensive, and producing food does not pay the bills. When a farm does sell, the land often is no longer farmed; gentrification of farmland into

country estates or new subdivisions is common, at least in North America. Preventing this loss is crucial to any effort to increase long-term local and regional food security.

Two strategic questions frame our exploration.

- How can we transfer increasingly valuable land in a manner that is affordable for a new generation of farmers, while ensuring aging farmers are assured a fair and respectful retirement?
- How do we ensure that the economic, social, and ecological value of the land is transferred into a tenure that carries with it the responsibility to contribute to the public good and the food security of local and regional populations?

Fundamental to addressing this knotty issue is the problem of financing such a transaction. The question of how to structure ownership of the land to maximize producer and community interest in long-term food security is another tricky part of the equation, but finding a workable answer is vital if we are to strengthen the resilience of local and regional food systems.

Restoration: From Old Garbage to New Farmers

In 1983, the flood plain of the Winooski River, a mile and a half from the center of Vermont's largest city, Burlington, was a mess. Garbage four feet thick, junked cars strewn across the landscape, seepage problems from the adjacent sewage plant — not exactly a setting that triggers visions of organic farming. Nevertheless, the land was reclaimed to produce local food, and just two decades later, in 2007, a mere 120 acres were producing more than 1 million pounds of high-quality produce and generating over \$1 million in annual sales. Stewarded and managed by the Intervale Center, a nonprofit organization that has been strengthening community food systems since 1988, a once-desolate 350-acre site has been transformed into a local ecological treasure and a vital agricultural resource.

Today the Intervale Center leases over 140 acres to farmers enrolled in its Farms Program to build a local supply of sustainably produced food and help new farmers get started in the business of farming. Founded in 1990, the Farms Program leases land, equipment, greenhouses, irrigation, and storage facilities to small independent farms. Each year, these farms — many of which are linked to community-supported agriculture (CSA) and other direct markets — create 60 seasonal jobs.

This system creates significant benefits for young farmers. First, not having to buy land is a huge capital savings. Creative design of leases lowers the financial risk considerably. Similarly, structuring cooperative arrangements



Fig. 6.5: *Sustaining farms: Since 1990, the Intervale Center's Farms Program has helped nearly 50 farms get their start in the Intervale. These independent, organic farms grow and sell healthy, delicious food to the greater Burlington community. Photo courtesy of the Intervale Center.*

to share buildings, equipment, and irrigation reduces capital costs and increases the cost efficiencies. Several other agricultural development programs, including Success on Farms and the Intervale Food Hub, support local market development, business planning, and technical support services for new farmers. Together, these factors create a reasonable and realistic gateway for younger people to grow food as a viable livelihood.

Providing a diverse food supply is a key objective of the Farms Program, which the Intervale Center achieves by carefully selecting lessees based on their individual interests and by studying local and regional niche markets, and the capacity of the land.

The Intervale Center has several revenue-generating enterprises that produce about 60 percent of its \$1.3 million in annual revenue, the balance coming from grants and community fundraising. Other revenue generation streams include the various leasing arrangements with Intervale farmers, fees for technical services, contracted services related to education and training, and rentals of Intervale facilities.

Its revenues were higher by \$800,000 in 2008, when it still operated its first and largest enterprise, one that was key to the Intervale transformation from garbage dump to productive farming land: Intervale Compost.

This break-even operation, the largest composting service in Vermont, sold its products, packaged and in bulk, to individuals for household use, landscapers, farmers, and the city. Quite apart from its contribution to the local economy and soil-fertility enhancement, this social enterprise diverted over 30,000 tons annually from landfill sites and employed a number of marginalized people. In 2010 it was sold to Chittenden Solid Waste District and has become integrated into a state-of-the-art facility in Williston, Vermont.

Solidarity and Succession: Securing Local Food

What the Intervale example does not answer is the question of how to transfer land in an equitable and financially viable way from a farmer nearing retirement to an Intervale-type community land trust.

When one does an internet search for land trusts dedicated to preserving land for agricultural purposes, scattered examples turn up. In North America, groups or individuals often use the legal device of conservation easement to prevent farmland being sold off to developers. However, while protection is an important first step, it does not mean the land will be productively farmed. British Columbia, Canada's westernmost province, passed a law to protect farmland in 1973, but in the 2000s more and more people with a lot of money are buying these farms and turning them into rural estates. The land may be preserved, but the farm is no longer producing food.

Most farmers have a deep attachment to the land and a deep desire to see their life's work of husbanding that land sustained into the future. Selling off their homestead for cash to a developer or to the wealthy may be tempting in the absence of other options, but maximizing profit is hardly the driver of people who have committed their lives to farming. Indeed, the increasingly prevalent pattern of farmers taking jobs off the land in order to support the farm suggests the opposite motivation. Farmers want to farm but cannot sustain themselves. Herein lies part of the transition challenge: we as consumers have come to expect cheap food, yet the farmers we need to feed us in the future cannot afford to put their full efforts into doing so. Having invested for years, aging farmers reaching the end of their worklife have assets, but remain cash poor. And if the problem of retirement is not solved, the likelihood is that they will sell their land and assets to someone with lots of money and no intention to farm. As many farmers lament, you have to be either rich or crazy to buy a farm these days.

Indian Line Farm in Great Barrington, Massachusetts, provides an example of one method of solving this problem. A creative series of transactions reveal several important pieces of the puzzle necessary to address the challenge.

First, the Indian Line farm, a small 22-acre operation, was one of the first CSA farms in the United States. Thus there were already a number of

conscious consumers from the local area, members of the CSA, who had a relationship with the farmer putting food on their tables. In short, there was existing social capital.

Second, the CSA members' relationship to the farm fed a desire to preserve it in perpetuity. They were willing to donate funds and tell other people about the opportunity to preserve the farm. CSA member donations to a regional conservation land trust kicked off a broader campaign that successfully raised enough cash to secure the means to pay out the farmer's heirs following his death and to buy a conservation easement, the function of which was to place a covenant on the land that permanently protected its use as farmland. In this case, the easement also required that particular ecological values on part of the property be maintained and, indeed, enhanced. (Typically, conservation trusts get their money from a combination of public fundraising, foundations, and, at times, state or federal government agencies.)

Third, the title of the land was placed under a separate community land trust. With technical assistance from the EF Schumacher Society, a long-term (99-year) lease document was devised that required any leaseholder to use ecologically sound farming methods and sell to local markets. All the core values of the various CSA partners were intertwined into a covenant that was designed to endure.



Fig. 6.6: *Indian Line Farm was the first CSA farm in the USA. Without an alternative land tenure system, local markets, and creative financing, this little girl's family would likely not have been able to farm; indeed, it is unlikely the farm would still exist.* Source: Jason Houston.

Fourth, the next-generation farmer secured financing to purchase the house, barn, outbuildings, and whatever equipment was deemed useful. This completed the payment to the farmer's heirs. The lease allowed the new farmer to earn equity on any improvements made to the farm during his or her tenure, thus providing a limited but important incentive for investment. The community land trust retained an option to purchase the buildings and improvements back, and to resell them at their replacement cost to another farmer. Thus, long-term affordability is firmly established.

Fifth, the community land trust recovered its transaction costs through the capitalization of the deal. Over the longer term, the lease was structured to deliver a modest but ongoing management fee as well.

Transition Factors Related to Succession

Addressing the critical connections between ecology, economy, and community, CSAs, conservation easements, and community land trust projects are restoring and protecting habitat, preserving agricultural land, and making intensive organic farming viable for local and regional markets. The Indian Line Farm example, with the participation of two land trusts, shows a way for local consumers to partner with a new-generation farmer to successfully finance the purchase of the land, the buildings, and the farm equipment. If the farmer had still been alive she would have had enough to retire with dignity. As it was, her heirs were able to be paid out fairly. The new farming family had access to land on a long-term lease that gave them the opportunity and obligation to grow food organically and practice wise stewardship. The CSA members secured an important part of their annual food supply.

Commodity-based producers and the agro-food industry often discount the contributions of small farmers, but their small-scale, more labor-intensive style of farming may be of critical importance to rebuilding local food systems. A 2001 study of 200 sustainable agriculture projects in 52 countries calculated that "nine million farmers were using sustainable practices on about 29 million hectares. More than 98 percent of these small farms emerged in the last decade." Jules Pretty, the British agronomist who directed the study, found that the increase in yield per hectare of production ranged between 46 and 150 percent.

However, this kind of transformation does not happen by itself — at least not in settings where industrialized agriculture is dominant. The transition is challenging, and four elements stand out in both the Intervale and Indian Line Farm cases as critical enabling factors:

- A capable, value-driven development agent
- An alternative land-tenure option

- Accessible low-cost finance
- A capacity to bring together producers, consumers, capable community organizations, alternative land tenures, and local businesses in a circle of mutual interest and solidarity

In both cases, community land trusts were the key development agents. They acquired sufficient capacity to identify the opportunity, raise the capital, put together a deal, structure the covenants, work out the business model, recruit the younger farmer(s), and provide the basic administrative supports required to sustain the effort to finalize the deal. Supplementing these factors was the availability of technical assistance and expert guidance from committed professionals able to frame the legal, organizational, and sector-specific advice necessary to make the local development system work. Without fitting these jigsaw pieces together creatively, it is hard to see how the new generation of farmers could have put the elements together in a way that secured a livelihood focused on feeding local people.

Resilience Reflections

In a modern farming context, where an oil-soaked monoculture feeding global supply chains is the norm, the signposts emanating from the cases presented here appear radical. The *diversifying* of production, the localizing of markets, the covenants built into the ownership models, the more direct relationship to consumers (*social capital*), and the *ecologically* based agricultural practices run directly counter to the industrialized model of agriculture.

What these pioneering experiments show is that the centralized and highly interdependent global food system could be steadily replaced by a much more *modularized* system of production serving local and regional markets. The consumers' direct link to the production of food and even the financing of food production provides a level of relationship that *tightens the feedback loops* between all the actors in what has been transformed into a much shorter supply chain.

Underlying the resilience gains in both Intervale and Indian Line Farm is the duplex ownership tenure, without which the transition from garbage to organics and from old to young would have been very difficult, if not impossible, to achieve. The mix of *common and private property rights*, combined with creative and collaborative financing methods, was central to making the transition.

Restoring Salmon: Restoring the Commons in Alaska

Before Alaska became a state, the US federal government managed the region's salmon and was making a mess of it. Harvest levels in 1938 were

close to 120 million fish. Twenty years later the harvest had declined to 20 million. This precipitous erosion of a resource so important to the coastal communities of Alaska became a key issue in the movement for statehood. According to D.F. Amend, Alaskans felt that gaining control of the mismanaged fisheries would allow them a far greater degree of regional self-governance.

But the decline continued even after Alaska became a state. Different harvesting methods, habitat pressures, too many boats chasing fewer fish, conflicts, and inequities between different gear types made managing fisheries exceedingly complex. In 1972 the harvest fell even lower. The ongoing crisis finally led to five significant decisions to:

- Limit the entry of new fishing vessels to the fleet
- Invest in rebuilding the wild stock
- Initiate construction of salmon hatcheries
- Improve the stock enhancement program
- Design an approach for what was called “ocean ranching”

Ocean ranching involves the release and recapture of fish from hatcheries into ocean waters (see Figure 6.7). Eggs are stripped from the broodstock and reared for a time in a hatchery located near the mouth of a river. Once the offspring are large enough, they are put in net pens located somewhere offshore in an area that avoids the migration of wild stocks. Three or four weeks in the net pens is enough time for nature’s magic to imprint the young salmon with a personal homing beacon that will guarantee the survivors return to the precise point they were released. Once they do they are easy pickings. No chasing fish around — just wait and scoop them up. The question is: who will benefit?

Private ocean ranching was already being piloted in Oregon. Weyerhaeuser, a major multinational forest company, bought out the first Oregon project in the early 1970s and other states were beginning to consider replicating the private model.

In Alaska, the fight about who should benefit was first focused not on ocean ranching, but on who should own the hatcheries. Private investors argued that private businesses should do the job, as they were more efficient than government. The fishers disagreed. Knowing the pivotal role hatcheries played in ocean ranching, they feared a takeover by large multinationals and fought back. As far as the fishers were concerned, the commons was not for sale. Privatization was not a solution. They argued that hatcheries should be owned by nonprofit corporations governed by all stakeholders in the resource. The state government listened, at least in part, and brought all of

the key stakeholders together to design and agree on a strategic action plan. Ocean ranching was a main component.

Once this battle was won, however, it turned out that fishers had little input. The government decided it should run the hatchery program, and the results were a disaster; salmon runs declined to 4 million fish. Fishers blamed poor hatchery site selection and mistakes in the choice of salmon species to be reared at those sites. All the different groups practicing different fishing methods (known as “gear groups”) shared this opinion and launched another lobby.

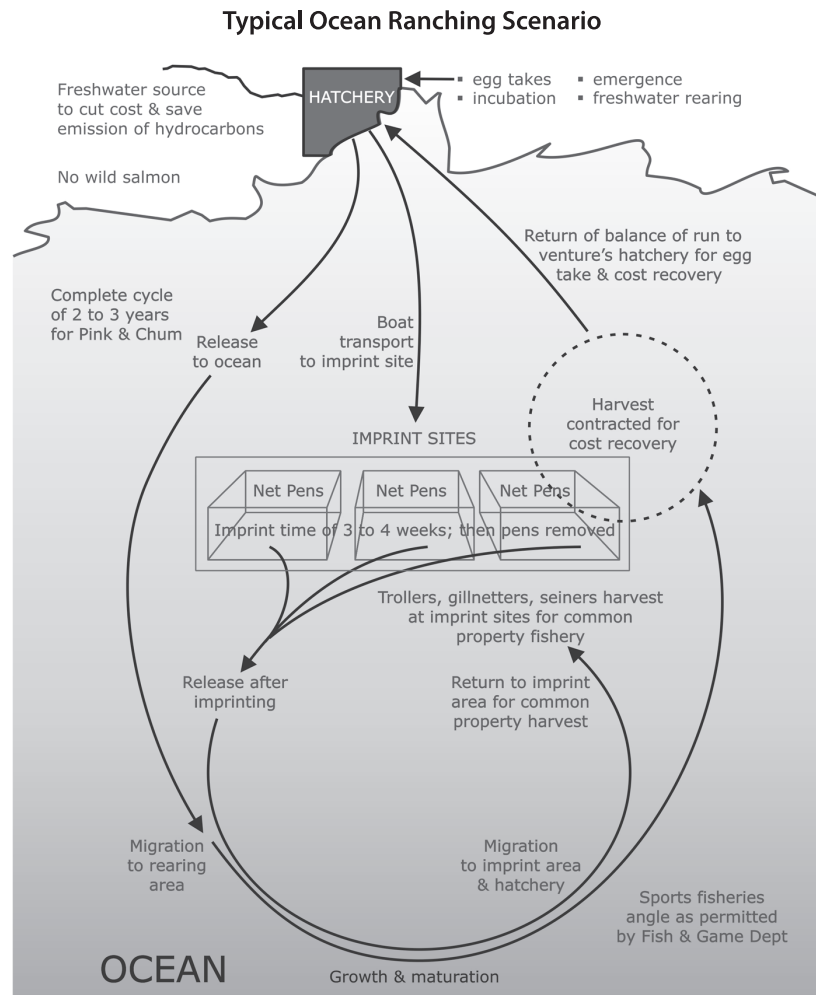


Fig. 6.7: *Ocean ranching.*

This time the fishers prevailed, and in 1976 the Regional Aquaculture Associations were established. Fishers in each of the five designated regions automatically became members of the relevant regional association. The associations are designed to provide direct economic and social benefits and management control to the fishers and other stakeholders of the local communities in each region. They were also designed to be financially self-sustaining. What has emerged is a collaborative and mutually beneficial multi-stakeholder partnership between the state and a carefully defined cross-section of community and local business stakeholders.

From a resilience perspective, the results have been transformative: 200 million salmon were being harvested by the late 1990s, 80 million more than in the 1930s. Through careful management of ecological risks (e.g., mixing wild stock and ranched stock), this number is made up of 65 percent wild salmon and a significant 35 percent of ocean-ranched stock. Moreover, over 70 percent of the harvest is designated common property.

Co-Managing the Commons

The Alaskans had one central goal: to increase the number of salmon available as a common property resource for fishers and common property users. The multi-stakeholder prescription for mutual and regional governance reflects this goal, though variation is possible between regions.

In the Northern Southeast Regional Aquaculture Association (NSRAA), for example, each of the gear types (troll, gill-net, and purse seine) elects five members. Ten other board members are appointed from this core body, representing aboriginal organizations, municipalities, sports fisheries, processors, conservationists, subsistence fishers, and the public at large (two members). This group of 25 elects an executive board of eight.

The NSRAA owns and operates the hatcheries in its region. But, as indicated earlier, ocean ranching involves a lot more than just the hatcheries. Associations were given significant planning responsibilities, including the design of a long-range management plan to enhance and manage salmon in a way that would create sustainable economic benefits for fishers and other users. The target of the NSRAA plan — to have 85 percent of the fish produced in their region available for harvesting as a common property resource — is being achieved. Traditional conflicts over how many fish are allocated to each group of users, especially the gear types, have been radically reduced by applying innovative management techniques designed and agreed to by the fishers themselves.

Making all of this work requires money. The cost to plan, construct, and operate hatcheries is high. The professional expertise and management to undertake the planning, site the release points, determine allocations, and

manage nonprofit harvests is an ongoing operating expense. Within a very short time after the regional associations were established, it became apparent that financing was going to be a problem. Conventional banks were not interested in financing a new and untested business.

The first problem was collecting capital to build the hatchery and related infrastructure, not a simple matter in remote coastal sites. The initial solution was to set up a State Fisheries Enhancement Loan Fund to get low-interest credit to the associations. Six- to ten-year holidays for payment of interest and principal were designed into the loans. Given the long lead time before revenue could be expected, this was a crucial feature; without patient capital, nothing would have happened.

However, by 1980 it was apparent that low-cost debt financing was not going to be enough to cover development and operating costs. The enabling legislation had provided for voluntary self-taxation of fishers, but this was not proving to be a steady or sufficient source of revenue. Viability demanded a reliable long-term source of equity and operating capital.

The solution the fishers devised was unprecedented: they demanded the state government put a mandatory tax on all licensed fishers. The regulations that were adopted required fishers to place a mandatory tax upon themselves. They had the choice of 2 or 3 percent tax on the value of the salmon they landed, and the rate chosen had to be approved by a majority of the permit holders within the region. Fish buyers collect the tax and send the proceeds to the government, which in turn disperses it back to the association for the region in which the fish were caught.

The other key revenue flow comes from allocating a portion of salmon for the nonprofit body. The original legislation let associations harvest the early returns of salmon for broodstock and for sale, the proceeds of which go directly to the association to offset operating costs.

The state government's responsive legislative and financial role has been fundamental to launching the process. Also important, it retains control of issuing permits for the transportation of fish and is responsible for measures to protect the genetic integrity of the wild stock. Without question, these regulations have at times been a source of friction, but the consensus is that the overall effect is positive. Indeed, Pete Esquiro, manager of the Northern Southeast Regional Aquaculture Association since its inception, has suggested that there were times when having the state filling this regulatory role prevented people from damaging their own interests.

The results achieved by the NSRAA are among the most impressive of the five regional associations.

- By 1980, its \$5 million in original capital was paid off.

- The target of 70 percent of the fish being harvested as a common property resource has been regularly exceeded, averaging between 80 percent and 85 percent.
- Annual operating costs and some capital improvements are being covered by association cost-recovery harvests (10 percent of the total annual return) and enhancement tax revenues. Five percent of the total return is used for broodstock.
- As of 2000 the association had a \$1.5-million capital reserve set aside.
- NSRAA has 23 full-time employees and a further 20 to 30 seasonal and part-time employees. Positions include biologists, fish culturalists, maintenance engineers, hatchery managers, tagging supervisors, and general laborers. There are also administrative, accounting, and shipping positions.
- Of significant importance, the self-imposed tax of \$22 million between 1980 and 2000 ensured the equity and working capital needed to produce an increased harvest yield of \$122 million.
- The association has developed an organizational culture driven by the goal of meeting the needs of fishers and communities.

In an era when the public's image of Alaska is dominated by Sarah Palin's talk of rugged individualists and their wholesome families living close to the land and far from the reach of big government raiding their purse, the story of restoring salmon and defending the commons is a breath of fresh air. Without solidarity and cooperative cross-sector investment of time, effort, and money the Alaskan fishing commons would likely have continued to decline.

Transition Factors

The political influence of persistent, active citizens and fishers is a central underlying factor in this story. Even before Alaska became a state, citizens' frustration with distant, disconnected, and incompetent management of the resources they depended on for a livelihood was so profound that it became a key issue in the push for statehood. Their involvement continued long after that goal was achieved, leading to the creation of the first action plan, the push for decentralized multi-stakeholder associations in each region, and the self-taxation model that created the equity so necessary to securing the long-term viability of restoration efforts. Perhaps most strategic was the outright rejection, by fishers and many citizens groups, of the private ownership model being applied to ocean ranching. Cooperation and mutuality were fostered by the focus on achieving a public good—the restoration

of a common property resource. It is hard to imagine a multinational like Weyerhaeuser arguing for the state to increase its tax load in order to ensure success. Yet private local fishers, rooted and connected to their place, with their livelihoods at stake and their cultural knowledge of the environment to leverage, did just that. Elinor Ostrom would not be surprised.

Equally important was the state's capacity to take leadership, listen, and address financing issues intelligently and flexibly. As well, state officials proved flexible when necessary, adapting rules and regulations to achieve the central goal of restoring the common property resource for community benefit. By delegating ownership and management responsibilities to regional associations, they unleashed the energy and commitment of stakeholders to restore the commons where they lived. By retaining key regulatory functions, they were able to create a framework that ensured the ecological integrity of the wild stocks was maintained and legislation respected.

Resilience Reflections

One of the remarkable achievements of the Alaska story is the level of *innovation, experimentation, and learning* embedded in the process of restoring the salmon within a common property framework. This was not without risks. Environmentalists and professionals of many kinds had real worries about the contamination of wild stocks by ranched salmon, fearing that genetic diversity would be eroded. Indeed, these concerns were shared by the fishers; they were the most stringent critics of state decisions on hatchery siting and species selection in the early days.

Nevertheless, once the centralized state-led approach was dropped in favor of the regional associations, the common interests and knowledge of the state, fishers, and other resource users were able to unite in a *modularized* system of *overlapping governance structures* that facilitated experimentation and shared learning. This collective wisdom and skill meant planning and management could be more effectively tailored to the *ecological and species variation* in each region. Most importantly, siting decisions for hatcheries and imprinting pens were improved, thus minimizing contact between wild stock and ocean-rancher fish. Genetic *diversity* has been protected; wild stocks have thrived, while the *diversity* and overall population of stocks has been radically expanded.

Feedback loops between regional and state actors, and between a *diversity* of stakeholders in each region, have been tightened. In the process, *social capital* has been significantly strengthened. As evidence, one need only note the reduction in conflict between resource users, the radical improvement in resource planning and management, and the exponential increase in self-reliance and socio-economic benefit.

Impacts on the Household Economy: The Hartwick Family

Thus far the pathways identified have saved the Hartwick family \$123,392 over 10 years, about \$12,400 per year. When it comes to food being produced on a sustainable basis, however, the direct costs to the family will go up, not down. Fair pricing to sustain livelihoods and the environmental criteria to sustain the planet require setting prices to cover these costs, something that is largely absent in the mainstream global food system.

How to calculate such a cost is complex and is not explored here. Nevertheless, given the purpose of exploring the impacts of alternative pathways on the Hartwick family household we offer a modest formulation to calculate an increase in the cost of food.

Consider two pieces of evidence cited in the introduction to this chapter. First, recall the declining percentage of the food dollar captured by farmers and the tiny percentage of our food dollar that gets to the farmer.

On average, US farmers get back less than 20 cents of every dollar spent on food. Sixty years ago they received almost 40 cents, and as recently as 1981 the figure was still 31 cents on the dollar. The iniquitous implication cannot be ignored by any citizen concerned with basic notions of fair trade, sustainable livelihoods for farmers, or long-term food security. If 10 percent of consumers' disposable income goes for food purchases, and 20 percent of that amount gets to farmers, only 2 percent of a consumer dollar actually ends up with the farmer.

Second, consider how the average percentage of disposable income we spend on food has steadily declined. In the United States today, an average person spends 9.9 percent of disposable income on food; 80 years ago, 25 percent was the share.

Without determining the fair price needed to allow a full-time farmer to earn a reasonable income, and without making adjustments for the costs of transitioning to a low-carbon system of production, let's assume a 50 percent rise in the amount of household disposable income devoted to food. Assuming the Hartwick family is American, they would start spending 14.7 percent of their income on food, up from 9.9 percent. This is only 1.1 percent higher than the average household spends on food in France, and 2.8 percent lower than in South Africa.

Now let us recall the economic circumstances of the Hartwicks. Together they make the net equivalent after taxes of about \$30 per hour, about \$225 per day. The combined disposable income of the two parents is \$62,400. Applying the 9.9 percent US average would suggest an expenditure of

\$6,178. At the higher 14.7 percent, the expenditure would rise to \$9,173, an increase of \$2,995 dollars per year.

Table 6.1 connects the dots we have been plotting since Chapter 3. Even with more disposable income going to food, the cumulative impact of the reforms introduced is impressive. And assuming the Hartwicks had access to some land for growing food, they could choose to translate some of their time savings of 312 hours per year into home-grown production.

A person can grow an impressive amount of food on a small plot. A San Francisco-based urban farmer reclaimed a 4,360-square-foot (one-tenth of an acre) plot of concrete and relatively lifeless soil. Five years later this small urban farm yielded three tons of food, which does not include the crop from several fruit trees that are not yet producing. If the Hartwicks decided to try their hands at intensive urban farming, they would be making money and becoming healthier in the process.

In the last four chapters we have examined innovations in finance, shelter, energy and food. We now turn our attention to shaping the places we live, drawing from place-based strategies that build citizen engagement and multi-sector collaboration in order to address difficult challenges specific to one's own community and region.

Table 6.1 The Hartwick Family: Cumulative 10-Year Savings when Food Prices Increased				
Comparison of JAK Bank and Convention Bank Mortgage Costs	Bank interest charges (8.05%)	JAK fee charges	Savings \$	Savings in hours
Last 10 years of 25-year mortgage of \$200,000	\$91,821	\$24,731	\$67,090	2,236
Impact of land trust on financing costs (130,000) in last 10 years	\$67,530	\$17,780	\$49,750	1658
Actual capital cost saving of land to the householder	\$70,000	\$70,000	\$ 70,000	2333
Kirklees conservation savings over 10 years			\$ 3,642	121
Net savings due to CLT, JAK, and Kirklees model			\$123,392	4113
Subtract Increased Food Costs over 10 Years			-29,950	
TEN YEAR NET SAVINGS			\$93,442	3,115 hrs