

UNIVERSITY OF NORTH CAROLINA at ASHEVILLE

RELOCALIZATION OF THE FOOD SYSTEM:
BACK TO A SUSTAINABLE FUTURE

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RELOCALIZATION OF THE FOOD SYSTEM
BACK TO A SUSTAINABLE FUTURE

by

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Abstract

This thesis examines the current industrial food system as a starting point in advocating for relocalization efforts to revamp how food is brought to the consumer. In presenting a case for a wholesale adoption of sustainable agricultural practices, the damaging elements of intensive farming to the environment, economy, community, and human health are contrasted to the benefits of a sustainable, local system. Discussion on communities that have embraced relocalization confirms that the core tenets of sustainability are supported. Acknowledging that site-specificity is crucial in crafting individual structures, the different components that may comprise a local food system are discussed. Compromising factors to relocalization success are considered.

Introduction and Background

Eating is an agricultural act.¹
Wendell Berry

Not a seat in the room was empty and everyone came to get the job done. Participants, representing a wide array of professional, educational, and personal backgrounds, settled upon policies they hoped would be reflective of the general opinion regarding what needed to be done. They had campaigned hard to be here, and having won a seat at the table, it was time to start discussions on the *Farm Bill*. There were no surprises on the general topics considered: farmer support, foreign aid, conservation measures, and domestic food assistance — the usual. But, shockingly, at the end of the day, there was consensus: what Americans needed was a Farm Bill that would produce a healthier people and planet, one that would transform a food system that was no longer working for the general good, and create and support one that was small-scale, regional and sustainable. Unfortunately, this discussion was taking place in *Marian Nestle's* graduate-level food studies course at New York University, not in the halls of Congress in Washington, D.C., where legislation such as this needs to be enacted.²

Conversations revolving around food, farming, health, environmental justice, ethics and the like have reached a fever pitch. A recent conference in February 2013, “Changing the Way We Eat,” attracted a diverse cross section of participants including farmers, professors, activists, small business owners and corporate CEOs alike. Together, they addressed the current food system in the United States. Topics included a wide range of issues and, while not ending the conference with any unified action plan to “change the way we eat,” there was consensus: our food system is “broken.”³

There is a growing food movement comprised of environmentalists, public health experts, economists, civic leaders, elected officials, backyard growers, family farmers, urban gardeners, activists, and people who just like to eat; each and every constituency brings a vital perspective, agenda and energy to the dialogue. The issues are complex and the debate is oft-times heated, sometimes violent, and always passionate. Agricultural issues come with their own vocabulary and noted experts. This thesis is no different, and for ease of understanding and perspective, words with special contextual meaning and names of noted experts are italicized and defined in the Glossary beginning on page 55.

The existing food paradigm, driven by *agribusiness* leaders and their lobbyists, is under constant attack to change. Regardless of the genesis for discontent, such as the safe usage of *genetically modified organisms* (GMOs), ethics about animal *factory farming*, food-based triggers for childhood obesity and adult disease, food access for millions of people living in poverty, or environmental and food safety concerns, localizing our food system offers solutions to move the country towards the path of an environmentally sound, economically vibrant, and equitably balanced model – a truly *sustainable agricultural* system.⁴

Industrial agriculture, which produces more than 99% of all food in the United States,⁵ is not sustainable from an economic, health nor environmental perspective. Not only are we producing unhealthy products in unsustainable ways, the majority of farmers are nearing the age of retirement. The average age of the American farmer is 57, and getting even older.⁶ Replacing these farmers is challenging; new farmers are increasingly unable to enter the profession due to financial constraints of land purchase, taxation and capital investments.⁷ Small family farms and *beginning farmers* not only need assistance

from national agricultural policies that support small farming operations, but also provide access to federal loan assistance, research and educational support. Perhaps most importantly, farmers need an enlightened local consumer base that not only loves the idea of a local food system, but also understands its role in making it happen.

A local and sustainable food system is both an economic driver in helping communities and individuals thrive, as well as the basis for implementing sound environmental practices that will be viable into the uncertain future. Existing agricultural policy is beginning to address issues of sustainability, although more substantial measures must be enacted to bring a flourishing local food movement as well as the farmers with the sustainable vision to make it a reality. Current laws and policies actually prohibit small-scale farmers from competing with the industrial giants. Farm policy for the 21st century must prioritize *relocalizing* our food system utilizing sustainable methods. The benefits to consumers, communities and the environment are profound, and once understood, the existing agribusiness model will be appreciated for the folly it truly is.

Sustainability Defined

The ultimate test of man's conscience may be his willingness to sacrifice something today for future generations whose words of thanks will not be heard.⁸

Gaylord Nelson

The concept of “sustainability” captures the imagination and endorsement of a large cast of characters: governments, businesses and communities all address policies, practices and agendas that are sustainability-centric. The United Nations advocates for sustainable development as evidenced by its 1992 adoption of Agenda 21, a voluntary, non-binding resolution addressing sustainable development.⁹ The 2012 Conference on

Sustainable Development¹⁰ (informally known as Rio+20) reaffirmed the 1992 resolution. Corporations large and small hire sustainability specialists¹¹ to “green” their operations, and communities work on sustainable initiatives through non-profit and public-private partnerships.¹² Universities meet the growing interest by offering sustainability majors.¹³ And not to be left behind, community colleges offer classes running the gamut from re-skilling a “green” workforce to *permaculture* design certifications for homeowners.¹⁴ And of course, consumers embrace sustainable products, services and lifestyles. The Internet is saturated with blogs, websites, and advertisements from A – Z, touting a sustainable something; from architecture, beer, and cleaners, to “X-mas” trees, yarn, and zoos.

But what exactly does it mean to be sustainable? The word sustain is derived from the Latin *sustinere*, meaning hold up, support, maintain or preserve.¹⁵ In layman’s terms, the Brundtland Commission crafted one of the most cogent definitions in *Our Common Future: Report of the World Commission on Environment and Development*. Simply put, sustainable development is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”¹⁶ Embodied in the sentiment of the document is the need to set limitations on seemingly unbridled technological advancement for the protection of the environment and conservation of finite natural resources, a task not easily negotiated between the competing demands and expectations of developed and third world countries alike.¹⁷

Why Sustainability?

The future will be green, or not at all. This truth lies at the heart of humankind's most pressing challenge: to learn to live in harmony with the Earth on a genuinely sustainable basis.¹⁸

Sir Jonathon Porritt

In his collections of essays on human nature and the *agrarian tradition*, *Wendell Berry* drives home the concept that a civilization's success is dependent upon a complete understanding and appreciation of the natural world. "Land that is in human use must be lovingly used; it requires intimate knowledge, attention, and care."¹⁹ The benefits received from thoughtful land use for agricultural, residential, industrial and commercial purposes as well as the necessary infrastructure to support such use (i.e., roads, utilities, etc) are obvious; however, they are only a fraction of what we receive from the land. The ecological services that we depend upon (air and water purification, climate moderation and a habitat for other species that supports *biodiversity*²⁰) are seamlessly provided in a healthy *ecosystem*.

America's scorecard in sound stewardship of the natural system is not good:

- More than half of the *wetlands* (54%) in the conterminous United States had been filled or drained for development or agricultural purposes by 1984.²¹ Federal programs authorized in the 1985 and 1990 Farm Bills have slowed the trend although losses continue. Enhanced conservation and restoration efforts are necessary,²²
- Soil quality is constantly compromised by erosion and overgrazing, caused by having too many animals dependent on available pasture lands,²³
- Old growth forests, excellent sources for a wide range of ecological services,²⁴ are disappearing from the landscape at devastating rates,^{25, 26}
- Water resources are being depleted through overuse at increasing rates^{27, 28} and degraded through industrial/agricultural pollution and human impacts on the hydrologic (water) cycle,²⁹ and

- Biodiversity is being challenged at devastating rates, with extinctions outpacing new species evolution due to climate change and human interference.³⁰

The problems are complex, and no silver bullet exists to remedy the situation. There is no “if we just” solution available. A multidisciplinary approach is necessary to reverse these disturbing trends, an approach that includes sociology, agronomy, forestry, political policy, economics and ecology,³¹ and perhaps a wizard to orchestrate the collaboration.

This country has been having the sustainability dialogue for many years, without much to show for it. The Environmental Protection Agency (EPA), a favorite target of Republican administrations and legislators has either been hobbled to levels of pure ineffectiveness or assaulted with legislative road-blocking maneuvers aimed at forestalling any meaningful environmental regulations from taking effect; supporters of the Tea Party-led caucus in the Republican congress say “Agenda 21 is nothing short of treason,”³² and a recent attempt at a new Farm Bill, voted on and passed in the House of Representatives, cuts billions of dollars from long-standing conservation programs, and enhances subsidy/price support programs for commodity farmers.³³ One positive development is that now more people are thinking about sustainable practices as the way forward. And some are even doing something about it, notably in the area of agriculture, as evidenced by an array of food-focused movements.

Creating a vibrant future is dependent on incorporating the three core tenets of sustainability when crafting new policies: environment, economy and equality.

- Environmental sustainability includes not only *not* depleting natural resources for future generations' use, but also not polluting nor permanently damaging natural ecosystems.
- Economic sustainability recognizes the importance of creating employment opportunities that will not jeopardize long-term economic health.
- Equality addresses parity in access to resources; it acknowledges that in a healthy community, individual needs and the needs of the population as a whole are interdependent. If one suffers, the other does as well.³⁴

I propose a fourth core tenet should be included – education. The benefits of a sustainable system should be self-evident, but certainly are not. Therefore, public education that communicates the interdependency of the core principles of sustainability will help facilitate the paradigm shift that is necessary for a thriving society.³⁵ The local food movement, based on these four core principles, promises to address the goals spelled out to craft a sustainable future.

The irony is not lost in recognizing that the ultimate fate for a thriving civilization rests upon a global movement to adopt sustainable solutions in providing for the world population. One major step towards sustainability is a shift away from the industrial-scaled agricultural paradigm towards a more localized system. There is an emerging awareness of and appropriate resistance to accepting the existing paradigm of food production. Outcries over the non-ethical treatment of factory farmed animals and demand for truth in food labeling to disclose genetically modified organisms, or the outright banning of GMO seed in other countries, make the environment ripe to take a critical look

at how our food arrives on the table and to institute the necessary changes in how to feed the world.

Sustainable Agriculture

If we are going to start calling industrial corn sustainable, then we might as well say that petroleum is a renewable resource if you're willing to wait long enough.³⁶

Catherine Friend

The actual definition of sustainable agriculture varies depending on who is asked, and ranges from simply conserving resources to a full systems approach, acknowledging the interwoven roles of individual farmers to the entire ecosystem.^{37, 38}

Stuart Hill, professor and founder of the Ecological Agricultural Project, the premier Canadian resource center on sustainability issues, focuses on the whole systems approach; he emphasizes the importance of behavior modification to achieve a truly sustainable system. Likening industrialized societies' ruinous exploitation of limited natural resources to drug addiction, he defines sustainable agriculture in stringent terms:

- Prioritize meeting the basic needs of all people over the greed of a few,
- Control population density to levels below the actual carrying capacity of the natural world,
- Manage consumption patterns to allow for resource renewal,
- Conserve and recycle nonrenewable inventories, and
- Oversee environmental impact in such a way to allow for recovery and evolution of the natural systems.³⁹

Hill further breaks down the idea of sustainability to two levels, shallow (short term, symbolic) and deep (long-term, fundamental). Shallow sustainability relies on efficiency and substitution strategies, asking little in terms of behavior modification. Instead, it supports magical thinking by offering magic-bullet solutions, curative to the immediate problems, but offering no long-lasting remedy. Deep sustainability, on the other hand, challenges us to solve problems through prevention, to create healthy environments through redesign of the system itself, striving for optimization over maximization.⁴⁰ Achieving deep sustainability is certainly an ambitious target, and perhaps too idealistic for the political culture of today. Nonetheless, it must be the ultimate goal in a united effort to reshape and relocalize the food system.

In everyday language, sustainable agriculture encompasses farming practices that are ecologically clean, *low-input*, and rely on biological rather than synthetic chemical solutions. It may be *organic*, although that is not a requirement.

The term “sustainable agriculture” is inherently charged with emotion and controversy. Some members of the agricultural community internalize the term and hear personal criticism when defending their farming methods.⁴¹ Because there is such difficulty in crafting a unified idea of what sustainable agriculture is, *John Ikerd*, in the best interest of moving the sustainability model forward, dismissed the importance of actually pinpointing the concept. He stated:

I concluded some time ago that we didn't need to spend much more time and effort attempting to define sustainability. We have sufficient commonality among our different understandings of it to continue moving in the right general direction, even if we are not yet all moving toward precisely the same destination by the same route. More recently, I have come to the conclusion that we may never have a generally accepted definition of sustainability, and perhaps, we don't need one.⁴²

A more formal understanding of the concept finally took hold as Congress incorporated sustainability measures into the Farm Bill. Passage of the Food, Agriculture, Conservation, and Trade Act of 1990 (FACTA) broadly defined sustainable agriculture in economic, environmental and communal terms, stressing the importance of the long-term health and viability of all three.⁴³

In addition to providing the foundational governmental financial support, the bill also introduced a widely accepted “formal definition” of sustainable agriculture. The Food, Agriculture, Conservation, and Trade Act of 1990, Public Law 101-624, Title XVI, Subtitle A, Section 1603 defines it as an integrated system of plant and animal production practices having a site-specific application that over the long term will:

- Satisfy human food and fiber needs.
- Enhance environmental quality and the natural resource base upon which the agricultural economy depends.
- Make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls.
- Sustain the economic viability of farm operations.
- Enhance the quality of life for farmers and society as a whole.⁴⁴

Perhaps the most significant component in the Farm Bill verbiage is that sustainable practices are “site-specific,” predicated on the fact that environmental, economic, and communal conditions are unique to specific locations. Also ingrained in “site” are consumer preferences based on family traditions, cultural and ethnic identity and overall “personality” of the individual and the general populace.

Benefits of Sustainable Agriculture – Greater Than the Sum of its Parts

Is a well groomed, ecologically kept, sustainably fertile farm any less cultural, any less artful, than paintings of fat angels on church ceilings?⁴⁵

Gene Logsdon

We have every reason to get the agricultural paradigm “right.” There is a rich history of prior civilizations that have failed due to misallocation, misunderstanding, or misuse of their natural resources. *Wes Jackson*, founder of The Land Institute, traces man’s unsustainable relationship with the land back to the Fertile Crescent.⁴⁶ Once capable of producing enough food to provide for a complex civilization, today the Middle East is a vast desert, dependent on food imports to sustain its population.⁴⁷ Jared Diamond’s best selling book, *Collapse*, makes similar assertions regarding the fates of the Polynesians of Pitcairn Island as well as the inhabitants of Easter Island. He cautions that more dire consequences will result from the mismanagement of the land through non-sustainable agricultural use, offering the disintegration of the Mayan civilization as proof.⁴⁸ The world population recently topped 7 billion, and is projected to be over 10 billion by the turn of the next century,⁴⁹ a stark reminder that arable land is a limited resource. It is this finite availability of productive agricultural lands that demands a more sustainable method of food production.⁵⁰ G.C. Wilkin, professor and agriculture researcher stated, “Sustainable agriculture is not only worth pursuing, it is inevitable.”⁵¹ The benefits to the environment, economy, community, overall health and just good taste are profound. The undeniability of the need for a wholesale transition to sustainable farming techniques, when evaluated in its totality, will become evident.

Environment

When you look at environmental problems in the U.S., nearly all of them have their source in food production and in particular meat production. And factory farming is "optimal" only as long as degrading waterways is free.⁵²
Gidon Eshel

The environmental impact of industrial farming is widely known, well documented, and rarely disputed.⁵³ Lasting repercussions of synthetic fertilizer usage is evidenced in the *eutrophication* of waterways,⁵⁴ contamination of local water supply systems and degradation of air quality,⁵⁵ as well as a major atmospheric contributor of the greenhouse gas (GHG), nitrous oxide.^{56, 57} While nitrous oxide does occur naturally, levels have increased by 20% since the 1940s and the marked increase in synthetic fertilizer usage.⁵⁸ Pesticides, certainly not meant for human consumption, routinely find their way into well water,⁵⁹ but even more disturbing, they don't discriminate, killing valuable insects that are critical in food production as well as the intended destructive pests.⁶⁰ Beneficial soil microbes, vital in maintaining healthy soils fall victim to pesticide use⁶¹ and it is speculated that pollinators, without which most fruits and vegetables would cease to grow, are dying off, due in part to pesticide poisoning.⁶² Even the manufacture of these chemicals and pesticides is ecologically harmful. Fertilizer production is energy intensive,⁶³ generates high levels of GHG emissions^{64, 65} and is inherently dangerous. The massive Union Carbide industrial accident that killed over 10 thousand people, and inflicted untold damage to the local environment, is an easily discoverable example of just how destructive the manufacturing process can be; but there have been thousands of smaller spills and accidents that aren't sensational enough on their own to get the attention they should, each and every one exacting its toll on local ecosystems.⁶⁶ The sad reality is

that as soil is degraded from chemical fertilizers, the more dependent the farmer becomes on continued fertilizer usage to keep the soil productive. A Catch-22 scenario has developed, demanding a wholesale change in how our food is produced to mitigate the negative impacts that our present fertilizer usage exacts.⁶⁷

Soil erosion, a problem since before the Dust Bowl, is a multi-billion dollar problem today.⁶⁸ Land degradation due to erosion is ruining millions of acres of farmland each year⁶⁹ and despite aggressive conservation efforts, farms still lose topsoil faster than it is formed.⁷⁰ Even when industrial farmers adopt *no-till* practices to reduce erosion, they invariably douse the land with herbicides to kill the weeds before sowing the next harvest.⁷¹ American farm policy gives with one hand, and inadvertently, takes away with the other. While conservation policies attempt to remove highly erodible acreage from the farming inventory, federal commodity programs can actually encourage farmers to forgo *conservation payments* in lieu of higher income potential by growing crops that receive the highest levels of price supports.⁷² Unfortunately, these crops – corn, wheat and cotton – are also the most erosive to the land.⁷³ Furthermore, the intensive agricultural practice of *monocropping* degrades the soil, and therefore exacerbates the erosion problem even more.⁷⁴

Irrigation systems are necessary for the production of 40% of the global food supply,⁷⁵ (55% of total crop sales in the United States in the 2007 Ag Census were irrigated)⁷⁶ but they come at a high cost. Depletion of underground aquifers outpaces recharge capability;⁷⁷ dwindling water resources jeopardize continuity of farm and residential communities alike.⁷⁸ As water levels drop in aquifers, farmers are forced to drill their wells deeper and deeper at enormous expense to guarantee a continuous supply;

unable to afford such capital investments, small farmers either shift to production of less profitable “*dry land*” crop varieties, or quit farming altogether.⁷⁹ There are other calamitous consequences as well. Most notably, *salinization* of farmlands is a naturally occurring phenomenon;⁸⁰ there are dissolved solids (mineral salts) in water, regardless of the source, but the concentration of these solids delivered through irrigation systems far outweighs the concentration brought through natural precipitation.⁸¹ Soil salinization occurs as the crops absorb the water, but not the salts, instead leaving them behind. Irrigation can also affect the underlying water table, causing it to rise closer to the surface. High water tables experience greater water loss through evaporation, which again, removes the water, but not the solids. Many irrigated fields experience increased soil salinization caused by both methods. Increased build up of salts causes lower crop yields, and in extreme cases, renders the soil completely sterile.⁸²

Monocropping is perhaps the foundation for why industrial farming is not sustainable. Natural biodiversity, all the species of plants, animals and microorganisms that exist and interact in an ecosystem, provides *ecological services* that not only protect and preserve, but also enable the system to thrive. When an environment is simplified, as in the case with the majority of intensive farming operations in the United States,⁸³ biodiversity is destroyed and nature is no longer capable of doing its job. This creates an expensive and suboptimal environment on which to farm. Researchers warn of environmental vulnerabilities associated with the genetic uniformity characteristic of intensive agriculture; the more marginal the land, which is more and more the case, the more genetic diversity is needed.⁸⁴ Instead, expensive chemical *inputs* are dumped on the land. And then the soil becomes more depleted, and salinized. And then more water is

needed to flush the salt out of the soil. And then the waterways get more polluted with agricultural runoff. And...and...and... Industrial agriculture is certainly a fool's errand.

Intensive factory farming of livestock exacts a heavy toll as well. *Concentrated animal feeding operations (CAFOs)* are especially egregious offenders on the environmental front. In large scale CAFOs,⁸⁵ the sheer volume of manure produced by thousands of animals stuffed into these facilities is unable to be recycled naturally due to land constraints. Instead, manure is stored as liquid slurry in lagoons or ponds. Bacteria slowly break down the manure, releasing methane gasses and nitrous oxide into the atmosphere at devastating rates.⁸⁶ While common perception is that carbon dioxide is the major threat to a stable climate, methane threatens with 23 times more global warming potential than carbon dioxide and nitrous oxide an astounding 296 times more.⁸⁷

Along with climate change, the integrity of the soil and quality of the air and water are also matters of deep concern. Intensive animal agriculture, both from the impact of the livestock itself to the raising of feed crops for their fodder, is extremely detrimental to soil systems. Poorly managed livestock grazing⁸⁸ takes its toll through soil compaction which in turn leads to the soils' inability to hold water, thus creating a convoluted situation: livestock compacts the soil, rain water cannot be absorbed, grasses and plants cannot grow, weather comes and either washes or blows the topsoil away.⁸⁹ Dreaded erosion is often an unavoidable byproduct.

Precious water supplies fare no better with the far-reaching consequences of factory farming operations. To support intensive livestock operation's requirement for animal fodder, millions of acres, over 66% of the grain produced in the US,⁹⁰ is grown and fed to livestock. Demand for livestock feed is expected to steadily increase as the rest of

the world adopts a more western diet;⁹¹ more demand means more *monoculture* grain production. This grain requires chemical fertilizers and pesticides to sustain growth year after year. Runoff from these millions of acres eventually finds its way into the Mississippi River and ultimately into the Gulf of Mexico where it has created an 8,000 square mile “*dead zone*,”⁹² and frequent spills from manure storage lagoons into fresh creeks, streams, lakes and rivers and leakage from poorly constructed storage systems into the groundwater supply⁹³ pollute the water on a consistent basis. Where there’s manure, there’s ammonia, residuals from antibiotics that are routinely fed to livestock at subtherapeutic dosages, and other toxins. This cocktail of waste that is present in our water supply, regardless of how it got there in the first place, whether through nature’s work, accidental spills or intentional dumping, is an environmental disaster.⁹⁴ Even the excessive packaging that is required for shipping and marketing products in the industrial system has damaging impacts on the environment – more waste is created, most of it non-biodegradable in the landfill and toxic if incinerated.⁹⁵

Sustainable agriculture practices, on the other hand, owing much to traditional *agroecosystems* maintained by indigenous peoples around the world, honor biodiversity tenets and are greatly dependent on the symbiotic relationships that it preserves.⁹⁶ By improving farmland biodiversity, synthetic inputs are not necessary. Crops, carefully selected for a particular region, naturally provide *ecological services* such as pest control, water management, soil fertility and resistance to herbivores. *Conservation tillage* practices,^{97,98} mulching, *cover-cropping* in the offseason,⁹⁹ *smother cropping* during the growing season,¹⁰⁰ *intercropping* and *crop rotation*¹⁰¹ naturally maintain healthy, organic-rich soils. Pollinators and biological pest control agents (a component of *integrated pest*

management) are attracted by the variety of vegetation.¹⁰² Carefully integrating appropriate levels of livestock into the system increases symbiotic efficiencies, manure is at the ready for composting and fertilization, crop residues serve as fodder and bedding, poultry assist in pest management, and otherwise unusable acreage can be used for grazing.¹⁰³ And the farmer's risk is reduced; one crop might fail, but the likelihood of all crops failing is slight.¹⁰⁴

Economic Viability

Skyrocketing consumer demand for local and regional food is an economic opportunity for America's farmers and ranchers.¹⁰⁵

Tom Vilsak

Just like there are winners and losers in the world of sports, there are winners and losers in economic prosperity as well. The trouble with industrial agriculture is that there are too few winners, and far too many losers. Over the years, turbo-charged by the industrial revolution, a local-centric agricultural system, supporting farm families and the community they lived in, has morphed into a transnational corporate behemoth. As the pathway to profitable farming became more dependent on economies of scale, large capital investments,¹⁰⁶ and preferential treatment from government farm policies that reward "big,"¹⁰⁷ the number of farms precipitously dropped. There were close to 6 million farms by the end of World War II, 2% were over 1,000 acres, and 8% were greater than 500;¹⁰⁸ today, as of the latest available census data,¹⁰⁹ there are just over 2 million farms, total, with roughly 8% at least 1,000 acres, and 15% at least 500.¹¹⁰

Farm consolidation has not directly affected the consumer, not as far as the quantity of food available on grocery store shelves. But the consolidation of millions of

individual farms, once vital components of communities, has taken its economic toll. Hand in hand with the advent of industrial farming, there was an economic loss to communities as the network of local businesses that once supported the family farm were no longer needed.¹¹¹ Instead of purchasing supplies from local businesses, corporate-ownership dictates where inputs are sourced;¹¹² and in *vertically-integrated* operations, those inputs are obtained within the system whenever economically advantageous. Communities, once bustling with feed and supply stores, equipment repair shops, blacksmiths, and local slaughterhouses are no longer vibrant, as these previously viable businesses have closed their doors or moved elsewhere. This creates an additional hardship on the few small farms that are still working, as they need to travel greater distances to find the goods and services to run their operations.¹¹³

Overall, provisions in agricultural price support programs favor large agribusiness operations, making it difficult for the small family farm to compete.¹¹⁴ Unable to support continued operations on such low profit margins, small-scale farms are forced to find revenue elsewhere. They either supplement farm income with additional revenue sources or stop farming altogether and move to where they find employment, further diminishing demand for local goods and services and allowing the cycle of communal economic decline to continue.¹¹⁵ Wendell Berry sums up the industrial agricultural model best calling it an “economic siphon” as it “suck[s] value out of the local landscape and the local community into distant bank accounts.”¹¹⁶

Advocates of sustainable agriculture have a legitimate stance to question the rationality of a global food system and the economic ideal it represents; they refuse to buy into the notion that the “demise of family farms, the degradation of the rural environment,

and the decay of rural communities can be so easily justified as simply declaring them the inevitable consequences of a free market economy, which we must blindly trust because, as if by divine decree, it somehow makes us all better off,” a sentiment voiced by John Ikerd.¹¹⁷

Rather than measuring economic prosperity on a single variable, income, a *triple bottom line* is the basis for determining success. Profit is naturally still important, but so too are honoring environmental stewardship and overall health and resilience of the local community. The balance of all three dictates decisions; no longer are maximum profit and growth the end goal to shoot for. Common sense assures that economic security follows hand in hand with being in the “right relationship” with people and nature.¹¹⁸ The benefit of a triple-bottom-line accounting to a localized economy becomes obvious when parsed in such terms.

Social Equity - Quality of life - Community

If more of us valued food and cheer and song above hoarded gold,
it would be a merrier world.¹¹⁹

Thorin, (The Hobbit)

The centralized, nearly always remote, corporate ownership of the industrial farm has destroyed local communities. Large-scale farmers have cannibalized their very family-farm neighbors with brutal competitive tactics, forcing the small-scale farmers out of business. Large farms get even larger as they absorb the now-defunct neighboring operation, positioning themselves to stave off takeover from yet another competitor pursuing the same survival tactics.¹²⁰ The shuttered doors of ancillary businesses on Main Street, critical to the civic spirit of once vibrant cities and towns, are a stark reminder of

what used to be. These are all metaphors for everything wrong with agribusiness. Corporate managers, claiming that the costs of sustainable practices outweigh the benefits,¹²¹ remain slave to the corporate culture of maximizing profit; there is no room for cooperation, collaboration, or comradery, it's capitalism, competition, and control; constantly.

CAFOs offer the perfect example of profit over community interests. Methane and nitrous oxide gasses that are emitted from the manure lagoons cause great harm to the environment, but their existence to people is unnoticeable. Ammonia, on the other hand, is quite noxious and offensive to the olfactory senses. *VOCs*, *volatile organic compounds*, also form as manure breaks down. Both are in abundant supply in the manure slurry, endangering farm workers and the surrounding community alike.¹²² Employees, exposed to high levels of these air pollutants, suffer respiratory problems such as asthma or acute/chronic bronchitis as well as irritation to their skin, eyes, nose and throats. As high as 30% of factory farm workers are afflicted with respiratory disease.¹²³ Nearby community residents often complain of headaches, respiratory problems, nausea, eye irritation and general weakness when air currents shift and they find themselves in the odiferous path of downwind patterns.¹²⁴ Children living near CAFOs are nearly twice as likely to develop asthma as those who do not.¹²⁵ Citing reasons of expense, increased management requirements, or lack of regulation, corporate response, rather than remedying the situation, is to circle the wagons and wait for results of law suits or revised government regulations to settle the matter.¹²⁶ Either of which can take years to unfold, too long for many residents to stick it out to see if the solution is tolerable.

Food Inc., a tell-all, sobering documentary on the industrialized food system, sheds the light on factory farming in a particularly heartbreaking manner. Not only are the grim conditions that the livestock endure shown in detail, but the lives of the “farmers” and other employees are exposed as well. Undocumented poultry workers, afraid to ask for better working conditions, and *contract growers*, self-described as “indentured servants”, are certainly not paragons of just and equitable treatment.¹²⁷ Even the CAFO neighbors, unwitting victims, are affected. Many studies show that real estate values in close proximity are negatively impacted, losing in the range of 7-90%^{128, 129} of their market value. The closer to the CAFO, the steeper the decline in property value; although beyond three miles, the adverse effect is greatly diminished.¹³⁰

True sustainable agriculture looks quite different, the interaction between farmer, animal, consumer, employee, and land, is one of respect, stewardship and gratitude. Understanding the interdependence of all components, John Ikerd quotes Adam Smith in justifying the concept: “No society can surely be flourishing and happy, of which the far greater part of the members are poor and miserable.”¹³¹ Perhaps it’s necessary to get a bit philosophical when thinking about this third core tenet of sustainability – social equity can be a bit squishy to deal with in concrete terms – there is no empirical measure to know when it’s right. But when it is, there’s no mistaking it.

Social capital, a concept brought into the mainstream in Robert Putnam’s *Bowling Alone*, is used in assessing community cohesion and effectiveness of relationships that exist within. An ample supply leads to a highly functioning civil society; the reverse is true as well, a community whose social capital is sparse has little cohesion, and it functions in disarray.¹³² Communities that support sustainable agriculture also rank high in

social capital, valuing good, healthy food, but not at the expense of the environment or their fellow neighbors.¹³³ It's hard to discern which comes first, high social capital or sustainable agriculture: in places with strong social capital, farmers are more likely to adopt sustainable methods,¹³⁴ and those wanting to farm sustainably, seek community in which there is a strong social fabric, knowing that their chances of success are all the better.¹³⁵

Health of the Consumer (and Farmer)

Let food be thy medicine, thy medicine shall be thy food.¹³⁶
Hippocrates

One of the most pressing public health problems in the United States is obesity in both adults and children. Heart disease, cancer, diabetes, and hypertension are the leading causes of death in this country;¹³⁷ all these conditions are related to obesity.¹³⁸ High-calorie, nutrient-deficient, processed foods have become the dietary staple of families who have lost the connection with local, seasonal foods.¹³⁹ It's easy to make the link between the consumption of highly processed, fatty foods and being morbidly overweight, but obesity isn't the only culprit in health issues facing the nation. A less obvious connection between conventionally grown fare and crippling health conditions is borne out once the actual farming methods are factored into the equation.

The industrial food system has multiple triggers that challenge public health, from methods of production to the food itself. It's hard to imagine a more perilous system of meat production than that practiced by CAFOs, accounting for 99% of all meat eaten in this country.¹⁴⁰ While the negative health impacts on CAFO farm workers and nearby

neighbors were previously discussed (see page 20), the capacity for widespread harm to the general population is significant.

Outbreaks from food-borne pathogens, such as salmonella and campylobacter are becoming more common; while rarely fatal, complications of severe diarrhea and nausea are experienced by millions of Americans each year.¹⁴¹ E.coli and listeria infections are more deadly. The primary path for these bacteria to enter the food system is through meat,¹⁴² predominantly, factory-farmed meat.¹⁴³ The sheer concentration of livestock in the facilities makes the spread of the viruses ubiquitous. In an attempt to maintain a “healthy” animal population, or to keep them “healthy enough” to get them to slaughter, subtherapeutic levels of antibiotics are routinely administered. This practice is causing havoc with human health. According to the Food and Drug Administration (FDA), 80% of all antibiotics sold in this country are used on livestock,¹⁴⁴ and of that percentage, 90% are used as feed-additives to promote accelerated growth and in hopes of preventing viral outbreaks rather than in treatment of sick animals.¹⁴⁵ Antibiotic abuse on the factory farm has evolved into drug-resistant strains of the diseases that the CAFOs were trying to control. As infected meats enter the food supply, sickening millions, the medical community has little to offer, as the medicines that were developed to combat the illnesses have been rendered ineffectual through such abuse.¹⁴⁶ Most alarming, a new strain of the deadly MRSA virus is on the rise, and studies strongly suggest that it’s linked to hog CAFO operations.¹⁴⁷

While the overcrowding of animals in the CAFO is obviously problematic, the farmers’ attempt to keep the animals alive is understandable. What defies belief though, is what passes for an acceptable livestock-diet in these factories. In addition to unhealthy

amounts of grains and low-level dosages of antibiotics, most CAFO animals also receive a daily allotment of some combination of the following:

- same-species meat, rendered road-kill, horses, euthanized shelter cats and dogs, and other “*animal protein products*,”
- a slurry of manure, poultry litter, dirt, rocks, sand and/or wood, and
- plastic pellets to provide roughage as a digestive aid.¹⁴⁸

This practice, while totally legal, has led to fatal outcomes in the past. When a variant of Creutzfeldt-Jakob disease, known by the public as “Mad Cow,” erupted in the late 1980s, the food supply was quickly identified as the cause, specifically, the practice of same-species feeding. This practice has been modified to exclude the feeding of dead cattle to live cattle, although curious allowances for what can be fed¹⁴⁹ suggest the next mutation of the disease is possible.¹⁵⁰

Not only are the farming methods harmful to humans, but the meat itself is also less healthy. Just as diet is important to human well being, the same holds true for livestock. Pasture-raised animals produce meat, dairy products and eggs that are much healthier than their CAFO-raised counterparts.¹⁵¹ Cattle are natural grazers, they are meant to eat grasses, not grain. But because they fatten quite nicely (and quickly) on a grain-based diet, that’s what they are fed in industrial feedlots. While this practice maximizes the profits for the farmers, it alters the actual composition of the meat, lowering the levels of omega-3 fatty acids. The effect of omega-3 deficient meat on human health results in increased rates of inflammatory diseases such as arthritis, cancers, and even dementia.¹⁵² CLA, a beneficial fatty acid that is known to reduce risk for certain cancers, cardiovascular and inflammatory diseases, is substantially more abundant in pasture-raised

animals.¹⁵³ Pasture-raised cows produce milk that has five times more CLA and their meat has between two- and five-times more of the fatty acid than that of conventionally raised cows. Study results on free-range chicken also indicate a human health advantage. The meat has 21% less total fat and 30% less saturated fat; eggs have 10% less fat, 40% more Vitamin A and a whopping 400% more of the omega-3 fatty acid than conventionally-raised poultry.¹⁵⁴

Industrially farmed produce is no better. Pesticides applied to bring blemish-free produce to the stores are also laden with chemical residues that when consumed can cause serious repercussions. Health complications include disruption of human reproductive, immune, endocrine and nervous systems, as well as elevated risks for a battery of cancers.¹⁵⁵ Farm workers, even if they don't eat one bite of the food they grow, are exposed to the same health risks simply by breathing in the "pesticide drift" created when spraying the pesticides on the fields.¹⁵⁶

These health concerns are eliminated, or drastically reduced in the case of meat, by eating and farming sustainably-grown products. By utilizing agroecologically sound methods, (see page 17) farmers are not exposed to synthetic chemical pesticides and fertilizers, and the dangerous conditions present in CAFOs are avoided. By eating sustainably or organically grown products, consumers are reducing the likelihood of food-induced illness.

The Centers for Disease Control and Prevention recognize the health benefits of supporting local sustainably grown agriculture in their campaign to address obesity issues. They advocate for expanding access to farmers markets, and encourage local governments to adopt policies requiring more local foods be served in facilities under their control.¹⁵⁷

Even the insurance company, Blue Cross Blue Shield of North Carolina has recognized the importance of healthy food choice. In partnering with various public and governmental programs, they are collaborating to establish community gardens in every NC county and providing grants to increase local food access through Farm to School programs.¹⁵⁸

Intrinsic Reasons: Freshness, Quality, Altruistic Values

It's difficult to think anything but pleasant thoughts while eating a homegrown tomato.¹⁵⁹

Lewis Grizzard

Subjective qualities are difficult to measure, value, rate, or quantify. Nonetheless, when asked, “Why buy local food that has been grown sustainably?” invariably, the answer includes something about taste, freshness, quality or altruistic values. In a meta-analysis of forty independent studies, “perceived” superiority in these attributes was the most relevant factor in a purchase decision.¹⁶⁰ In a national survey conducted to determine the motivations for purchasing local foods, not surprisingly, the respondent’s number one reason was health related. Also receiving high marks were “to support farmers and the local economy,” “freshness,” “quality,” and “food safety.”¹⁶¹ Even though there is no “definitive” answer, nothing provable to justify the purchase, Stephanie Ogburn, editor of

High Country News, sums it up best when she says,

You can't taste fairness. You can't taste good wages for the backbreaking work of hand-harvesting and packing strawberries. You can't taste the absence of cancer and the lack of pesticide residues. You can't taste the coastal ecosystems suffering from fertilizer runoff, nor can you taste the higher margins coffee farmers receive from an equitable supply chain, or the joy a farmer feels when her work produces food that is healthy and nourishing and fresh. So no, sustainably-produced food doesn't taste better. But it is better.¹⁶²

Climate Change

An effective policy to reduce greenhouse gas emissions should have as its cornerstone the support and promotion of sustainable and organic agricultural systems throughout USDA's programs and initiatives.¹⁶³
National Sustainable Agriculture Coalition

Industrial farming exacerbates climate change.¹⁶⁴ The impact of raising livestock with intensive grazing and feedlots has been thoroughly discussed in previous sections, with the exception of this one data point. Emissions of all greenhouse gasses from industrial livestock farming exceed 18% of the total global GHG emission level, more than from all forms of transportation, worldwide.¹⁶⁵ While greenhouse gasses are emitted during all stages of the livestock farm-to-table cycle, the bulk of the emissions are attributed to the following phases: feed production/grazing and manure management.¹⁶⁶ As land is deforested to make more acreage available for livestock grazing or to raise feed crops, massive amounts of carbon dioxide are released into the atmosphere.¹⁶⁷ And where there once stood forests removing carbon dioxide from the air, a now tree-less landscape is incapable of providing carbon sequestration at the same level as before.¹⁶⁸ Manure management systems can greatly impact the amount of GHG emissions. In the United States, these emissions have risen by approximately 19% since 1990, due in large part to the increased use of liquid manure systems.¹⁶⁹

Many of the recommendations for combating agriculturally related climate change revolve around reducing the overall amount of meat eaten, especially beef.^{170, 171, 172, 173} But, industrially raised produce is also problematic. Intensive practices that rely heavily on fossil fuel-based inputs, heavy soil-compacting machinery and tillage practices degrade

the soil. Degraded soils are less capable of providing the *ecoservice of carbon sequestration*; instead, excess carbon is released into the atmosphere¹⁷⁴

Sustainable agricultural practices, based in agroecological principles, actually provide the necessary ecological services to maintain balance in the climate system. Soils rich in organic materials are natural carbon sinks. And while true that livestock is a natural methane gas emitter, sustainable practices greatly reduce the amount of methane added to the atmosphere. Manure management in sustainable systems is vastly different than the *anaerobic lagoon storage* models predominantly used by CAFOs.¹⁷⁵ Because small-scale farms spread manure on the land to decompose, exposure to more oxygen breaks down the waste with considerably less methane production.¹⁷⁶ This is a preferred manure management technique endorsed by the EPA.¹⁷⁷

Local Food Movement

Counting all the people negatively affected by the global food system...we are really the majority of the people in the world.¹⁷⁸
Peter Rosset

The story of local to global, traditional to industrial, subsistence to intensive, first by industrialization, and now through biotech invention, is, up to this point, the trajectory of American agriculture. But something is stirring, an awareness is slowly building, timidly shifting the public's desire towards an embrace of something drastically different, yet vaguely, nostalgically familiar. The local food movement is sort of the perfect storm resulting from the intermingling of other, independent, yet interrelated movements. The environmentalists, global warming believers, food security apostles, anti-corporatists, animal rights activists and Slow Food advocates found common ground, and local food

became the rave.¹⁷⁹ Witnessing the economic riptide of local money leaving the local community coaxes one to question: Is “cheap food” now a worthwhile bargain in the long run? We can invest in creating a local sustainable food system today, or, we can pay later for the consequences of environmental degradation, economic insecurity for small-scale farmers and impacted rural communities, and health issues resultant from the industrial food supply.¹⁸⁰ Certainly the next chapter must be yet another shift, but on this iteration, a relocalization of our time, money, and spirit. There is a blossoming call to arms to fix our broken food system; the meteoric rise in the demand for local food is answering that call. An understanding of where we are now with the industrial food system is necessary to better understand the “fix” that relocalization offers.

What is the Industrial Food System?

"The way we eat has changed more in the last 50 years than the previous 10,000."¹⁸¹

Michael Pollan

What started as subsistence farming, practiced by nearly all colonists in the founding days of this country has morphed into a highly mechanized, specialized, multi- or transnational corporate behemoth. Vertical-integration within the system allows for the industrialized food system to control everything from the farmer’s fields right up to the consumer’s front door. A handful of corporations own or control large shares of the farms, the seeds, the animals, the processing plants, the grocery stores, the slaughter facilities, the feedlots, the CAFOs, and even the trucks that transport all the pieces of the industrial puzzle hither and yon.¹⁸² Pieces of the system that aren’t owned outright are subcontracted. This is a particularly advantageous arrangement for the corporation: the

subcontractor assumes all the risks, while the company calls all the shots.¹⁸³ At one time, this practice was utilized only in developing nations, but today, similar arrangements are common in both livestock and grain farming.¹⁸⁴ *Concentration* in a food production sector (i.e. meat packing) consolidates the number of companies that are involved, thus limiting competition, and ultimately, consumer choice. This practice could result, if unabated, with a handful of conglomerates controlling the global food supply.¹⁸⁵

Government oversight, in the past, has been tepid. The meat supply chain sounds a cautionary warning. In 1985, the top four beef packers controlled 50% of the business, by 2006, their share had risen to 79%. Pork processors experienced a similar concentration of market share. Fifty-one percent of grocery sales are held by the top four supermarket chains, 29% by Walmart alone.¹⁸⁶ In 2009, the Justice Department promised renewed enforcement of antitrust laws to protect consumers against predatory monopoly maneuverings.¹⁸⁷

The impact of the industrial food complex on the U.S. economy is staggering. According to the latest census, over 1/6 of American workers were employed in the agribusiness sector; agribusiness earnings accounted for 5% (\$9.95 trillion) of the nominal GDP in 2010.¹⁸⁸ That's a lot of power to place in just a few conglomerates' control.

So, Why Be Local?

Local food is about getting the freshest and best-tasting food. It's also about connecting to and strengthening your community.¹⁸⁹

Anna Lappe

The fledgling local food movement is expanding at a rapid pace,^{190,191} a phenomenon that is not being ignored by food industry giants. Unlike the organics market

that has been co-opted by big money interests, able to take advantage of “certified organic” labeling to produce and distribute on the industrial scale,¹⁹² the local food movement has the antidote to avoid a similar fate. By the very definition, industrial farming can’t manufacture what the local food movement is demanding — healthful food grown and delivered at the local level, by known community members. While “place” is a large factor, so too are methods of farming and the farmers themselves. Typically, *locavores* demand that their food be organically or sustainably grown; the “story of the food” is just as important, things such as the ethics and personality of the farmer, the beauty of the landscape and appeal of the farm.¹⁹³ Local food is a whole package of tangible and intangible characteristics. Massive food marketers such as Walmart and regional grocery chains are nevertheless cashing in on customer demand by offering a limited supply of locally sourced foods, and attempting to “*local-wash*” their corporate image to capture unwitting consumer’s food dollars.^{194,195}

Such efforts are meeting with success in supplying consumers with healthier, local alternatives to a certain extent, but corporatizing the local food market will never be capable of producing the same overall benefits to the local community. And unfortunately, it can be damaging to small individual producers^{196, 197} and the local economy as a whole.^{198, 199} The economic impact and communal social wellbeing that a thriving local food system bestows upon all the members of a community cannot be duplicated at the industrial level. Certain intrinsic benefits, such as self-reliance, resilience, collaboration and social capital are developed as communities both look “to” and “out for” their neighbors in electing how they are going to spend their dollars.²⁰⁰ While it’s possible that the ingredients for the evening dinner purchased at the local farmers’ market won’t be as

inexpensive as those secured at a grocery outlet, there is a solid argument to be made that, in fact, cheap groceries today come a high cost tomorrow, that if *truly* understood, would never be tolerated. Localization offers a critical path forward in creating sustainable communities and livelihoods, and a solid solution to our present day problematic food system.

Communities Assess Their Local Food Systems

This is about homeland security, in a way.²⁰¹
Nina Thompson

An analysis I completed of twenty food assessments for local food systems from around the country, prepared by an array of academics, consultants and/or stakeholders, reveals common threads; there is a shared belief that a local food system offers environmental, economic, and quality of life enhancements for residents and farmers alike.²⁰² It would be inaccurate to conclude that there was consensus about specifics amongst all the reports, but in general terms, the overall belief about the benefits of sustainable agriculture and the need to relocalize community or regional food systems validates the time and energy the participants in the local food movement have invested.

Environment

Surely we have the wit and will to develop economically
without despoiling the very environment we depend upon.²⁰³
Tony Blair

Two issues were cited consistently in the food assessments: a concern for the loss of farmland due to pressures from land developers and the belief that impact on global warming is decreased with localization due to a decrease in *food miles* to deliver food

from farm to table.

The development concerns are valid. According to the National Resource Defense Council (NRDC), 400 thousand acres of farmland are disappearing each year. The USDA estimates an even higher number, claiming 587 thousand acres are annually lost to development.²⁰⁴ The most recent National Resources Inventory (NRI), for the years between 1982 and 2007, reports an alarming statistic: more than 23 million acres of agricultural land (an area the size of Indiana) have been lost to development, with the most fertile land developed at a disproportionately high rate.²⁰⁵ Not only that, but also 78% of our vegetables and 91% of our fruits are grown on farmland that is close to urban areas.²⁰⁶ Farmland conservation studies point to citizen interest in farm and open-space preservation. Conservation easements are increasingly being implemented across the country²⁰⁷ and contingent valuation, a method of measuring public willingness to pay for land conservation, is being conducted by academics and government officials alike, for public policy planning decisions centered on land use.²⁰⁸ According to The Farmland Values Project, a USDA-sponsored study specific to Western North Carolina, participants reported that they were willing to pay money to protect local farmland, verifying that indeed, the landscape has value. That perceived value, on average, is between \$184 (local residents) - \$195 (visitors to the area) per respondent per year, to be exact.²⁰⁹

The food miles argument is actually hotly debated. Rich Pirog and associates at the Leopold Center for Sustainable Agriculture calculated that conventional food traveled an average of 1,500 miles from farm to table. That number became the basis for the local food movement to make the argument that food that travels an average of 44 miles must be better for the environment than that traveling 1,500 miles, and at the most simplistic

level, it is;²¹⁰ but, the calculation for GHG impact is complex. The method used to raise or produce the food has much more impact on the environment. On average, 83% of the greenhouse gas emission of the overall food-footprint is generated in production, with only 11% coming from transport;²¹¹ focusing solely on transportation or food miles has the potential to discredit the overall positive impact of localizing the food system.

Intensive agriculture's reliance on fossil fuels, and the raising of livestock exact the heaviest tolls in GHG emissions, most especially CAFO raised meats. It's important to keep in mind that unsustainably raised food can be locally sourced as well as from afar. Consumers claiming climate change as their reason for supporting a local food system would be better served by eliminating meat from their diets, even for one day, than avoiding the global food supply, unless their local food system is a sustainably farmed local food system.²¹²

Economy

Money is like blood. It needs to keep moving around to keep the economy going...it flows out, like a wound.²¹³

David Boyle

Each of the assessments analyzed claimed that a local food system had economic benefits to the local community. An array of justifications ranged from limiting *leakage* that drains money away from the local economy and *import substitution* that brings the money back through job creation either on-farm or through the *multiplier effect* creating increased demand for local goods and services.

Farmers selling direct to consumers is of obvious financial benefit; by eliminating the middleman in the transaction, more of the revenue ends up in the farmer's pocket.

Even modest increases of the amount of food purchased from local sources can have significant impact on the local economy.²¹⁴ There is also added security for the farmer in selling to a diversified local base; by becoming less dependent on a few large customers, farmers are able to insulate themselves from a crippling loss of income should the big customer demand cheaper prices or switch to a different provider. Other hassles such as late payment, refused shipments for non-uniformity of product, and the possibility of not being able to sell an oversupply of a crop in more formal selling arrangements are diminished in *direct marketing* relationships.²¹⁵

Pinpointing the definitive multiplier-effect number is impossible. Recent studies have resulted in multiplier effects ranging anywhere from 1.32 to 2.6.²¹⁶ Concrete results are elusive for a few reasons. Local economies are simply that – local, unique, and dependent on lots of independent variables, such as actual size of the community and availability of local products to purchase,²¹⁷ as well as the distinctive characteristics of weather and climate that dictate what agricultural products may be grown, and for how long. As such, the scholarly research in the field is quite limited. Ken Meter, a food policy analyst, supports the idea that it is clear that local food is good for the local economy, and strongly suggests that the multiplier is easy to estimate based upon the amount of local food that is purchased within the community – the more food, the higher the multiple.²¹⁸ With that being said, it's important to state that despite the difficulty in determining an actual “number,” a strong local economy has many “hidden” components that help make it work, acknowledging that the vibe that is created in a socially cohesive community is an economic engine in and of itself.²¹⁹ And a thriving local food scene is a great way to start that engine.²²⁰

Strong Community

Eating's not a bad way to get to know a place.²²¹
Michael Pollen

Perhaps the trickiest component in arguing for the benefits of a sustainable food system is quantifying the intrinsic value bestowed upon the idea of community, but that did not inhibit the authors of the food assessments from making some sort of claim. Half made some assertion about the communal benefits of a local food system; words such as resilient, vibrant, relationship, restorative, social embeddedness, and interconnection peppered the reports, without empirical data to support the claim.

Social capital is an essential ingredient in creating a dynamic community. As America became more industrialized, trending away from its traditional, rural, local beginnings, community cohesiveness unraveled.²²² On the other hand, communities with a high degree of social capital are more effective in community development planning, able to shepherd divergent opinions into a cohesive and shared vision for the future.²²³ In *Deep Economy*, Bill McKibben acknowledges the difficulty in producing empirical evidence that communities benefit from localizing, yet suggests that transforming our habits from being consumers to active participants in a local economy will enhance our lives.²²⁴ Even the Union of Concerned Scientists weighs in on the value of relocalization, specifically citing value in social engagements made possible at farmers markets and other direct-contact exchanges between eaters and those who grow their food.²²⁵

But, Not Everyone's a Fan

"Locavore" may have been the 2007 New Oxford American Dictionary Word of the Year, but there's already been a word for those whose diets are restricted to seasonal items grown in their immediate area: That word is "peasant."²²⁶

Brett Martin

Despite the growing enthusiasm for the local food movement and the transformation to more sustainable agricultural practices, the campaign does have its detractors. Blog posts abound with words such as "eco-smugness", "upper class food fetish", and "culinary Luddite" to describe those who self identify as locavore. The most complete attack on the local food movements is delivered in *The Locavore's Dilemma*, in which geographers Pierre Desrochers and Hiroku Shimizu summarily dispel the belief that local foods are better for the environment, economy and community.²²⁷ A major criticism in the book revolves around the idea that Locavores romanticize small-scale family farming, presenting the notion the current-day small-scale farming relies on techniques from the agricultural past, ignoring that present day sustainable agriculture is high-tech and cutting edge in many ways. They also take justifiable exception to the claim that local foods are better for the environment based on the food miles argument. But should one take seriously all the criticisms they make in the book as valid, it brings into question why the local food movement sprang to life as voraciously as it has.²²⁸

A more academic criticism, although mild in comparison to *The Locavore's Dilemma*, comes from the USDA. In the same report that the USDA's Economic Research Service (ERS) supports localizing the food system, they also caution belief in claims that food quality or security issues are improved, citing lack of empirical evidence to back up the assertion.²²⁹ Robert Paarlberg, a food policy expert, points out the problems

associated with adherence to a strict local food system, such as climatic limitations on growing season, as well as food variety and affordability of fresh/local foods in comparison to supermarket offerings.²³⁰ This critique is one that advocates for relocalization must grapple with; consumers are accustomed to getting what they want, when they want it. Potentially narrowing food choice, either on a whole scale level or seasonally, truly tests the commitment of consumers to eat locally.

And finally, Pamela Cuthbert of SlowFood Canada cautions that simply buying locally produced products does not guarantee that they were grown sustainably, citing that worker wage and safety standards are routinely violated as well as employing farming practices that are not necessarily environmentally sound.²³¹

Criticism is good in that it brings more focus and clarity to the issues that support the arguments in favor of localization of the food system. It helps bring purity of policy and policing of practices within the sustainable farming community itself to maintain integrity of the brand. Understanding both pros and potential cons is important in creating effective messaging to policy makers and consumers alike in advocating for a change to the status quo.

The Roadmap: How to Arrive at a Relocalized Food System

When you come to a fork in the road, take it.²³²
Yogi Berra

Due to the more intimate nature of the *direct marketplace*, both farmer and consumer hold responsibility for making it work. In tandem, they share the success for stewardship of the land (the obvious most critical raw material) and in providing for each

other's needs (income and nourishment). This inherent relationship, when understood and embraced, creates the fertile environment necessary for successful relocalization efforts.²³³

Alternatives to the industrial system are most successful in launching when a weakness or gap in the existing system is discovered and exploited.²³⁴ By creation of “niche” markets, new entrants gain hold and create space for alternative offerings.²³⁵ These niche markets need not be limited to a specific product, such as “heritage” or “heirloom,” but may be broadly defined to incorporate a values-based market offering – and this is where the relocalization efforts are staking their claim.²³⁶

Federal, state and local governments as well as a robust grassroots-community of tireless, optimistic activists share interest in this work. A true partnership between all these players is necessary in shepherding a relocalization campaign. Modifications to necessary infrastructure, zoning laws, and appropriate regulatory food safety laws all require buy-in and execution by government, and are as fundamental to relocalization success as are a well educated network of farmers and food processors and an eager, hungry public. The USDA's National Institute for Food and Agriculture (NIFA) Sustainable Agriculture Research and Education (SARE) is partnering with a myriad of non-profit organizations and community activists in truly remarkable public-private partnerships that are moving the effort forward.²³⁷ Local food policy councils are popping up across the country, interested in creating a dialogue, engaging all the players and advocating for changes at the local level, most suitable for their specific situations.²³⁸

Anatomy of a Local Food System

Shake the hand that feeds you.²³⁹
Michael Pollan

Beyond the obvious (farmer, consumer) there are many elements that make up a local food system. One of the important aspects addressed in the original FACTA legislation was the recognition that a sustainable agricultural model must be site-specific. What works in urban New York City, rife with posh rooftop gardens, blighted Detroit, *guerrilla gardens* blooming in abandoned lots, and tiny Sigourney, a few acres for vegetables chiseled out of otherwise vast industrial farmland, are not the same things. Environmental conditions are not uniform throughout the country, one region may struggle with water shortages, another plagued with soil erosion, and yet another must deal with too much precipitation. Economic strengths and weaknesses of local communities are also unique to the area, and to individuals as well – how food dollars are spent have a moral component that may or may not be conducive to a sweeping food system change.²⁴⁰ And what works in one community in maintaining or creating social and human capital might fail miserably if duplicated in another, and the actual composition and diversity of the population is mirrored in food preferences and consumption. All of these factors must be seamlessly woven into relocalization efforts for success.

Relocalization of the food system must take into account the uniqueness of each place, and from the available components that are described below, sculpt the best model to meet the wants and needs specific to the community. Flexibility and creativity must also be exercised; successful local food systems are dynamic, responding to and incorporating,

when appropriate, new ideas, policies and programs that might better fit as a local food system evolves.

Direct to Consumer Sales

To market, to market, to buy a fat pig!²⁴¹
Mother Goose

- Farmers' and tailgate markets, roadside stands and on-farm sales – Occurring on a regular basis, perhaps even daily, customers interact directly with farmers; customers claim the attraction to shopping at these markets includes not only supporting local vendors but because they enjoy the pleasant atmosphere, freshness of the produce, and the face-to-face nature of the transactions.²⁴² By 2013, there were 8,144 markets in operation, an increase of 464% from 1994, the first year the USDA started to monitor this segment of the food system.²⁴³
- Community Supported Agriculture (CSA) – Members of the community purchase “shares” of a local farm and become jointly invested with the growers in the benefits and risks of the growing season. The advantage to the grower is obvious; even before planting a seed, they are assured income, regardless of what nature might provide later in the year, they are also able to concentrate more on farming rather than marketing, and due to the direct sales transaction, they are able to make more revenue. In exchange for sharing the risk with the grower, the customers receive a portion of each week's harvest and the gratification of connecting with their farm neighbors and the land.²⁴⁴ There was only one CSA operating in the United States in 1985,²⁴⁵ 12,549 farms ran CSA programs as reported on the 2007 Ag Census.²⁴⁶

- Pick-your-Own (PYO) or U-pick – These operations are well suited for crops which are labor intensive, yet require little skill in harvesting; popular fruits are berries, apples and tomatoes as well as Christmas trees. PYO operations were very popular in the 1930-40s and after WWII. Demand fell in the 1960s and resurged in the 1980s as people became more interested in food and nature.²⁴⁷
- Community gardens – People are growing food in their backyards, rooftops, school- and churchyards, and vacant lots; where there's a patch of dirt, it seems as if something edible is growing in it, on purpose.²⁴⁸ According to the National Gardening Association, 19% more people planned on gardening in 2009 than had the year before.²⁴⁹ Food is grown for personal consumption, to share with neighbors, and for donation to soup kitchens and food pantries. Since 1995, over 18 million pounds of fresh produce (72 million meals) has been donated by backyard and community gardeners.²⁵⁰ It seems as if everyone is getting their hands dirty; even prisons are growing food to donate to food kitchens, a positive result for “dirty hands” in this instance.²⁵¹

Direct to Retail/Foodservice Sales

Top 10 Menu Trends for 2013 - local and sustainable products, with hyper-local being even better.²⁵²

National Restaurant Association

- *Food hubs* are helping local producers to connect with local retailers, restaurants, and institutional customers. Small and mid-size farmers lack the capacity to individually provide volume demanded in this market, but through consolidation of inventories, new markets and opportunities have opened.²⁵³

- Food Co-ops and grocery stores – Large grocery chains (i.e. Walmart and Costco), regional chains (i.e. Kroger and Safeway), local independents, co-ops and green grocers are all offering local foods to their customers. Stores are *aggregating* inventory through food hubs and directly from the farmers, with a solid commitment to expand their local networks to meet the growing demand.²⁵⁴
- Restaurants - In the 2013 Chef Survey, 5 of the top 10 trends focus on local/sustainably raised foods, including “hyper-sourced” ingredients, those being foods raised on the premises in restaurant-owned gardens.²⁵⁵ Chefs and food buyers have a strong preference for buying directly from the farmer, but also source their local foods from foodservice distributors, local processors and cooperatives. A growing number of quick service restaurants also source local foods.²⁵⁶
- Farm to school programs – These programs provide fresh fruits and vegetables to schools K-12, sponsor school garden projects for hands-on education purposes and if possible, fund fieldtrips to nearby farms.²⁵⁷ These programs are somewhat new, and for the first time, were counted in the latest agricultural census information, (not yet available). It is estimated that there are more than 10,000 schools in Farm to School programs operating in all 50 states.²⁵⁸
- Food service – Healthcare providers, colleges and universities also serve locally sourced foods in their cafeterias and food courts.

Other Services

Brides are looking for unique destinations and farmers are looking for ways to supplement their income.²⁵⁹

Jane Eckert, on agrotourism

- Kitchen incubators – Start-up food business often do not have the capital to invest in their own commercial kitchen, but instead rent shared kitchen space that meets all federal and state food safety laws. There are over 100 of these businesses renting space around the country.²⁶⁰
- Mobile slaughter units – These mobile USDA-inspected units travel to small-scale meat producers who lack access to permanent slaughterhouses or want to sell meat directly to customers. Operational since 2000, they have been critical for the local food movement, as many rural areas lack USDA- or state-inspected facilities.²⁶¹
- *Agrotourism* – Farmers and ranchers have generated revenue in marketing the land itself by offering adventures on their properties. Running the gamut from weddings and farm stays to seasonal activities such as pumpkin patches and corn mazes, reported income more than doubled from the 2002 to the 2007 census reports.²⁶²
- *Value added products* – Farmers with the time and skill have discovered that they can make more profit on enhanced products (i.e. jam and jellies rather than berries) and such sales were reported for the first time on the 2007 census.

Headwinds on the Path to Sustainability

I'm slaying dragons every day.²⁶³
Tod Murphy

Given the pros of creating a sustainable local food system and the cons of staying the course offered in the industrial path, one would think that relocalization should be a priority. But in reality, the movement, which is moving forward, does face strong headwinds in making meaningful, systemic progress. These impediments can be

generalized into three areas of concern: consumers, governmental policy and challenges faced by beginner and small farmers.

Consumers: Education and Preferences

A farmer friend of mine told me recently about a busload of middle school children who came to his farm for a tour. The first two boys off the bus asked, "Where is the salsa tree?"²⁶⁴

Joel Salatin

While Joel Salatin's anecdote is cute, it's sadly true. Most people, not only children, have no idea how our food is produced. Farmer's markets, farm-to-school programs, local food campaigns, ecotourism and social media are crucial means to educate an uninformed consumer. It's human nature to care for, conserve, and value things that we have intimate knowledge of; this holds true for our food as well. Educating consumers on all the aspects of a local, sustainable food system will help raise awareness of the total costs of the industrial system; pointing out the short-sighted nature of supporting a system that provides cheap food now to the detriment of the environment, local economies and our well-being – physically, mentally and spiritually, will help usher in the new food paradigm.

The typical local food shopper is erroneously believed to be an older, educated, urban, working, married woman.²⁶⁵ In reality, a national study concluded that the typical shopper is measured more by perspective and behavior than by demographics. Positive attitudes about cooking and a keen understanding of food production increase the probability of local food purchase decisions; those concerned with cost alone are less likely to purchase directly from the farmer.²⁶⁶ Various regional studies have determined that local foods need not be more expensive than their grocery store competitors; shoppers

can actually save food dollars when spent locally.^{267, 268} As this information is carefully communicated and actually experienced, a newly-engaged consumer will likely switch their allegiance to direct markets for some of their purchases.

The smart money isn't waiting for the switch to happen, and instead is reaching out to the next generation of consumers. The USDA established the Farm-to-School program in 2010, and by 2012, an estimated 43% of public schools were using the curriculum in the classrooms, with an additional 13% ready to launch the program in the coming year.²⁶⁹ Elective after-school programs in gardening and cooking are gaining popularity, and farm school and tours catering to children's interests are just some of the proactive initiatives being implemented around the country.

Consumer Awareness: The Faces of Food – (Non)Ethical Treatment of Animals and Workers

The survival of the current food system depends upon widespread ignorance of how it really operates.²⁷⁰

Eric Schlosser

The treatment cows, pigs, and chickens endure in their short lives is most certainly a practice that agribusiness does not want the public to know. The combination of CAFO, feedlot and slaughterhouse, a trifecta of terror, ensures that the life of an animal unfortunate enough to be born into the factory farming system is one of complete misery, pain and torture; every decision made for running the operation is to maximize the profit line, and that doesn't bode well for "the inventory."

The industrial food complex is not blind to the devastating impact on their bottom line should the consumer become aware of how food truly "happens." Hence, nostalgic websites and marketing campaigns obfuscate the truth. McDonalds would love their

customers to believe that ready-to-eat hamburgers, complete with ketchup, mustard and one little pickle, grow just like that on plants in the Hamburger Patch.²⁷¹ When pink slime²⁷² became a sensational news story in 2012, McDonalds recognized a marketing disaster, and quickly distanced themselves from the use of the product, claiming its discontinuation had been long in the works.²⁷³

Ethical treatment of both industrial farm workers and slaughterhouse employees leave much to be desired. Slaughterhouse procedures are no more than a mass production disassembly line; unskilled employees dominate the workforce.²⁷⁴ Laborers, to a great extent, are illegally in the country and therefore unwilling to speak out about the deplorable conditions of the workplace.²⁷⁵ With an ample supply of immigrant labor at their disposal, despite a turnover rate between 100% and 150%, slaughterhouse ownership has no motivation to change a thing.²⁷⁶ The only thing that matters is the bottom line.

Deplorable workplace conditions understandably lead to even more reprehensible behavior on the part of the employees. Worker desensitization occurs rapidly. Time spent with stressed and sometimes-mean animals quickly erodes any sympathy held for these creatures; animal abuse becomes routine.²⁷⁷ Hidden cameras occasionally capture wicked treatment of livestock. Thanks only to an outraged public, management is forced to address the situation.²⁷⁸ In such a culture that does not readily punish inhumane acts, the boundaries of unacceptable behavior easily leak into other parts of the workers lives as they become violent against their own families.²⁷⁹

Strident efforts to squash the truth are evidenced by the unrelenting efforts of agribusiness to pass “ag-gag” legislation. Seven states have so far passed some form of legislation aimed at criminalizing the unauthorized release of video documentation of

animal abuse, unsafe working conditions and environmental infractions. Five more states are maneuvering (so far unsuccessfully) to do the same.²⁸⁰ The goals for “ag-gag” rules don’t stop with unwarranted photography, but also include measures that make it nearly impossible to document a pattern of abuse by implementing reporting guidelines that are logistically unworkable.²⁸¹ And if the American Legislative Exchange Council (ALEC) gets to write the rules, whistle-blowing activities down on the farm will be considered acts of terrorism.²⁸²

Fran Lebowitz once facetiously quipped, “My favorite animal is steak.”²⁸³ The corporate food industry undoubtedly would love if we all willingly insulated ourselves from the cruel truth about factory farming by believing that beef doesn’t start out with a face, one with beautiful brown, soulful eyes.

*The Government: Impact of the Revolving Door – From Industry to Government
(and Back)*

I think I can say, and say with pride, that we have some
legislatures that bring higher prices than any in the world.²⁸⁴
Mark Twain

It should come as no surprise that money buys favors in Washington. But while tickets to elite D.C. events and invitations to consort with political powerbrokers are standard paybacks for campaign support, it’s nevertheless discomfoting to know this behavior is tolerated. Unfortunately, access doesn’t stop at the social level, but instead finds industry-interests written into legislation and corporate leaders rewarded with influential positions within powerful governmental agencies.²⁸⁵ The movement between agribusiness executive suites to government agency offices is seamless, continuous, and unabashed.

A former USDA nutritionist tasked with rewriting the guidelines for the Food Pyramid tells of government policymakers bowing to industry pressures, repeatedly. Nutritionally sound recommendations were gutted in favor of food company interests. Recommended daily allowances of fresh fruits and vegetables were slashed in half, servings of grains and cereals were doubled, and wording was altered to emphasize less-healthy processed foods over fresh, changes reflective of industrial agriculture's relative influence.²⁸⁶

At least in the case of the manipulation of the Food Pyramid recommendations, consumers still had a choice in the matter. Tragically, the powerful agribusinesses ConAgra, Syngenta, Cargill, Archer Daniels Midland and Monsanto are challenging consumer's access to unadulterated foods. With the growing proliferation of GMO crops, wanted or not, organic growers can no longer absolutely assure the consumer that they are not inadvertently growing GMO food due to cross-pollination between fields of organics and that of conventionally grown with GMO seed crops.^{287, 288} Farmers have repeatedly lost in the courts when either suing or being sued for unwitting patent infringements,²⁸⁹ and with five ex-Monsanto employees or consultants appointed to powerful government jobs during the Obama administration,²⁹⁰ as well as former Monsanto general counsel, Clarence Thomas, sitting on the Supreme Court, farmers legal fortunes don't appear to be changing in their favor any time soon.

The Government: Regulations and Enforcement

Farm policy, although it's complex, can be explained. What it can't be is believed. No cheating spouse, no teen with a wrecked family car, no mayor of Washington, D.C., videotaped in flagrante delicto has ever come up with anything as farfetched as U.S. farm policy.²⁹¹

P. J. O'Rourke

Food safety and contamination is justifiably a concern; the USDA and FDA have legislated regulatory standards to protect the consumer for years. The new Food Safety Modernization Act (FSMA), still to be fully implemented, poses regulation and oversight that some small producers cannot afford. Prior to passage of FSMA, several amendments to lessen the regulatory measures on small, local food marketers were added, most notably, the Tester-Hagan Amendment. Farms meeting strict criteria defining “small” – less than \$500,000 in sales, and “local” – marketing within a 275-mile radius are exempted from the federal regulation, but still must comply with all state and local laws.²⁹² Faced with increased costs for modernization and inspections, farmers too pinched to comply are either growing for commodity markets in lieu of local customers or giving up farming all together.²⁹³

The FDA is presently in the “rule-setting” stage for the actual application of the FSMA, and small and sustainably farmed operations still are in their sights. New proposed regulations for biological soil amendments (animal-based compost and manure) are being considered, to a great degree of concern for farmers. Manure management and reporting requirements would place a great strain on small farms. Chemical and physical soil amendments would remain unmonitored.²⁹⁴

A controversial program, the National Animal ID System (NAIS), was in the beginning stages of implementation by the USDA. While under the auspices of food safety and the ability to track livestock through the system should the need arise, it clearly favored large agribusiness interests over that of the small rancher. Small-scale operators would be required to tag (ID) each animal so as to track its movement to slaughter or resale; factory farmers would only be required to tag the herd or flock in its entirety, for

the same cost as one animal, creating an absurdly inequitable cost/animal differential. The program was voluntary on the federal level, but individual states were adopting the policies with the intent to mandate compliance.²⁹⁵ Unfair policy makes for strange bedfellows, and this proposal was no exception. An unlikely alliance of political activists, survivalists, anti-government sympathizers, small-scale farmers and ranchers, and local food advocates²⁹⁶ banded together in protest. The USDA, in response to the massive pushback from such a diverse coalition substantially modified its rules,²⁹⁷ and for the time being, the uproar has subsided, although advocacy groups monitor the situation for any further developments.²⁹⁸

Challenges for the Small and Beginning Farmer

The tragedy of our time is that cultural philosophies and market realities are squeezing life's vitality out of most farms. And that is why the average farmer is now 60 years old. Serfdom just doesn't attract the best and brightest.²⁹⁹

Joel Salatin

The USDA has been reporting, with growing alarm, the aging farming population for some time. But solutions to this concern remain elusive. Beginning farmers face great difficulty in gaining access to farmlands for a variety of reasons, predominantly the lack of capital to purchase land and equipment, and the scarcity of farmland available for purchase. The cost to acquire land can be out of reach for many beginning farmers. Inheritance, the most common way farmland is transferred, is oft times delayed, as established farmers are living and farming longer.³⁰⁰ For those farmers not waiting to inherit but instead need to purchase, the sheer number of individual farms that become available is limited. Commodity programs and technological advancements encouraged

and enabled individual farmers to grow their operations in size, and years later, when finally ready to sell, qualified buyers for these large scale operations are few, and dividing the acreage into saleable portions is difficult, resulting in farmland that is prohibitively expensive for the beginning farmer to purchase and get started.³⁰¹ Farmland valuation may be overstated as subsidy payments have been capitalized into land value³⁰² and at times, a higher than a justifiable market value, reflecting a “symbolic value” recognized only by the seller unwilling to separate emotion from market, is demanded for a property.³⁰³ Corraling needed capital for land access and equipment continues to challenge beginning farmers to the point that their entry into farming remains just a dream for many.

Many of those that do start farming derive the bulk of their income from off-farm sources and carry much more debt even than their large-scale counterparts.³⁰⁴ They are also less likely to participate in or receive money from government support programs due to the fact that they either don't sell commodity crops or if they do, not to the scale necessary to qualify for enrollment in federal programs.³⁰⁵

In response to concern for the aging farmer demographic, as well as acknowledgement that beginning farmers are more likely to employ sustainable techniques more in keeping with the growing interest in sustainable farming, financing partnerships between beginning farmers and the federal government began in earnest in 1992. Through the years, these programs have been strengthened to give more direct loans as well as expand participation in land conservation programs. Most recently, the USDA's Farm Service Agency (FSA), in addition to providing *operating loans* and *ownership loans*, also provide *down payment*³⁰⁶ loan assistance. The New Farmer Individual Development Account (IDA) provides matching grants for qualifying non-land-related

start-up costs and conservation assistance is offered at higher cost-share percentages than that offered to established farmers.³⁰⁷

A Sustainable Future

When one considers all the benefits, to self, community, and planet, the urgency of now cannot be overstated: the aging demographic of the American farmer is occurring at a most beneficial time. Young farmers, armed with energy, passion and determination, are entering the fields with an ethic reflective of what the local food movement is demanding. Understanding the challenges of the scarcity of affordable land and pockets not deep enough for the outlay of capital equipment, creativity and flexibility are allowing them to farm “on the margins”. The local food movement is asking for, demanding, a change to the food system. Farmers are not willing to wait to seize the momentum. Renting land otherwise unattainable, establishing roots in non-traditional settings, and breaking the mold on how things are done to fulfill consumer’s desires are all exciting developments.

When one considers all the benefits, to self, community, and planet, the urgency of now cannot be overstated: a wholesale decentralization of the global food system to local authority will spread benefits to millions not thriving in today’s world. Relocalization of the food system must happen at the most local level. Communities must start the dialogue to understand what will work best for their unique circumstances. The commonality amongst all local systems is that at the heart of each and every one is the inherent sense of place, both honoring and striving to meet the needs of everyone in the community.

When one considers all the benefits, to self, community, and planet, the urgency of now cannot be overstated: there is a growing awareness, and appropriate response to all that is wrong with the industrial food system in addition to all that is right with a local,

sustainable one. Celebrity chefs and hometown diners are cooking up local fare, food writers are becoming known “personalities,” and documentary films about how food happens win awards and pack the theaters. Industrial food related issues are being fought in courtrooms and at the ballot box.

The stage has been set and the time is right for relocalization efforts to begin. Considering the vested interest we all have in getting it right, consumers can demand and force change. Wrestling control out of the hands of multinational corporate power will be an epic battle, but one well worth waging.

When I eat sustainable foods:
I taste that the earth is treated with kindness,
I taste that animals are cared for in a humane way,
I taste that social justice is an important part of the mix,
I taste that economic viability is the foundation that helps it happen,
and all of these tastes combine to form a deeply rich satisfying experience on my pallet
and in my soul.³⁰⁸

Kirsten Olson, farmer at Hunter Orchards

Glossary

Aggregation – the consolidation of products sourced from multiple growers to generate volumes compatible with the wholesale market³⁰⁹

Agrarian tradition – Agriculture, it was said, was the most noble of all employments; it was useful, enjoyable, righteous, healthful, and even blessed of God³¹⁰

Agribusiness – all components necessary for the business of agricultural production; from the actual growing of the crops (farmers, seeds, agricultural inputs such as chemicals and fertilizers, farm machinery and systems) through distribution, processing, marketing and sales³¹¹

Agroecosystems – system where communities of plants, microbes and animals inhabiting farmed land, pastures, grasslands or rangelands, interact with each other and their physical environment³¹²

Agrotourism – any agriculturally-based operation or activity that brings visitors to a farm or ranch; includes a wide variety of activities, including buying produce direct from a farm stand, navigating a corn maze, picking fruit, feeding animals, or staying at a B&B on a farm³¹³

Animal protein products – Additives to livestock feed rendered from feathers, hair, skin, hooves, blood, and intestines³¹⁴

Anaerobic lagoon storage – liquid-based manure management system, characterized by wastewater slurry held for a period ranging between 30 and 200 days. In the absence of oxygen, bacteria produce methane while breaking down waste³¹⁵

Beginning farmers – those in the business for 10 years or less, as the sole operator or with others who have operated a farm for 10 years or less³¹⁶

Berry, Wendell – American novelist, poet, environmental activist, cultural critic, farmer, and this year's recipient for a Medal of Freedom; sometimes described as a modern day Thoreau and also the soul of the real food movement³¹⁷

Biodiversity – sum total of all the plants, animals, fungi and microorganisms in a particular area; and all the interactions between them³¹⁸

Carbon sequestration – the process through which agricultural and forestry practices remove carbon dioxide (CO₂) from the atmosphere. Sequestration activities can help mitigate global climate change by enhancing carbon storage in trees and soils, preserving existing tree and soil carbon³¹⁹

Contract growers – independent operators that are under agreement to house, feed, and maintain animals in compliance to the processors' specifications. The processor maintains ownership of the animals throughout the process³²⁰

Concentrated Animal Feeding Operation (CAFO) – a livestock feeding facility that meets certain criteria defined by the EPA; this criteria is in regards to actual number of animals in the facility as well as waste management practices³²¹

Conservation payments – monies paid by the federal government to farmers who voluntarily agree to remove environmentally sensitive land from agricultural production and plant species that will improve environmental health and quality³²²

Conservation tillage – Any of several farming methods that provide for seed germination, plant growth, and weed control yet maintain effective ground cover throughout the year and disturb the soil as little as possible. The aim is to reduce soil loss and energy use while maintaining crop yields and quality. No-till is the most restrictive (soil-conserving) form of conservation tillage. Other practices include ridge-till, strip-till, and mulch-till³²³

Conventional farming – an industrialized form of farming characterized by mechanization, monocultures, and the use of synthetic inputs such as chemical fertilizers, pesticides and genetically modified organisms (GMOs), with an emphasis on maximizing productivity and profitability and treating the farm produce as a commodity³²⁴

Cover cropping – growing crops between periods of regular production of the main crop for the purposes of protecting the soil from erosion and improving soil productivity, health and quality³²⁵

Crop rotation – system of cultivation where different crops are planted in consecutive growing seasons to maintain soil fertility³²⁶

Concentration – control of individual food production sectors (such as flour milling or pork packing) by only a few corporations³²⁷

Dead zone – bodies of water than can no longer support fish and shellfish life due to low oxygen content brought about by agricultural runoff containing fertilizers and animal waste³²⁸

Direct market – farmers selling directly to the consumer through face-to-face interactions, can be at farmers markets, roadside stands or other settings offering personal interactions between growers and customers³²⁹

Dry land crops – crops such as sorghum and grains that can thrive in an irrigation-free environment, reliant upon natural precipitation for its water needs³³⁰

Ecoservice, ecological services – benefits obtained from ecosystems, including provisioning services such as food and water; regulating services such as flood and disease

control; cultural services such as spiritual, recreational, and cultural benefits; and support services such as nutrient cycling that maintain the conditions for life on Earth³³¹

Ecosystem – complex system of plant, animal, fungal, and microorganism communities and their associated non-living environment interacting as an ecological unit³³²

Eutrophication – Process by which bodies of water become enriched in dissolved nutrients, e.g. phosphates, nitrates, nitrogenous compounds. The nutrients deplete the dissolved oxygen of the water by stimulating the growth of algae and other aquatic plant life³³³

Factory farming – farming enterprise where animals are raised on a large scale using intensive methods and modern equipment, where animals are restrained in an indoor facility and food is brought to them; predominantly used for chicken, egg, turkey, beef, veal and pork production³³⁴

Farm Bill – omnibus Federal legislation that dictate U.S. agricultural policy and economic incentives in various forms; the Farm Bill is typically renewed every 5 years³³⁵

Food hub – a business or organization that actively manages the aggregation, distribution and marketing of source-identified food products, primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail and institutional demand³³⁶

Food miles – total distance food travels from production to the consumer's table³³⁷

GMO – organisms whose genetic material has been altered using genetic engineering techniques to enhance desired traits such as herbicide resistance, pesticide properties, and nutritional content³³⁸

Guerrilla gardening – the illegal gardening of someone else's land³³⁹

Ikerd, John – agricultural economics professor, author, and lecturer; researcher and educator for sustainable agriculture programs under contract with the USDA³⁴⁰

Import substitution – replace products (food) that are imported from outside the area with products (food) that are produced locally³⁴¹

Industrial (intensive) agriculture – industrialized production of livestock, poultry, fish, and crops. The methods of industrial agriculture are technoscientific, economic and political. They include innovation in agricultural machinery and farming methods, genetic technology, techniques for achieving economies of scale in production, the creation of new markets for consumption, the application of patent protection to genetic information, and global trade³⁴²

Inputs – include seeds and plant material, water, fertilizers and pesticides

Integrated pest management (IPM) – pest management strategy using a systematic approach in which pest populations are monitored to determine if and when control methods are required. Integrated pest management (IPM) uses biological, chemical, physical, cultural and/or genetic control methods in order to minimize pesticide use, reduce production costs, and protect the environment³⁴³

Intercropping – two or more crops grown simultaneously, as in alternative rows³⁴⁴

Jackson, Wes – one of the foremost figures in the sustainable agriculture movement, co-founder of The Land Institute and pioneer in research on the creation of perennial crop varieties; named one of the Smithsonian’s “35 Who Made a Difference.”³⁴⁵

Leakage – money drained away from the local economy to import goods from outside the area

Local wash – a marketing technique to capture the local market by defining “local” as “the nearest;” this strategy is akin to green washing³⁴⁶

Locavore – those who prioritize buying food that is grown/produced in an area that is generally defined as local to the region, believe that food purchased directly from farmers is more nutritious, tastes better, and is more ecologically sustainable³⁴⁷

Low input – Use of the locally available; inputs that are included in this definition include labor, capital, fuel and fertilizer. Intentional low input farming systems seek to optimize the management and use of internal production inputs (i.e., on-farm resources) and to minimize the use of external production inputs (i.e., off-farm resources), such as purchased fertilizers and pesticides³⁴⁸

Meter, Ken – well respected food system analyst; his consulting work integrates market analysis, business development, systems thinking, and social concerns; he serves as consultant to the USDA and EPA in addition to his primary venture, President of Crossroads Resource Center³⁴⁹

Monoculture, monocropping – specialized cultivation of one crop on a farm (often large plantations) and planting the same crop year after year³⁵⁰

Multiplier, multiplier effect – number of times a dollar cycles through a locale before it leaves; a higher number means more money is recycled³⁵¹

Nestle, Marion – prize-winning author of six books on food politics and nutrition, and professor of Nutrition, Food Studies and Public Health as well as Sociology at New York University and visiting professor of Nutritional Sciences at Cornell. Time Magazine has ranked her one of the Top 10 Most Influential twitter-writers on issues of health and science³⁵²

No-till – technique of planting seed into the soil with little or no prior land preparation³⁵³

Organic agriculture – holistic production management system that promotes and enhances agroecosystem health, including biodiversity, emphasizing the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, cultural, biological and mechanical methods, as opposed to using synthetic materials, to fulfill any specific function within the system³⁵⁴

Permaculture – conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability, and resilience of natural ecosystems. It is a land use and community building movement which strives for the harmonious integration of human dwellings, microclimate, annual and perennial plants, animals, soils, and water into stable, productive communities. The focus is not on these elements themselves, but rather on the relationships created among them by the way we place them in the landscape³⁵⁵

Relocalization – Bringing back food production to where it is consumed and building alternative networks for getting food from farm to plate through short supply chains³⁵⁶

Salinization – process by which water-soluble salts accumulate in the soil, excess salts hinder the growth of crops by limiting their ability to take up water. Salinization may occur naturally or because of conditions resulting from management practices³⁵⁷

Smother cropping – growing plant varieties not for selling, but rather to suppress weeds. They are grown during spring, summer or fall, between the growing seasons of the cash crops for the purpose of never having the soil “plant-free.”³⁵⁸

Sustainable agriculture – agricultural use that supports sustained economic profitability, quality and well being of the environment, efficient use of natural resources, and the overall quality and availability of food and fiber for mankind³⁵⁹

Triple bottom line – measuring business performance in terms of a balance among the economic, environmental, and social dimensions, rather than maximizing profits or growth³⁶⁰

Value-added products – changing the physical state of a product, such as milling wheat into flour, or producing the product in such a way as to enhance the value³⁶¹

Vertical integration – control by one corporation (or small group of closely integrated corporations) of all the components of growing, processing, distributing, marketing and selling food products³⁶²

VOC, volatile organic compound – a large group of carbon-based chemicals that easily evaporate at room temperature³⁶³

Wetlands – land that stays flooded all or part of the year with fresh or salt water³⁶⁴

Appendix I

Overview of Food Assessments

(Full citation for each assessment is in the Annotated Bibliography – Appendix II)

Author	Who conducted research	Objective	Participants
Banks 2011	Sustainable Food Policy Board	Comprehensive examination of the production capacity, distribution infrastructure, and availability of healthy food in selected counties	Farmers/customers
Benfeldt et al 2011	Collaboration between Harvest Foundation, Chamber of Commerce, Reynolds Homestead, Patrick County Economic Development Authority and VA Cooperative Extension	Determine the extent of the regions capacity for local agricultural expansion and value-added products	Local stakeholders
Blobaum & Plath 2003	Blobaum and Associates, commissioned report for Community Farm Alliance (CFA)	Take the pulse of progress made in past 20 years (since publication of Cornucopia report); snapshot of KY's present food economy, and to recommend ways to capture and retain local wealth in communities	Researchers/report writers
Carpio et al 2007		Calculate the potential economic impact of a marketing and branding campaign for local produce	Researchers/report writers

Author	Who conducted research	Objective	Participants
Colasanti et al 2010	Michigan Good Food Charter - working group out of Michigan State University -- overseen by Sustainable Agriculture Department	Create a roadmap to enact policies and strategies to foster the advancement of the local MI food system to increase economic health, protect natural resources, and improve health of MI residents	Interested parties to localizing the food system; funding from WK Kellogg Foundation, 12 working groups overseen by planning committee, supported by honorary advisory committee
Cooperband & Hultine 2011	Co-project out of University of IL and University of Missouri Extension	Explore and measure the community and economic impact of local food systems in rural areas of central IL	Wide range of stakeholders - vendors, growers, retailers, business owners, consumers
Cruze et al 2011	Center for Environmental Farming Systems (CEFS)	1) initial evaluation of food system; 2) highlight assets and challenges within different segments of the food system; 3) recommendation for action	Telephone interviews - Researchers will interview 'key' players in the food system.
Hartz, Boettner & Clingerman 2011	Commissioned by the Greenbrier Valley Economic Development Corporation, assisted by Ken Meter of Crossroads Resource Center	Follow-up to original food assessment conducted by Ken Meter - to discover next steps in implementing a localized food economy	Researchers/report writers
Luhning et al 2008	Valley Stewardship Network (VSN)	Determine best practices to develop a sustainable, equitable local food system	Local stakeholders

Author	Who conducted research	Objective	Participants
Magnusson, Gettel, & Carter 2010	University of New Hampshire's Whittemore School of Business and Economics	Examine the direct economic impact of the NH local food system; assessment of selected components of the local food system	Three professors at UNH
Meter 2011	Crossroads Resource Center	Overall snapshot assessment of food system for the state (WV)	Public meetings - Multiple workshops and/or open house gatherings will be used to gather public comment.
Meter 2010	Crossroads Resource Center	Overall snapshot assessment of food system for the region (Great Falls-VT/NH)	Data sources: Bureau of Economic Analysis, Bureau of Labor Statistics Consumer Expenditure Survey, US Ag Census, USDA Economic Research Service - food consumption and farm income data, CDC, National Assoc of County and Cit Health Officials
Mid Ohio Regional Planning Commission	Mid Ohio Regional Planning Commission staff and working groups	Snapshot of existing local-food-system components; develop a plan to increase size and scope	Taskforces: research, health/access, agricultural business, land use, public awareness

Author	Who conducted research	Objective	Participants
Northern Colorado/not authored	Citizens from Boulder, Weld and Larimer Counties	Develop an understanding of the existing local food system in relationship to public health, economic development and quality of life. Identify economic opportunities related to agricultural production resulting from gaps in the local food system and evolving market venues. Document needs and possible projects to fulfill those needs in anticipation of forthcoming state and federal programs for funding designed to strengthen local/regional food systems.	Community members and organizations, graduate students at CO State
Pirog & Bregendahl 2012	Michigan State University - Center for Regional Food Systems Iowa State - Leopold Center for Sustainable Agriculture	Examine the efficacy of the network approach in building and sustaining a local and regional food system	Researchers/report writers
Schrader & Lachlan 2009	Capstone project - Dept of Economics at IL State Univ	Estimate the impact of consuming more locally produced fruits and vegetables	Farmers and farmers market managers

Author	Who conducted research	Objective	Participants
Slama, Nyquist, & Bucknum 2010	FamilyFarmed.org and Wallace Center at Winrock International Both groups collaborated on a study for the Illinois DOA with similar results in the findings, although different methodologies were employed in determining different intended outcomes	Feasibility study of implementation of produce aggregation and distribution system to address the gap between the fragmented supply and growing scale of demand	National, regional and local agricultural, economic development, and environmental community organizations; institutional, commercial, and non-profit groups. Of note: growers were not included in the group meetings due to timing, although a few were interview - strongly suggested to include them in further research before launching and aggregation project
Stubblefield et al 2010	California Center for Rural Policy (CCRP)	Conduct a community food assessment as well as explore innovative rural projects that are addressing food insecurity issues and to facilitate the creation of a Food Policy Council	Members of community food-related organizations, general community members (business people, economic development professionals, farmers, local food advocates, food bank, nutritionists, social services), wide-range of demographic groups were represented

Author	Who conducted research	Objective	Participants
Tagtow & Roberts 2011	Consultants, Tagtow and Roberts, using a grant from the Kellogg Foundation administered by the University of Northern Iowa Center on Health Disparities	Measure the health of the Iowa food system through a report card, leading to recommendations for research, programs and policies to ensure a food system that supports healthier Iowans, communities, economies and the environment	Wide range of stakeholders (165) in the Iowa food system - academia, commodity groups, conservation districts, extension agents, faith based community, farmers, food banks, retailers, foundations, health providers, dietitians, planers, public health officials, policy professionals, state and county agencies, youth

Appendix II

Annotated Bibliography of Food Assessments

Banks, Karen. “Central Texas Food Assessment.” *Sustainable Food Center*. 2010. http://www.sustainablefoodcenter.org/about/Central%20Texas%20Foodshed%20Assessment_English.pdf

Summary: Initial stab at identifying possible ways to bring more local foods to local urban markets. Well researched and documented, the report offers more avenues for further research than recommendations for immediate employ. While not making overt statements about the economic impact of various ideas, the underlying assumption is that any measures put into play must not only improve conditions for farmers and consumers, but they must make economic sense. The report references several existing "toolkits" or cites various strategies that other communities have utilized to strengthen the local agricultural sector. Findings from conversations with consumers found that while they were interested in eating healthy foods, local did not hold any additional appeal; they were interested in convenient locations, healthy, "cheap" options. (54 pages)

Authors: Karen Banks was the program director of Community and Youth Gardens at the Sustainable Food Center. More detailed information is not available.

Bendfeldt, Eric et al. “A Community-Based Food System: Building Health, Wealth, Connection, and Capacity as the Foundation of Our Economic Future.” *Virginia Cooperative Extension, Virginia Tech/Virginia State University*. May 2011. <http://pubs.ext.vt.edu/3306/3306-9029/3306-9029-PDF.pdf>.

Summary: Examination of regional capacity to expand agricultural production and value-added products as both a way to meet growing demand for local foods and as an engine for economic development. Cautions that economic growth through community-based food system will happen only with highly-focused leadership and directed action to facilitate the process. By achieving intended goals, the community would benefit in terms of health, wealth, connection and capacity to meet growing market demands. All claims of economic impact (few) were based on Meter report, not community based assessment findings. Overall, the report offered little documentation to support claims. (33 pages)

Authors: Benfeldt is a Community Vitality Specialist at the VA Cooperative Extension. All co-authors are also employed by the extension in various capacities.

Blombaum, Roger and Pernell Plath. “Bringing Kentucky’s Food and Farm Economy Home.” *Community Farm Alliance*. September 2003. <http://www.communityfarmalliance.org/Bringing%20KY%20Home.pdf>.

Summary: Report establishes the present state of Kentucky agriculture, pointing out important changes that have taken place in the past twenty years, and presenting a vision for potential economic revitalization for both rural and urban areas. Addresses advantages of LIFE over global systems based on economic multiplier effect and overall nutrition of local foods. In conjunction with state long-term agricultural plans, the report identifies most significant areas to concentrate on for optimum progress toward LIFE goals. (45 pages)

Authors: Roger Blombaum is an independent consultant specializing in organic and sustainable agriculture studies. Co-author Pernell Plath is the research coordinator at Community Farm Alliance.

Carpio, Carlos E., Isengildina-Massa et al. “Potential Economic Impact of the South Carolina Agricultural Marketing Campaign – WP 050407.” Department of Applied Economics and Statistics Clemson University. May 2007. <http://www.clemson.edu/centersinstitutes/tourism/documents/WPpotentialimpacts.pdf>.

Summary: Utilizing IMPLAN, the impact of increased localization was calculated for the regional economy assuming different assumptions - in all cases, there was positive impact in the model. Background information on export-based growth to show impact of reducing imports and increase exports, social embeddedness of farmer's markets and forces that lead to specialization in the industry were discussed, as well as recent agricultural trends, growth of specialty crop production in addition to a recent up-tick in the direct farm sales channel. Non-economic benefits were also identified - environmental impact of less transportation leads to lower carbon footprint, as well as health to the consumer from having fresher options. The community element of relationship building between consumers and producers and the land is also noted. (21 pages)

Author: Co-authors are Assistant Professors or Professor at Clemson University in the Department of Applied Economics and Statistics.

Colasanti, K, Cantrell et al. “Michigan Food Charter.” *C.S.Mott Group for Sustainable Food Systems at Michigan State University, Food Bank Council of Michigan, and Michigan Food Policy Council*. 2010. www.michiganfood.org.

Summary: Visionary report setting an agenda to produce a thriving economy in a sustainable manner with equity for all stakeholders. Authors believe that by emphasizing a local food system, a healthier and more prosperous Michigan will result. By moving the Michigan agricultural paradigm away from commodity crop

production and towards a more local and self-sustaining one, positive outcomes will be realized for the environment, public health and the community. The charter spells out twenty-five interrelated steps to remake the agricultural system for the state; it is a ten year vision. (32 pages)

Authors: Colasanti is the coordinator at Michigan Good Food, which promotes policy measures to advance “good food” in Michigan.

Cooperband, Leslie and Sarah Hultine. “Making the Case for Local Food Systems as Community and Economic Development: Lessons from Central Illinois Local Food Projects.” *University of Illinois, University of Missouri Extension.*

Summary: Although a stated objective of the research was to determine economic benefit to the local community, it was mentioned only in passing. The research focused more on developing a local demand in rural communities, citing consumer's preference to support local growers, but really not having best knowledge of how and where to do so. Recommendations are offered at community leader level on how to best go about developing a vibrant local food system. (18 pages)

Authors: Leslie Cooperband is an Extension Specialist in Sustainable Agriculture and Community Development at University of Illinois. She is also co-owner of Prairie Fruits Farm and Creamery. Sarah Hultine is a Community Development Specialist and Co-County Program Director for the Dent County MU Extension Center.

Cruze, Sidney and Jennifer Curtis. “Cabarrus County Food System Assessment.” *Center for Environmental Farming Systems. 2011. <http://www.cefs.ncsu.edu/whatwedo/FoodSystems/cabarruscountyfoodassessment.pdf>*

Summary: Acknowledgement that building a local and sustainable food system will result in enhanced economic growth for its community. Cites CEFS (From Farm to Fork) belief that the benefits of a local food systems generating increased economic benefits at the local community level which lead to increased job opportunities, greater food safety and security and improved health for community members. Goals of the assessment are twofold - initial evaluation of food system and to highlight the assets and challenges within different food systems to maximize economic and general well-being. Challenges to expansion are environmental threats of lost farmland and water conservation issues. Grant funding is being pursued to research economic impact of establishing a regional food system. (41 pages)

Authors: Sidney Cruze is a freelance food and agriculture writer, also serves on the advisory board of Farm to Fork at CEFS. Jennifer Curtis, co-founder and COO of Farmhand Foods and project director at NC Choices.

Hartz, Laura, F. Boettner, & J. Clingerman. “Greenbrier Valley Local Food: The Possibilities and Potential.” *Downstream Strategies*. October 2011. [http:// www.downstreamstrategies.com/documents/reports_publication/greenbriervalleylocalfoodfinal.pdf](http://www.downstreamstrategies.com/documents/reports_publication/greenbriervalleylocalfoodfinal.pdf)

Summary: This well documented research describes a region that offers great economic potential by localizing local food system. Calculated demand far exceeds present levels of local consumption. Analysis of available farmlands indicates the ease of fulfilling local demand with local production. There is also much untapped potential for local growth through a variety of market channels not presently being utilized either at all or to their full potential. Specific recommendations are presented on how to enhance the local food system. (34 pages)

Authors: Laura Hartz, the project manager, has a background in agriculture and natural resources. She focuses in issues of agricultural policy and sustainability. Co-authors Boettner and Clingerman have over sixteen years of combined experience in related industry disciplines

Luhning, Jessica et al. “Vernon County, Wisconsin Community Food Assessment.” *Valley Stewardship Network Food and Farm Initiative*. 2008. <http://www.kickapooovsn.org/wp-content/uploads/2009/11/Vernon-County-Community-Food-Assessment4.pdf>

Summary: The goal of this report is to evaluate the food security (sustainable in context) assets and identify opportunities and strategies relating to the area. It serves as a foundation for stakeholders to act on to strengthen the local food system. Presents a detailed agricultural history of the area. Focusing on a community profile and detailed agricultural history of the area, gives a real sense of the importance of time and place in the community character. The only substantive economic impact information is a report prepared by Ken Meter, included in its entirety. Other than the Meter report, there are no real claims on economic benefits for localizing the food system, but more of recognition of health benefits and the growing demand for organics. There is acknowledgement of potential economic upside to developing the eco-tourism industry, part of which centers on local agricultural composition of the county, but also on the variety of outdoor adventures that are available in the region. (89 pages)

Authors: Luhning has an educational and career background in sustainable agriculture and natural resource planning. She serves on the Vernon County

Comprehensive Planning Agriculture/Natural Resource and Land Use Element Committees. Jessica was instrumental in the formation of the Valley Stewardship Network's Food & Farm Initiative and is a member of the Vernon County Farm to School Committee.

Magnusson, Matt, and Ross Gittel. “Home Grown: Local Food Systems in New Hampshire.” *Food Solutions New England, University of New Hampshire*. April 2010. http://agriculture.nh.gov/publications/documents/HomeGrownReport_final.pdf.

Summary: SWOT (strengths, weaknesses, opportunities and threats) Analysis conducted to provide a strategic planning tool for policy development. Detailed analysis was performed on four sectors of the food system’s impact on the state economy; sectors were defined using the North American Industry Classification System (NAICS). These four sectors are: local agriculture (farming), food manufacturing, food support systems (distribution) and retailers (supermarkets). Examined employment, wages, income, profitability and contribution (both real and potential) to Gross State Product (GSP.) The NH System was compared to both regional (New England) and national averages. Conclusions indicated that the viability of the NH system closely follows national agricultural trends, and could be greatly strengthened if efforts to expand overall farm acreage in the state in conjunction with a focus on improving individual farm profitability. Discusses specific areas to expand the system as well as recommendations to improve overall economic impact through efficiency modifications, business education, mentoring programs as well as food safety certification. Challenges within the system to increasing local food production are also addressed with a strong recommendation to form a State Food Council to establish policies and strategies to meet increased targets. Research calculations rely heavily on US Census, USDA, and Economic Research Service data. (20 pages)

Authors: Coauthored by Professor and PhD candidates at the University of New Hampshire Whittemore School of Business and Economics.

Meter, Ken. “West Virginia Farm and Food Economy.” *Crossroads Resource Center*. March 2011. <http://www.crcworks.org/crcdocs/wvsum11.pdf>.

Summary: This highlights report is the report in total, confusingly titled “highlights.” Formulaic in structures, with little narrative, it does make the calculation that there is a total loss of potential wealth to the state due to outside-of-state purchases of farming inputs, financial loss to farmers in production costs, and lost potential income in the area because consumers spend a very small percentage of food dollars from local sources. The report also claims economic loss due to food-related health issues (diabetes and obesity) conditions. Low-

income residents participation in food assistance programs is quantified, but no impact is calculated on the local food economy. (12 pages)

Author: Meter, a well-regarded food system analyst, incorporates market analysis, business development, systems thinking and social concerns into his formulaic food system assessments.

Meter, Ken. “Great Falls region (Vermont and New Hampshire) Local Farm & Food Economy.” *Crossroads Resource Center*. September 2010. <http://www.crcworks.org/crcdocs/vtgfsum10.pdf>.

Summary: This highlights report is the report in total, confusingly titled “highlights.” Formulaic in structures, with little narrative, it does make the calculation that there is a total loss of potential wealth to the state due to outside-of-state purchases of farming inputs, financial loss to farmers in production costs, and lost potential income in the area because consumers spend a very small percentage of food dollars from local sources. The report also claims economic loss due to food-related health issues (diabetes and obesity) conditions. Low-income residents participation in food assistance programs is quantified, but no impact is calculated on the local food economy. (17 pages)

Author: Meter, a well-regarded food system analyst, incorporates market analysis, business development, systems thinking and social concerns into his formulaic food system assessments.

Mid-Ohio Regional Planning Commission “Central Ohio Local Food Assessment and Plan.” The Columbus Foundation. April 2010. <http://www.morpc.org/pdf/CentralOhioLocalFoodAssessmentAndPlan2010.pdf>.

Summary: This report is an expansive portrait of the local food system in central Ohio as it exists today. There is recognition of the economic and social benefit of re-localizing the food system; a growing public interest supports investments to bolster a renewed effort in localizing the system. The study groups provide twenty-four recommendations for new initiatives and improvements to existing structure to foster development of a food system that will deliver more affordable and healthful food to local residents, while providing economic and environmental benefits at the same time. Very little documentation is offered to substantiate the claims with the exception of occasional reference to some study. (45 pages)

Authors: Prepared by MORPC’s Agriculture and Food Systems Working Group

**“Northern Colorado Regional Food System Assessment: From Plant to Plate.”
March 2011. <http://www.larimer.org/foodassessment/report.cfm>**

Summary: Report is chock full of graphs, maps and charts - all laying a great foundation of where the local food system currently operates. The report speculates, based on the current status, that the upside potential for more fully developing the regional food system is great, although makes no solid predictions of what that would actually mean. In concluding, strong emphasis is made that further research and study is needed to fully understand the positive ramifications on what the regional economy would be if a concerted effort to supply infrastructure and educate the consumer would be. (100 pages)

Pirog, Rich and Corry Bregendahl. “Creating Change in the Food System: The Role of Regional Food Networks in Iowa.” *MSU Center for Regional Food Systems*. March 2012. http://foodsystems.msu.edu/uploads/file/Creating_Change_in_the_Food_System.pdf.

Summary: Efforts in broadening public awareness of local food succeeded during grant-funded time period, but individual efforts failed when not being coordinated. For successful initiatives to change the food system, funders needed a more comprehensive, synchronized approach - a network. Trust between all entities is key to changing the Iowa food system. This report is more about creating a model for successful change to result in economic, environment and health benefits for the local community. (30 pages)

Authors: Pirog is senior associate director for MSU Center for Regional Food Systems as well as an independent food systems consultant. Bregendahl is a scientist with the Leopold Center for Sustainable Agriculture, specializing in sustainable agriculture, farm energy conservation and climate related projects.

Schrader, Viktor, and Joseph Lauchlan. “Local Food Systems in Central Illinois: An Economic Impact Analysis.” *Department of Economics and the Stevenson Center for Community and Economic Development, IL State University*. July 2009.

Summary: Utilizing IMPLAN, the impact of increased localization was calculated for the regional economy assuming different assumptions - in all cases, there was positive impact in the model. Background information on export-based growth to show impact of reducing imports and increasing exports, impacts of social embeddedness of farmer's markets and forces that lead to specialization in the industry were discussed, as well as recent agricultural trends, growth of specialty crop production in addition to a recent up-tick in the direct farm sales channel. Non-economic benefits were also identified - environmental impact of less transportation leads to lower carbon footprint, as well as health to the consumer from having fresher options. The community element of relationship building

between consumers and producers and the land is also noted. There is a good explanation for calculations in the methodology section of the paper. (69 pages)

Authors: Schrader and Lauchlan coauthored this report as their capstone project at Illinois State University

Slama, Jim, K. Nyquist, & M. Bucknum. “Local Food System Assessment for Northern Virginia.” *FamilyFarmed.org*. August 2010. http://www.familyfarmed.org/wp-content/uploads/2010/10/Northern-VA-Local-FoodAssessment_FINAL_10.1.10.pdf.

Summary: With increasing support for local food systems from the local, state and federal level, researchers investigate the feasibility of building a produce aggregation center to fill a gap between what is locally produced and what is purchased at the wholesale level. At this time, supply-side issues render aggregation not a viable option, although the question remains that if there was an aggregator (more security for grower) would more growers enter the industry? The consumer market and political climate is favorable to further research on ways to increase supply, and a business model is offered as a framework more study. Input from growers was limited to individual interviews, and the report states this as a weakness of the research – more interaction with farmers is a necessary next step in further study. (26 pages)

Authors: Jim Slama is the founder and president of FamilyFarmed.org that supports local growers by expanding markets for local food trade. Kathy Nyquist is a consultant specializing in business development. Megan Bucknum was an intern at The Wallace Center at Winrock International at the time of this report.

Stubblefield, Danielle et al. “Humboldt County Community Food Assessment.” *California Center for Rural Policy*. 2010. <http://www.humboldt.edu/ccrp/sites/ccrp/files/publications/Food%20Report%20Final.pdf>.

Summary: There is much upside economic potential to strengthening the local food system. Utilizing the USDA Food Assessment Toolkit, different areas of localizing the food system were identified as economic growth potential for the county - growth through developing specialty food sector, improving access and education to at-risk populations to encourage the purchase of healthy food options, assistance programs utilized more efficiently to boost local food usage and smart waste practices to decrease costs, thus have a positive influence on the bottom line. (89 pages)

Authors: Stubblefield, lead researcher, is a Community Food Systems Analyst at CCRP. Assistants in the research and writing process were a team of CCRP professionals and Graduate Research Assistants.

Swenson, Dave. “Investigating the Potential Economic Impacts of Local Foods for Southeast Iowa.” September 2009. *Department of Economics, Iowa State University* Edited by Rich Pirog and Mary Adams of Leopold Center for Sustainable Agriculture. www.leopold.iastate.edu/pubs-and-papers/2010-01-local-foods-southeast-iowa.

Summary: Primary document study conducted by Iowa State University economics department. Indicated that there is potential economic gains for the local economy by substituting more local produce at the expense of lost opportunity of commodity crops, as well as gains by increasing chicken/egg/goat and lamb production, but not beef and hog. Input/output model of the Produce Market Calculator and Location Quotient calculations based on 2007 Ag Census data were the basis of these conclusions. Modest net economic benefit comes at the expense of lost opportunity cost by converting commodity acreage to produce production for local usage. The study makes the case that overall economic gains are smaller than might be anticipated; their holistic benefits (while not calculable) should not be overlooked or undervalued. Short-term economic gains of providing more produce and some animal products are true, and more local economic activity is possible with value added additions. Long-term gains, while not specifically measured, should be anticipated due to more vibrant urban centers that in part are created by strengthening local markets. With caution and eyes open to the future, it is postulated that perhaps economic incentives should be the least-weighted driver in localizing the economy, that the intrinsic benefits in community building alone make the venture worth the effort. (27 pages)

Author: Swenson is Associate Scientist in the Department of Economics in the Agriculture College at Iowa State University. His work is in community economic analysis. Areas of research and specialization include community and regional economic studies and evaluations, economic development research and technical assistance, input-output (economic impact) studies, fiscal impact research, public finance and tax policy, community change and worker mobility issues, and public program and project evaluation. (From the Iowa State website)

Tagtow, Angela and Susan L Roberts. “Cultivating Resilience: A Food System Blueprint that Advances the Health of Iowans, Farms and Communities.” February 2011. www.IowaFoodSystemsCouncil.org/cultivating-resilience/.

Summary: Report focuses on importance of building a more resilient and healthy Iowa food system. It covers the production, processing, distribution, access and waste management sectors of the industry, with recommendations and categorized impacts of applying recommendations on the following: economy, environment, food access/health and food justice to both farmers and consumers. Utilizing a matrix format, the report card method analyzes Economic, Environment, Food Security and Food Safety along the following sectors: production, transformation, distributing and marketing, access, and waste management. Specific

recommendations are provided to address perceived weaknesses within the system.
(54 pages)

Authors: Angela Tagtow, founder of Environmental Nutrition Solutions, takes an ecological approach to food and health to build resilient and sustainable food systems that advance public health. Additionally, she is the cofounder of the Iowa Food Policy Council and is the coordinator of the Iowa Food Access and Health Working Group. Co-author, Susan Roberts, is a legal consultant with a background in food, agriculture, health and law. She collaborates with legal firms, policy institutes and NGOs to create strategies for safe, sustainable food systems.

Notes

¹ Wendell Berry, “The Pleasures of Eating,” *The Contrary Farmer*, December 10, 2009, <http://thecontraryfarmer.wordpress.com/2009/12/10/the-pleasures-of-eating-wendell-berry/>.

² Marion Nestle, “Utopian Dream: A New Farm Bill,” *Dissent* 59, no. 2 (2012), <http://www.dissentmagazine.org/article/utopian-dream-a-new-farm-bill>.

³ Cary Polis, “TEDxManhattan’s ‘Changing The Way We Eat’ Conference Raises Question: What Is A Food Movement?” *Huff Post Green*, March 24, 2013, http://www.huffingtonpost.com/2013/02/19/tedxmanhattan-changing-the-way-we-eat_n_2716191.html.

⁴ Amy Francis, *The Local Food Movement*, (Farmington Hills: Greenhaven Press, 2010).

⁵ Steve Martinez, et al., “Local Food Systems: Concepts, Impacts, and Issues,” *United States Department of Agriculture (USDA), Economic Research Service (ERS), Economic Research Report 97* (2010), http://www.ers.usda.gov/media/122868/err97_1_.pdf.

⁶ “Farmers by Age, 2007 Census of Agriculture,” *USDA National Agricultural Statistics Service (NASS)*, 2007, http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/Fact_Sheets/Demographics/farmer_age.pdf.

⁷ Mary Ahern and Doris Newton, “Beginning Farmers and Rancher,” *USDA, ERS. Economic Information Bulletin*, no. 53 (2009), <http://naldc.nal.usda.gov/download/31895/PDF>.

⁸ Gaylord Nelson, “Ah, Wilderness! Save It.,” *New York Times* (New York City, NY), September 4, 1984, <http://0-www.jstor.org.wncln.wncln.org/stable/4165847>.

⁹ Agenda 21, the non-binding UN resolution signed by the US at the 1992 Earth Summit in Rio de Janeiro, was a proposed roadmap to move forward when faced with the demands of a growing global population. Voluntary implementation of sustainable development measures seemed the prudent path to take and was adopted by 178 other nations as well. (Source: “Agenda 21,” *United Nations (UN) Sustainable Development Knowledge Platform*, 1992, <http://sustainabledevelopment.un.org/index.php?page=view&type=400&nr=23&menu=35>.)

¹⁰ The non-binding resolution “The Future We Want” was signed by 192 nations, (notably, Obama (US), Merkel (DE) and Cameron (UK) were not present). It reaffirmed the original Agenda 21 goals, citing insufficient progress to date due to complications arising from global financial, economic, food and energy crises. It furthered the mission to address added concerns in light of emerging issues related to climate change and other gaps in the

original proclamation. (Source: “Future We Want – Outcome Document,” *UN Sustainable Development Knowledge Platform*, 2012, <http://sustainabledevelopment.un.org/futurewewant.html>.)

¹¹ David A. Lubin and Daniel C. Esty, “The Sustainability Imperative,” *Harvard Business Review* (May 2010): 6, <http://www.natcapsolutions.org/business-case/HBR.SustainabilityImperative.2010.pdf>.

¹² Bradley K. Googins and Steven A. Rochlin, “Creating the Partnership Society: Understanding the Rhetoric and Reality of Cross-Sectoral Partnerships,” *Business and Society Review* 105, no. 1 (2000): 127-144, doi: 10.1111/0045-3609.00068.

¹³ Debra Rowe, “Environmental Literacy and Sustainability as Core Requirements: Success Stories and Models,” *Saint Mary’s College*, 2002, <http://www.stmarys-ca.edu/sites/default/files/attachments/files/Sustainability%20as%20a%20general%20education%20requirement.pdf>.

¹⁴ Ellie Ashford, “Interest Growing in Food Sustainability,” *American Association of Community Colleges*, March 18, 2013, <http://www.communitycollegetimes.com/Pages/Sustainability/Interest-growing-in-food-sustainability-.aspx>.

¹⁵ “Sustain, v.,” *OED Online*, accessed July 12, 2013, <http://0-www.oed.com.wncln.wncln.org/view/Entry/195209?result=1&rskey=SZssq9&>.

¹⁶ World Commission on Environment and Development, “Our Common Future Our Common Future, Chapter 2: Towards Sustainable Development,” *UN*, 1987, <http://www.un-documents.net/ocf-02.htm#I>.

¹⁷ “Future We Want – Outcome Document.”

¹⁸ Martin Hill, *Earth to Earth: Art Inspired by Nature’s Design*, (Kansas City: Andrews McMeel Publishing, 2007), 142.

¹⁹ Wendell Berry, *Bringing It to the Table: On Farming and Food*, (Berkeley: Counterpoint: 2009), 42.

²⁰ Richard K. Olson, “Integrating Sustainable Agriculture, Ecology, and Environmental Policy,” in *Integrating Sustainable Agriculture, Ecology, and Environmental Policy*, ed. Richard K. Olson (Birmingham: Food Products Press, 1992), 2.

²¹ “Wetlands,” *USDA, Natural Resources Conservation Service*, accessed July 15, 2013, <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/water/wetlands/?&cid=stelprdb1043483>.

- ²² “Status and Trends of Wetlands in the Conterminous United States 2004-2009,” *National Wetlands Inventory, US Fish & Wildlife Service*, accessed July 15, 2013, <http://www.fws.gov/wetlands/Status-And-Trends-2009/KeyMessages.html>.
- ²³ Ed Rayburn, “Overgrazing Can Hurt Environment, Your Pocketbook,” *West Virginia University Extension Service*, November 2000, <http://wvu.edu/~agexten/forgrlvst/overgraz.html>.
- ²⁴ Jaime Hilbert and Alan Wiensczyk, "Old-growth Definitions and Management: A Literature Review," *Journal of Ecosystems and Management* 8, no. 1 (2007): 22, <http://www.jem.forrex.org/forrex/index.php/jem/article/view/360/275>.
- ²⁵ James R. Strittholt, Dominick A. Dellasala and Hong Jiang, “Status of Mature and Old-Growth Forests in the Pacific Northwest,” *Conservation Biology* 20, no. 2 (April 2006): 367, http://www.oregon.gov/odf/board/docs/ffac_010708_literature_tom_spies.pdf.
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Walmart’s interpretation for local is “in-state.” This creates quite a different connotation of “local” when comparing Delaware and Rhode Island to Texas and California. (Source: Robert P. King, Miguel I. Gómez, and Gigi DiGiacomo, “Can Local Food Go Mainstream?” *Choices* 25, no. 1 (2010), http://www.choicesmagazine.org/magazine/pdf/article_111.pdf.)

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Research shows that the entry of a Walmart store into a Chicago neighborhood added no new employment, but rather absorbed the workers displaced from failed competitors in the area. (Source: Julie Davis, et al., “The Impact of an Urban Wal-Mart Store on Area Businesses: An Evaluation of One Chicago Neighborhood’s Experience,” *Center for Urban Research and Learning, Loyola University of Chicago*, December 2009, <https://static.squarespace.com/static/51e86261e4b00dfa7317c09b/51e9b18fe4b01c56e4d7dfc9/51e9b190e4b01c56e4d7e102/1373472180813/WalMartReport2009122%202.pdf>.)

Customers shopping at farmers markets rather than big box outlets have a positive impact on the local economy as they tend to shop at other local establishments in the area at the same time. (Source: John Taylor, Matina Madrick, and Sam Collin, "Trading Places: The Local Economic Impact of Street Produce and Farmers' Markets," *New Economics Foundation*, November 2005, http://library.uniteddiversity.coop/Food/Farmers_Markets/Economic_impact_of%20street_produce_and_farmers_markets.pdf.)

Consequently, as shoppers make purchases from the big box stores rather than through direct channels, the advantageous impacts for the local economy is reduced. (Source: Gill Seyfang, "Avoiding Asda? Exploring Consumer Motivations in Local Organic Food Networks," *Local Environment* 13, no. 3 (April 2008): 199, doi: 10.1080/13549830701669112.)

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²⁷² “Finely textured beef” is made from the bits of meat that are stuck to fatty tissue during the processing operation. These small pieces are then added to ground beef as filler. This

practice is decades old and has been regulated by the federal government. In 2009, the New York Times reported that a federal microbiologist referred to the product as “pink slime” and the negative public perception of the product gained notoriety by 2013. Meat processors are now labeling the product as Finely Textured Beef, but demand for the product has fallen precipitously. (Source: “Cargill To Label Meat After ‘Pink Slime’ Uproar,” *AgriNews*, November 12, 2013, <http://agrinewspubs.com/Content/Livestock/BeefNews/Article/Cargill-to-label-meat-after--pink-slime--uproar/9/28/8784>.)

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