

*CASE STUDY*

**GROWING IN PLACE:  
BUILDING A LOCAL  
FOOD ECONOMY  
IN VERMONT**

*by* **Kathryn A. Olson**

2/2/2015



## EXECUTIVE SUMMARY

The local food movement has been gaining momentum in the United States, with farmers' markets and new direct-to-consumer arrangements such as Community Supported Agriculture (CSAs) gaining in popularity. Yet while proponents of local food point to its environmental, economic, and social benefits, little research has investigated the impact of local food on community wellbeing. Vermont leads the country in farm stands, direct-to-consumer sales, and farmers' markets per capita and the town of Hardwick has received attention for its growing economy based on new food and agriculture businesses. This project applied a multi-disciplinary methodology to assess the impact of a local food economy on the environmental, economic, and social wellbeing of the community.

Through interviews with key stakeholders and analysis of United States Census data, the project identified the unique features of the Hardwick area local food economy, which include a great diversity of enterprises of different scales, an NGO hub, highly collaborative businesses emphasizing growing in place, and combining high-value exports with locally sold products. In addition, interviews illuminated how farmers and institutions in the area have forged new relationships, connecting farmers to new markets and increasing access to local food in the community. Analysis of census data revealed that between 2000 and 2012, the unemployment rate in Hardwick decreased by .5%, compared to a 1.6% increase in unemployment statewide. In Hardwick alone, 285 new jobs were created between 2000 and 2013, while the Center for an Agricultural Economy and Vermont Food Venture Center have created or retained 55 new jobs. The five largest agri-businesses in the surrounding area have created a total of 156 new jobs. The mean household income increased by 18%, compared to an 8% increase in the nearby comparison community of Glover and a statewide decrease of 2.3%. The percentage of the population in the lowest income category, less than \$14,999, decreased by 12.3% in Hardwick, compared to an 11% decrease in Glover and a statewide decrease of 3.1%. Despite this decrease in the percentage of the population in the lowest income categories, the percentage of families in Hardwick with income below the poverty level remained nearly the same between 2000 and 2012, at 10.5% and 10.6% respectively.

## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY .....</b>	<b>i</b>
<b>1. INTRODUCTION.....</b>	<b>1</b>
1.1. The Hardwick Area Local Food Economy .....	1
1.2. Literature on Local Food.....	5
1.3. Methodology.....	7
<b>2. EVALUATION.....</b>	<b>8</b>
2.1. Livelihoods and Opportunities .....	8
2.2. Equity .....	10
2.3. Empowerment and Social Relations .....	14
2.4. Environment .....	15
<b>3. RESILIENCE, SCALABILITY, AND REPLICABILITY .....</b>	<b>16</b>
3.1. Resilience .....	16
3.2. Supporting Resources .....	17
3.3. Replicability .....	17
3.4. Vulnerabilities and Unintended Consequences .....	18
<b>REFERENCES .....</b>	<b>20</b>

---

## About E3 Network's Future Economy Initiative

In communities across the US, new economic institutions are emerging to challenge business-as-usual. These bold innovations respond to rising inequality, environmental degradation, and economic decline. They may forge the foundation for a more resilient and equitable economy of the future. Despite their potential significance, there is a general lack of awareness of these innovations and their impacts and there has been little systematic economic analysis of these innovations and their contribution to a potential future economy.

The Future Economy Initiative<sup>1</sup> is bringing rigorous economic analysis to these emerging innovations. Our goals are to document and study their social, economic, and environmental impacts and identify factors which contribute to their emergence, success, and limitations. We assembled a team of researchers to design a framework for analyzing future economy innovations and awarded grants to teams of researchers across the country to apply the framework to varied case studies. This case study report is one of seven presenting results of those efforts. We encourage you to explore the other completed case studies and to apply the framework in your own research and share your findings

For questions or comments on E3 Network's Future Economy Initiative, please contact Robin Hahnel at E3 Network: [robinhahnel@comcast.net](mailto:robinhahnel@comcast.net).

For more information regarding this particular case study, please contact Kathryn A. Olson at Boston College Department of Sociology, McGuinn Hall 426, 140 Commonwealth Avenue, Chestnut Hill, MA, 02467-3807, [olsonkh@bc.edu](mailto:olsonkh@bc.edu).

---

<sup>1</sup> The Future Economy Initiative is a program of Economics for Equity and the Environment Network (E3 Network), a national network of economists developing new and better arguments for protecting people and the planet. Through applied research and public engagement, we seek to improve decision making and further understanding of the relationship between economy and ecology. More information available online at: <http://www.e3network.org/future-economy-initiative.html>.

# 1. INTRODUCTION

The local food movement in the United States has exploded in recent years. Nationally, farmers' markets increased from 1,755 in 1994 to 8,268 in 2014 (USDA, 2014). This movement is particularly strong in the state of Vermont, which has more direct-to-consumer farm sales, farmers markets, community supported agriculture (CSAs), and farm stands per capita than any other state (USDA, 2012). Hardwick, in Vermont's Northeast Kingdom, is considered by many to be the epicenter of the local food movement in the state. Hardwick has always had a thriving agricultural industry, but in the last decade this industry has taken an increasingly ambitious turn. The town has been widely promoted as an example of a new local economy centered on food and agriculture, with substantial media coverage locally and nationally (Charles, 2011; Burrios, 2008). Numerous food and agricultural ventures have been created, including an organic seed company, organic tofu company, and a non-profit organization connecting local growers with infrastructure and new institutional markets.

A common thread among these newer agri-businesses, the non-profit organization, and the more than 200 growers in the surrounding area is an emphasis on place—drawing from the natural and social assets of the surrounding communities. Though media attention has focused on a handful of growing agri-businesses, the deeper infrastructure supporting this new agricultural economy and its impact on the community have not been examined. Though individual enterprises within the Hardwick movement have been successful, the broader distribution of impacts is largely unknown. By examining the case of Hardwick, this project seeks to unravel the many social, ecological, and economic layers that shape the agricultural economy there, and consider the impact of this new food economy on the community.

## 1.1 The Hardwick Area Local Food Economy

The Hardwick area local food economy is a diverse, interdependent, highly collaborative agricultural economy comprised of mission-driven businesses, a non-profit organization and food hub, and more than 200 farms and producers in the surrounding area. Agriculture and food in the Hardwick area are seen as engines for local economic development, where local economic activity is supplemented by export-oriented businesses. Diverse enterprises of different scales, an NGO hub, and highly collaborative businesses emphasizing growing in place characterize the food economy in the Hardwick area.

### 1.1.1 Diversity

One of the key features of the Hardwick area food economy is the diversity of enterprises comprising it, from mission-driven agri-businesses creating products for export to smaller family-owned farms growing and producing for mostly local markets. High Mowing Organics Seeds, Pete's Greens, Jasper Hill Farm, and Vermont Soy are successful agri-businesses in the greater Hardwick area that have worked together since the mid-2000s to create a thriving community of food-related enterprises. These businesses share a vision of contributing to a thriving local community, job creation, and preserving the working lands of Vermont. "The core vision is of doing business where we live. Improving where you live for your kids impacts education, social networks, and infrastructure; every piece is connected," says Andrew Meyer of Vermont Soy. Andy Kehler of Jasper Hill Farm describes his goal as being more directly connected to the lands of Vermont.

Our business is aimed at preserving the working landscape and agricultural soils in Vermont. All of us have an economic goal aimed at figuring out how to make agriculture the highest and best use of the land. If you can't crack that nut, the highest and best use is going to be development. We have overlapping interests—to be economically stable, to provide good jobs to the community, to be good stewards of the land, to offer something that is better than a development opportunity.

Though these businesses have garnered significant media attention for their ambitious goals and promotion of Hardwick, they are just a small part of a deep and diverse food and agricultural economy in the surrounding area.

In addition to these businesses, the greater Hardwick area has over 200 small farms and homesteads that sell their products to area restaurants. The Buffalo Mountain Food Coop in Hardwick, for example,

sells directly to consumers through CSAs (community-supported agriculture shares) and roadside stands, through an organic vegetable distribution cooperative in nearby Johnson, and at area farmers' markets. These different outlets support a wide variety of farms and homesteads of different scales and philosophies. Many participants in the area food economy cite the importance of this diversity of scale in the success of the area food economy. Pete Johnson, of Pete's Greens in Craftsbury, explains:

You really need a mix of all the different scales. For example, we're doing all kinds of dicing now for schools in our kitchen and we can only do it because we have a huge quantity of seconds that we can't sell as firsts-carrots, beets, turnips-because they are cosmetically blemished so they have no value. But over the course of a winter we have 80,000 to 100,000 pounds of these things. For us they go right into our kitchen, we dice them up on a machine and they go right to the schools. You need an operation of a certain scale to do that. On the other hand, farms smaller than us can be efficient and productive in different ways because they are not dealing with this larger infrastructure, different plots of land around the area, or things like that. Everything from the home garden to farms bigger than we are is needed for a comprehensive food system and everyone can specialize in different parts and find their own niche.

The Buffalo Mountain Food Cooperative provides an important outlet for area farms of all sizes. They have an explicit mission to stock diverse fruit and vegetable varieties from as many different local producers as possible, currently stocking food from 188 local farms and producers.

### 1.1.2 NGO Hub

Another central feature of the Hardwick local food economy is the Center for an Agricultural Economy (CAE), which is also home to the Vermont Food Venture Center. In 2014, the Vermont Food Venture Center/Center for an Agricultural Economy processed and sold 46,000 pounds of local fruit and vegetables for Vermont institutions and markets. CAE was founded in 2004 by many of the owners of the area agri-businesses, including: Tom Stearns of High Mowing Organic Seeds, Andrew Meyer of Vermont Soy, Pete Johnson of Pete's Greens, and Andy Kehler of Jasper Hill Farm. The mission of the Center for an Agricultural Economy is "to engage the public in building a regenerative, locally based, healthy food system through collaboration opportunities, food access and hunger relief, educational outreach and providing infrastructure" (Center for an Agricultural Economy, 2014). Originally founded as a non-profit with the goal of promoting and supporting the local food economy of the nine area towns in the greater Hardwick area, the Center expanded its mission when it became the new home of the Vermont Food Venture Center, a food business incubator and processing facility with classroom space for nutritional and educational events.

The Center serves three primary groups: food businesses, farmers, and more generally the local community, particularly the low-income community. CAE works with food businesses on business advising and consultation and by providing a rental kitchen with industrial processing and cold storage facilities. To date, 130 processing clients have used the facility since it opened in 2012. CAE also serves farmers by working with them to process and store farm crops for distribution and establish relationships with Vermont schools and institutions to create farm-to-institution supply opportunities. For example, area schools are interested in incorporating local produce into school lunches, but do not have the resources to process them, so many have purchased pre-cut and frozen local carrots from CAE. In addition, CAE oversees the Vermont Farm Fund<sup>2</sup>, a revolving loan fund for farmers and food businesses, in partnership with Pete's Greens. The Vermont Farm Fund has issued a total of \$321,000 in loans to 29 recipients since 2011.

CAE serves the local community through its food access and hunger relief programs. They partner with the Hardwick Area Food Pantry to supply processed local food and award the pantry a \$5,000 annual grant to purchase local food (within a 30 mile radius) at market value. They also process donated local food for the area outlet of the Vermont Food Bank and have numerous community events including Pies

---

<sup>2</sup> See [www.vermontfarmfund.org](http://www.vermontfarmfund.org) for more information.

for People, a collaboration with Sterling College in Craftsbury, and many area farmers to process and distribute pies and other locally grown food products to community service organizations during the holiday season. CAE also has a grant-funded project with the Hardwick Area Food Pantry to organize educational classes related to home food preservation, and they coordinate the 24 beds at the Hardwick Community Garden.

### 1.1.3 Collaboration

The Hardwick local food economy is also characterized by a high degree of collaboration among businesses and farms, through meetings, knowledge-sharing, and integrated business models. Tom Stearns, President of High Mowing Seeds, relates that he moved to the area because of the cluster of food and agriculture businesses that already existed. “My interest in moving to this area had to do with...educational and community-based institutions that were very connected to the land, to gardening, to the kinds of ethics around food and around community that I wanted to be a part of...For me, I wanted to plant myself and my work in fertile ground, not be the only one doing something. I knew that would be important for partners, for collaboration, for future employees, all sorts of different reasons.”

Early in the evolution of the new food-based economy, area business owners began gathering for informal monthly meetings. At its largest, this group was comprised of 40 business owners, most with food and agriculture businesses, including some who drove up to two and a half hours to attend. The meetings were an opportunity to commiserate, get advice, and discuss all aspects of running food-related businesses in the area. By all accounts, many opportunities for working together arose out of these meetings, including product development, renting land, and even (in the case of the Hardwick agribusinesses) loaning money. Though the meetings have tapered off, the group still has an email chain where queries and advice are exchanged and the spirit of collaboration that it generated still supports an invisible but strong support infrastructure for local food businesses.

Other farm and institutional collaborations in the area are common. Farmers often share knowledge and resources, and the Hardwick area is no exception. Farmers in the Hardwick area share haying equipment and gather to raise barns following fires, or just to help out those who are new to the area. Ben Helm of Snug Valley Farm described it this way: “Friends moved here from another part of Vermont and were blown away by the amount of support from other farms. They said we wouldn’t have thought this amount of support would be possible-if something goes wrong we can borrow equipment or get extra help. There’s a pretty free-flowing sharing environment.” Farmers also collaborate with the food pantry and the local outlet of the Vermont food bank, donating market-ready products in addition to produce gleaned from fields for processing.

These collaborations are also built into the business models of some area farms. Snug Valley Farm in East Hardwick, run by Nancy, Helm, and Ben Notterman, raises beef, pork, and pumpkins that are not certified organic but rely on agro-ecological practices. The primary reason that Snug Valley is not certified organic is because they get pig feed in the form of vegetable seconds from neighboring farms, some of which are not organic. Snug Valley also has an interesting source for their cows. In dairy farming, male cows (bulls) are a by-product and sometimes an expensive one—they must be fed and cared for until they can be sold or taken away. Snug Valley buys quality bulls from a neighboring dairy farm and raises them for beef, turning a by-product of dairy farming into a high-end meat product.

### 1.1.4 A Role for Exports

Another notable feature of the Hardwick area local food economy is that it embodies a vision of a local food economy that emphasizes feeding its community and creating local jobs. However, this is in a sense subsidized by a handful of export-based businesses producing high value products such as artisanal cheese and organic tofu. Yet this combination of thriving local exchange with export-oriented businesses could be a resilient model. An entirely local food economy would be extremely vulnerable to local stressors such as floods and hurricanes; an entirely export-based food economy would be vulnerable to the demands of the global economy. Perhaps a model for a local food economy with supplementation by exports is a more resilient one. Though not literally local in the sense often invoked by proponents of the 100-mile diet and other advocates of local food, many in the area view food products exported outside of

Hardwick<sup>3</sup> as an enabling feature of activities that support working more closely with the community. Pete Johnson explains his own interpretation:

Export is a reality in Vermont because there just aren't that many people that live here. We have a lot of land and historically we were shipping butter to Boston 200 years ago, so there's nothing new about this. I'm really into more regional stuff. I see Boston and New York as our food area and I'd really like to build all that up as much as we possibly can. I'm not so concerned about being as hyper-local as I used to be. Part of what I see is that if we can ship some food to New York in a pretty straight forward, efficient manner and make a profit on that, that only helps us to do a better job with local schools, where we don't really make a profit.

Perhaps a definition of local food that is not based on self-sufficiency but on diversity and interdependence, and one that takes into account historical trends in a given region, is needed to better understand what is happening in Hardwick.

### 1.1.5 Brief History of Agriculture in Vermont

Vermont's agricultural history has long been characterized by responding to larger systemic shifts in trade policy, new markets, local ecological conditions, and even wars. As early as 1792 surplus grain from Vermont's Champlain Valley, grown from seeds originally brought by European settlers, was sent on boats up Lake Champlain for export into Montreal (Lazor, 2013). In the 1820s declining soil fertility due to continual cropping of wheat and the opening of Eastern markets to the Midwest through the Erie Canal, meant Vermont as a state went from exporting to importing grain. Vermont agriculturalists shifted to raising sheep for wool production when a tariff on British wool imports in 1828 led to a spike in domestic wool production. The wool economy was also export-based as wool was sent south to the burgeoning woolen mills and factories in Massachusetts. With the decline of the domestic wool market following the Civil War, Vermonters turned to the production of dairy, largely because Vermont's soils and climate are conducive to growing the many kinds of grass that cows eat. Until the 1850s, most dairy was processed into butter and cheese for local consumption (Sherman, Sessions and Potash, 2004). By the turn of the 20<sup>th</sup> century dairy had become the leading agricultural activity in New England, in large part due to an expansion of railroads and the invention of refrigerator cars. The dairy industry in Vermont was immediately successful as both liquid milk and value-added dairy in the form of butter were transported by rail and eventually truck to Boston and New York City. Dairy continued to thrive in Vermont until productivity and consolidation trends across the country beginning in the mid-20<sup>th</sup> century (not to mention the volatility of milk prices) made the economic viability of the small Vermont dairy farm increasingly difficult to sustain (Gould, 2010). But as this brief history demonstrates, Vermont agriculturalists have been producing for export since the earliest days of agriculture there.

Like most of Vermont, Hardwick has a long history of dairy production. In addition, Hardwick had a productive granite industry that began its decline in the early 20<sup>th</sup> century. By the late 20<sup>th</sup> century, Hardwick was by all accounts an economically depressed town (Hewitt, 2011). The town saw an influx of back-to-the-landers in the 1970s who were attracted to the area's agricultural history, strong communities, and affordable land.<sup>4</sup> This was when the first seeds of the "agricultural renaissance" were planted, as newcomers and some locals who grew up on dairy farms began diversifying into vegetable production, the Buffalo Mountain Coop was founded in 1975, and the area's first vegetable cooperative, the Vermont Northern Growers Cooperative, began providing a mechanism for distributing locally grown root vegetables. By the time the new agri-businesses were formed in the early 2000s, the agricultural scene in Hardwick had shifted to include more than 200 small farms and producers, including both conventional and organic dairy farms. Newer agri-businesses such as High Mowing Organic Seeds, Pete's Greens, Vermont Soy, and Jasper Hill Farm were all formed between 1999 and 2007,<sup>5</sup> Today, Hardwick's vibrant

---

<sup>3</sup> Depending on the business, this can vary from other places in Vermont, New England, and globally in the case of High Mowing Organic Seeds.

<sup>4</sup> Based on interviews with farmers and area residents.

<sup>5</sup> Two other early businesses were central to the formation of the food business landscape in Hardwick. Claire's restaurant, a community-supported, local food restaurant in downtown Hardwick, operated from 2008 to 2014 and has since been replaced by a new restaurant, the Vermont Supper Club. Highfields Center for Composting is an organization focusing on research, education, and technical services supporting closed-loop agricultural systems and composting infrastructure in the state of Vermont. Originally



downtown attracts people to its farmers market, shops and numerous restaurants and the agricultural renaissance has attracted another generation of young farmers to the area.

## 1.2 Literature on Local Food

The local food economy in Hardwick is situated within a broader national and global food movement. This alternative food movement arose out of a critique of the global industrial food system for its socially, environmentally, and economically destructive practices. The alternative food movement is vast and diverse, but its proponents generally call for reducing the scale, resource-intensity, and exploitative labor practices of the conventional food system. While some emphasize organic agriculture, others have offered critiques of organic agriculture's tendency to mimic industrial practices in its social, environmental, and economic practices and thus its failure to represent a fundamental alternative to industrial agriculture (Guthman, 2004). Still others call for an agro-ecological focus, arguing that while organic can be practiced on an industrial scale and thus embody industrial practices, agro-ecology requires more intimate, time and knowledge intensive practices (Altieri, 1995; DeSchutter, 2010). Further, many alternative agricultural ideals emphasize local ecological and indigenous knowledge as central to sustainable agriculture (DeLind & Bingen, 2008; Mares & Pena, 2011).

One response to the global food system has been to relocalize the food system, eliminating the distance—both physical and social—associated with global food production. An early proponent of local food, Gail Feenstra, writes that local food systems are “rooted in particular places, aim to be economically viable for farmers and consumers, use ecologically sound production and distribution practices and enhance social equity and democracy for all members of the community” (Feenstra, 1997, p. 28). This definition, and others within the local food movement, emphasizes a focus on place and scale in pursuit of a food system that is more equitable and democratic, environmentally sustainable, and beneficial to local economies (Kloppenburg, et al. 1996).

### 1.2.1 Local Food and Community

Research connecting agriculture, scale, and community wellbeing can be traced back to two large social science research projects undertaken following World War II, which suggested that smaller-scale businesses are associated with positive social equity outcomes. These projects sought to investigate the impact of large-scale industry and agriculture on community wellbeing. In a case study comparison of three US cities, Mills and Ulmer found that communities with smaller, locally-owned businesses had higher levels of civic engagement and social and economic welfare than those dominated by big businesses (Mills & Ulmer, 1946). Goldschmidt looked more specifically at small versus large-scale agriculture, comparing two farming communities in California. The communities of Arvin and Dinuba were very similar aside from farm size and ownership, the former averaging farms 9 times the size of the latter (Goldschmidt, 1978; see also Lyson, Torres & Welsh, 2001, p. 312). Goldschmidt found that residents in Arvin had a lower quality of life and standard of living, and characterized this as an effect of the worker exploitation stemming from large-scale agribusiness in the community.

One influential contemporary framework for considering agriculture's impact on communities is civic agriculture. First described by Thomas Lyson, civic agriculture represents a vision of a food system that is “re-embedded” in the particular social and economic relations of particular places, encouraging more direct relations between producers and consumers and greater participation in and knowledge of the food system (Hinrichs, 2000; Lyson, 2007). “From a civic perspective, agriculture and food endeavors are seen as engines of local economic development and are integrally related to the social and cultural fabric of the community. Fundamentally, civic agriculture represents a broad-based movement to democratize the agriculture and food system” (Lyson, 2007, p. 19). The vision of civic agriculture is a reconnection to place, people, and community through CSAs, farmers markets, and more civic engagement and democratic activity relating to agriculture and food. Re-contextualizing food production, distribution, and consumption in local places is considered the antithesis of the social, physical, and political distancing

---

founded as a non-profit organization, Highfields is currently being restructured following passage of Vermont Act 148, Vermont's Universal Recycling Law, in order to more effectively fulfill both its educational and technical roles. For more information on the status of Highfields, go to their website: [highfieldscomposting.org](http://highfieldscomposting.org).

associated with the global food system due to its potential for empowering communities to take greater interest in and control over food decisions.

### 1.2.2 Local Food and Social Equity

Yet the premise that the local scale is intrinsically more socially equitable and democratic has been increasingly questioned (Born and Purcell, 2006). Local is not an innocent term, as it can be and often is constructed as defensive against other places and communities (Harvey, 1996; Hinrichs, 2003; Winter, 2003). Moreover, a conception of the local scale as “pure” and “civic” obscures the power and wealth asymmetries that exist at all scales and in every community and is contradicted by research showing that even locally-based, democratic alternative food initiatives often fail to champion social justice concerns (Allen et al., 2003; Allen, 2004; Pelletier et al. 2000). DeLind and Bingen (2008) point out that local food systems that are still based primarily on market relations—direct or indirect—are not intrinsically structured to promote democratic participation or social equity, but individual consumption and profit. They argue that as local becomes defined increasingly in economic market terms, the importance of context, the places constituting the communities in all their social and ecological diversity, is being lost.

Allen (2010) notes that “In the local food movement there is a sense that, because people live together in a locality and encounter each other, they will make better, more equitable decisions that prioritize the common good. While this is a beautiful vision, localities contain within them wide demographic ranges and social relationships of power and privilege embedded within the place itself. At both global and local scales, those who benefit—and those who do not—are arranged along already familiar lines of class, ethnicity and gender” (Allen, 2010, p. 301). While localism holds promise for promoting social equity and civic engagement at the community level, more systematic investigation into the distribution of the effects of relocalizing agriculture is needed.

### 1.2.3 Local Food and Environmental Sustainability

In addition to promoting community wellbeing through civic engagement and the pursuit of equitable processes and outcomes related to food production, distribution, and consumption, another hope embodied in the local food movement is that local food is more environmentally sustainable. The impact of local food on greenhouse gas emissions was initially embodied in the concept of food miles, the distance food travels from place of production to market or home. While an intuitive measure of carbon impact, the food miles concept obscures the relative importance of production (pastured versus grain-fed meat, input-intensive versus agro-ecological practices) in the life cycle greenhouse gas emissions associated with food. Nevertheless, most food in the United States is transported great distances and the impact of transport choice is significant. Transport by rail greatly reduces greenhouse gas (GHG) emissions associated with food transport, while small, less-efficient trucks delivering locally have higher GHG emissions than large-scale but larger distance supply chains (Brodt et al., 2013; Weber and Matthews, 2008; Van Hauwermeiren et al., 2007).

However, the vast majority of food’s GHG emissions come from production. Production-associated GHG emissions vary greatly by product, with lamb and beef embodying the most significant production emissions (Weber and Matthews, 2008; FAO, 2006; Environmental Working Group, 2011). Weber and Matthews (2008) find that 83% of food GHG emissions in the United States are from the production phase while transportation accounts for only 11%. Most life cycle assessments of this nature compare local to national or national to domestic without consideration for regional supply chains. In a study comparing GHG emissions from tomatoes produced and consumed in Michigan to those produced in California and transported to Michigan, Brodt et al. (2013) find that regional growing advantages, such as soil type and climate, in California can offset emissions from transport. However, when considering environmental impact more broadly to include water resource use and biodiversity loss, Michigan-grown tomatoes had a lower impact than those grown in California. Research indicates that the GHG emissions impact of food varies by region and product but is influenced more by growing practices than distance transported.

Additional arguments in favor of the localization of food systems emphasize the economic benefits of local food economies. Swenson (2006; 2010) finds that increasing regional fruit, vegetable, chicken, and

egg production and consumption in Southeast Iowa would lead to an increase in 50-75 jobs and substantial labor income even when accounting for the concomitant reduction in jobs and labor in commodity corn and soybean production which currently predominates in the region. In a series of 15 case studies conducted for the USDA, King et al. (2010) find that producers' net revenue from direct marketing in local supply chains ranged from equal to seven times the value of that received from mainstream chains. They attribute this primarily to producers assuming a greater share of supply chain activities locally, including processing and marketing, which would otherwise be taken on by mainstream supply chains. Research on the economic impact of farmers' markets has found significant multiplier effects from increased income and jobs (Henneberry et al, 2009; Otto and Varner, 2005). One study found that consumers shopping at farmers' markets also spend additional money at downtown businesses, leading to spillover effects for local restaurants and other non-food related enterprises (Lev et al., 2003; Martinez et al., 2010).

Many researchers have called for further investigation of the interplay between local food, place, and community and the social sustainability of local food. In conducting interviews with sustainable agriculture participants near Burlington, Vermont, Macias (2008) finds that local agriculture projects vary in their degree of social inclusivity and participation. He concludes that without deliberate programming promoting equity, social integration, and nurturance of human capital, local sustainable agriculture projects may ultimately fail to be socially sustainable. Among other things, Macias suggests that a more systematic investigation of local agriculture projects, equitable distribution of local food, and institutional configuration is needed to ensure that local agriculture projects "provide the conditions that allow for the generous creation of natural human capital" (Macias, 2008, p. 1098).

A review of the literature on local food demonstrates that while certain studies have investigated the potential of local food economies in promoting social equity, environmental sustainability, or economic development, comprehensive investigation of the holistic impacts of relocalizing agriculture on community wellbeing have not been undertaken. While this project is far from comprehensive, it aims to contribute to the research on local food by offering a framework for more broadly considering the impact of local food economies on community wellbeing.

### **1.3 Methodology**

To evaluate the Hardwick area food economy, this project utilized two strategies: measuring impact both over time and in comparison to the town of Glover, Vermont and, where applicable, the state of Vermont. Glover was selected as a comparison because it has a similar agricultural history and demographic composition to Hardwick, but without the same degree of local food activity. Both Hardwick and Glover are in Vermont's Northeast Kingdom, historically the most rural and impoverished area in the state. Two data sources were used: the United States Census and interviews with farmers and other key stakeholders.

#### **1.3.1 Data Sources**

This project utilized data from the United States Census and the American Community Survey ([factfinder.census.gov](http://factfinder.census.gov), 2014). United States Census data for 1990 and 2000 are available at the town level. For 2012 data, estimates from the 2012 American Community Survey were used. The decennial census aims to count all people in housing units at one point in time, April 1<sup>st</sup> of the census year. The American Community Survey, in contrast, takes a yearly sample and generates estimates based on that sample. For smaller towns, such as Hardwick, these data are averaged over a five-year period to provide more accurate estimates. The 2012 ACS data used for this project are averages of data gathered annually from 2008-2012. While Vermont ACS data are available annually, the 2008-2012 average was used for this project to maintain consistency in comparisons among Glover, Hardwick, and Vermont. Thus for this project, all Census and ACS data listed as 2012 represents an average of data collected between 2008 and 2012.

All census data are from the United States Census and American Community Survey with the exception of supplemental nutrition assistance program (SNAP), formerly known as food stamp, data. The 2000

census, conducted in 1999, did not gather data on SNAP. Data on SNAP were collected in December of 2001 by the Vermont Agency of Human Services, Department of Children and Families. This data is collected at one time point every year and is a count of the total persons enrolled in the program at the time. To calculate the percentage of the population receiving SNAP assistance, census population estimates from 2001 were divided by the number of persons receiving SNAP assistance to calculate the percentage of the total population receiving SNAP assistance in Glover, Hardwick, and the state of Vermont in 2001. The 2012 SNAP data for Hardwick, Glover, and Vermont were collected by the ACS in response to a question asking whether members of the household received SNAP benefits at least once in the past 12 months. These data are yearly averages for 2008-2012 of the monthly ACS surveys. Because the 2001 data collected are a snapshot of enrollment at one time point and the 2012 data are monthly averages, comparisons between the 2001 and 2012 SNAP data are only speculative.

### 1.3.2 Interviews

Some characteristics of the Hardwick area food economy are simply not captured in the census data, including but not limited to: institutional linkages among farmers, citizens, and businesses; diversity of citizens involved in and accessing the local food; farm practices and ecological impact; and the diversity and composition of locally-owned businesses related to food and agriculture. 21 interviews with farmers, food business owners, employees at the Center for an Agricultural Economy, and other stakeholders in the community were conducted in July 2014. Interviewees were selected using the snowball sampling method. Interviews were semi-structured and included questions about farming practices, linkages with the broader community, and history of agriculture in and around Hardwick.

## 2. EVALUATION

This section will describe the impacts of the Hardwick area food economy along the key dimensions of livelihoods and opportunities, equity, empowerment and social relations, and environment.

### 2.1. Livelihoods and Opportunities

Local food economies have the potential to contribute to local livelihoods and opportunities. Particularly in rural communities that have declined economically with agriculture concentration trends, creating new kinds of local economic opportunities in agriculture is perhaps one of the greatest promises of the local food movement. Despite this, the impact of local food economies on local economic development has been only minimally explored (Martinez et al., 2010).

One indicator of the impact of the Hardwick area food economy on area wellbeing is jobs and employment. Historically the local economy in the Hardwick area has been dependent on few primary industries, granite and lumber, and dairy farms. As each of these has in turn declined or become less economically viable, jobs in Hardwick have been harder to find. There is little doubt that the Hardwick area food economy has created jobs since its beginnings in the early 2000s. US Census data can provide an indication of job growth since the new agricultural movement began in Hardwick. In addition, employment data from the Hardwick area agri-businesses provide a picture of job creation. However, it must be noted that while totals of agri-business jobs created include businesses in the greater Hardwick area, the census data provide a picture of jobs in Hardwick alone. Yet as Hardwick is the epicenter of the local agricultural activity and the location of two of the five agri-businesses and the Center for an Agricultural Economy, considering how the job profile has shifted in Hardwick alone is still useful.

Data from the US Census and the Vermont Department of Labor demonstrate that Hardwick's unemployment rate has decreased 1.5% since 2000, from 4.4% to 2.9%. However, in comparison to Glover, where the unemployment rate decreased only .6% from 2.7% to 2.1% and the state unemployment rate, which increased from 2.9% to 4.5%, this decrease in Hardwick's unemployment rate is significant. In the historically impoverished Northeast Kingdom, Hardwick's unemployment rate has decreased since 2000 despite the 2008 recession and in contrast to a rising state unemployment rate.

**Table 1. Unemployment Rates in Hardwick, Glover, and Vermont**

Town	2000	2012
Hardwick	4.4%	2.9%
Glover	2.7%	2.1%
Vermont	2.9%	4.5%

Source: US Census and American Community Survey

According to the Vermont Department of Labor statistics, between 2000 and 2013, 285 new jobs were created in Hardwick alone (Vermont Department of Labor, 2014). Though the methods of data collection make it difficult to isolate farm and agri-business jobs, the contribution of the local agri-businesses and the Center for an Agricultural Economy has been significant. The Center for an Agricultural Economy and the Vermont Food Venture Center have created or retained 55 jobs in Hardwick in the last two years. The following table shows the current number of employees at local agri-businesses, in the towns of Hardwick, Craftsbury, Greensboro, and Wolcott.

**Table 2. Employees at Greater Hardwick Area Agri-businesses, July 2014**

Agri-business	Full-time employees	Part-time employees
Vermont Soy and Vermont Natural Coatings	20	6
Jasper Hill Farm	53	2 summer interns
Pete's Greens	15	10 (full time seasonal)
Caledonia Spirits	8	8
High Mowing Organic Seeds	45	15

Source: Personal interviews

Among the Center for an Agricultural Economy and the five area agri-businesses, 156 new jobs have been created in the Greater Hardwick area since 2000. These jobs vary by business but many of them are professional and managerial-level positions that are rare in the area. Moreover, by all accounts the Hardwick downtown has become a more vibrant place, attracting more visitors to its shops and restaurants, in the last 12 years. A succession of new restaurants, first the locally-oriented Claire's, then Positive Pie and the Vermont Supper Club, have likely added new service industry jobs. Two additional locally owned restaurants, Connie's Kitchen and the Village Restaurant, reopened and/or moved to the downtown. Census data show that service industry jobs in Hardwick have increased from 17.3% in 2000 to 19.6% in 2012. A more substantial percentage of jobs have shifted to the management, professional and business sectors, which made up 23.1% of all jobs in 2000 and now account for 33.5% of jobs. These data on job growth indicate that both the overall number of jobs and the number of mid-level jobs have increased in the Hardwick area since 2000.

**Table 3. Mean household income, Hardwick, Glover, and Vermont (inflation-adjusted)**

Town	2000	2012
Hardwick	\$55,376	\$65,323
Glover	\$53,794	\$58,124
Vermont	\$72,673	\$71,004

Source: US Census and American Community Survey

The mean income in Hardwick increased by 18% between 2000 and 2012, compared to an 8% increase in Glover and a 2.3% decrease statewide.

In addition to impacting livelihoods in terms of jobs and income, the Hardwick area local food economy has increased access to other livelihood assets and opportunities, particularly for disadvantaged groups, such as home growing workshops, support for local food purchases by food banks, and community gardens. Collaborations between the Hardwick Area Food Pantry and the Center for an Agricultural Economy, in particular, have focused on enhancing the community's ability to grow and access local food.

The food pantry received a grant to work more closely with clients to support and enhance their ability to meet their own food needs by learning to better grow and preserve their own food. They surveyed food pantry clients to assess their needs related to gardening (i.e. prepping a garden in the spring versus succession planting) and preserving (i.e. safe freezing and canning techniques) and structured classes accordingly. “Grow your Own” classes, which are open to the entire community, range from tips on how to use succession planting in your home garden to canning and preservation methods for preserving the harvest for winter. The program contributes to food pantry clients’ skills and knowledge about cooking and growing food, going beyond ensuring access to food by giving clients concrete tools to better meet their own food needs.

Another collaboration between the food pantry and CAE involves funding for local food purchases. An anonymous annual donation through CAE provides the food pantry with \$5000 to purchase food from farms within a 30-mile radius. This allows the food pantry to guarantee market price to area farms while still accepting their donations beyond purchases. Here again, the food pantry surveyed clients about their needs and found that clients most valued local eggs and milk, two staples difficult to produce at home.

The Hardwick Community Garden is another example of a community collaboration through food. The garden, which has 24 beds, is coordinated by CAE. Six of the beds are for the food pantry and six are for the Hardwick elementary school. CAE waives the \$20 garden fee for these two institutions and all seeds for the beds, as well as seeds for the educational program, which are donated by High Mowing Organic Seeds. These three examples demonstrate the Center for an Agricultural Economy and the Hardwick Area Food Pantry’s efforts to contribute to local livelihoods by connecting area residents to locally grown food, garden space to grow, and knowledge and skills to preserve the harvest.

## 2.2. Equity

The sections above have indicated the ways in which the Hardwick area food economy has contributed to jobs and employment and incomes and livelihoods in the communities of the Greater Hardwick Area. But how widely have the benefits of the economy been distributed? By considering how the income distribution, poverty rates, and reliance on SNAP (supplemental nutrition assistance program) benefits in Hardwick have changed over time a picture of the distribution of benefits begins to emerge.

The table below shows the income distribution in Hardwick in 2000 and 2012. The percentage of the population in the lowest income category, less than \$14,999, fell by more than half between 2000 and 2012. In addition, while the percentage of the population in the middle two categories remained relatively stable, the percentage in the top two income categories increased by 12.4% and 4.4%, respectively. This is consistent with income trends in both nearby Glover as well as statewide, as shown in the following tables.

**Table 4. Income distribution by household, Hardwick**

Income category	2000	2012
Less than \$14,999	20.9%	8.6%
Between \$15,000 and \$34,999	30.6%	26.8%
Between \$35,000 and \$74,999	38.9%	38.4%
Between \$75,000 and \$149,000	8.2%	20.6%
Above \$150,000	1.3%	5.7%

Source: U.S. Census and American Community Survey

**Table 5. Income distribution by household, Glover**

Income category	2000	2012
Less than \$14,999	21.3%	10.3%
Between \$15,000 and \$34,999	31.6%	26%
Between \$35,000 and \$74,999	39.3%	41%
Between \$75,000 and \$149,000	7.1%	18.9%

Above \$150,000	.5%	3.9%
-----------------	-----	------

Source: U.S. Census and American Community Survey

**Table 6. Income distribution by household, Vermont**

Income category	2000	2012
Less than \$14,999	14.4%	11.3%
Between \$15,000 and \$34,999	27.9%	20.4%
Between \$35,000 and \$74,999	39.3%	34.7%
Between \$75,000 and \$149,000	15.3%	26.3%
Above \$150,000	3%	7.3%

Source: U.S. Census and American Community Survey

In Hardwick and across the state, the percentage of people in the bottom income categories is shrinking while the percentage of people in the top categories is increasing. However, the middle-income categories are not expanding. This suggests that there is both movement from the lowest to the middle and from the middle to the highest income categories. It is difficult to know from these data whether the movement between income categories is among longtime residents or due to in and out migration. It is possible that people from out of state with higher incomes have moved into Hardwick, raising the percentage of incomes at the very top. Regardless, it does appear as if this shift in income distribution is part of a broader statewide trend and not isolated to Hardwick.

The decrease of the percentage of the Hardwick population at the bottom of the income distribution should be contextualized by data on families living below the poverty level. The percentage of families with income below the poverty level at some point in the prior 12 months was virtually the same, increasing only .1% from 10.5% in 2000 to 10.6% in 2012. In Glover, the percentage of families with income below the poverty level declined substantially, from 10.8% to 2.9%. At the state level, this percentage increased from 6.3% to 7.3% between 2000 and 2012. So, while data on income distribution indicate that the percentage of households living in the bottom income category has shrunk in Hardwick, this has not been significant enough to raise families above the poverty level.

**Table 7. Percentage of families with income below the poverty level**

Town	2000	2012
Hardwick	10.5%	10.6%
Glover	10.8%	2.9%
Vermont	6.3%	7.3%

Source: US Census and American Community Survey

Another potential indicator of how widely the benefits of a local food economy are distributed and whether disadvantaged groups in a community are accessing the food grown locally is the percentage of the population that receives SNAP benefits. The table below shows the percentage of the population receiving SNAP benefits in 2001 and 2012 for Hardwick, Glover, and Vermont.

As indicated in the methodology section, these data should be interpreted with caution due to the different sampling methods employed by the Vermont Agency of Human Services for the 2001 data and the American Community Survey for the 2012 data. The 2001 data is collected at one time point every year—in this case December—and is a count of the total persons enrolled in the program at the time. Percentage was estimated by dividing census population estimates from 2001 by the number of persons receiving SNAP assistance to calculate the percentage of the total population receiving SNAP assistance in Glover, Hardwick, and the state of Vermont in 2001. In contrast, the 2012 SNAP data for Hardwick, Glover, and Vermont were collected by the ACS in response to a question asking whether members of the household received SNAP benefits at least once in the past 12 months. These data are yearly averages for 2008-2012 of the monthly ACS surveys. Because the 2001 data collected are a snapshot of

enrollment at one time point and the 2012 data are yearly averages, comparisons between the 2001 and 2012 SNAP data should be interpreted carefully.

**Table 8. Percentage of population receiving food stamps, Hardwick, Glover, and Vermont**

Town	2001	2012
Hardwick	7.2%	17.1%
Glover	13.6%	11%
Vermont	15.7%	12.2%

Source: Vermont Agency of Human Services and US Census

While only speculative due to the differences in sampling methodology between the 2001 and 2012 data, the above table suggests that between 2001 and 2012 utilization of SNAP benefits decreased in Glover and statewide but increased substantially in Hardwick. During this same time period, income levels for SNAP eligibility were raised. Eligibility for SNAP changed from at or below 133% of the federal poverty level to at or below 185% of the federal poverty level. This might explain the significant increase in utilization of SNAP in Hardwick but does not explain why statewide and in Glover SNAP utilization went down during the same time period. The increase in SNAP utilization in Hardwick could be due to this SNAP program expansion, or to an idiosyncratic feature of Hardwick, rather than being indicative of a change in food security or needs. It is possible that increased outreach in Hardwick has led to greater awareness of access to SNAP. While further research on SNAP benefits in Hardwick and Vermont is needed to determine the underlying causes of these changes, the data suggest that individuals in Hardwick may be more reliant upon SNAP benefits now than prior to the agriculture renaissance in the early 2000s.

The above discussion of income distribution, poverty rates, and SNAP benefits has demonstrated that though the income distribution in Hardwick has shifted upwards, those families at the bottom were not necessarily better off in 2012 than they were prior to the agriculture renaissance in Hardwick. These findings suggest that Hardwick’s agriculture renaissance may not be benefitting the most disadvantaged members of the community. Moreover, they raise another question about whether the production of the high-value local products created by the local agri-businesses is accessible to local residents. Is the local food and produce so expensive that most area residents cannot afford it? An informal cost comparison in July, 2014 of local produce from one of the big agri-businesses, Pete’s Greens, a local organic farm, Riverside Farm, and the local grocery store, Tops Market, shows that the local, organic produce is not always more expensive than the conventional produce available through the grocery store.

**Table 9. Cost comparison of three vegetables from local outlets, July 2014**

Outlet	Tomatoes	Broccoli	Lettuce
Pete’s Greens	\$3.75/lb.	\$3.50/lb.	\$9.00/lb.*
Riverside Farm	\$2.50/lb.	\$2.00/lb.	\$1.50/head
Tops Market	\$2.69/lb.	\$2.99/bundle	\$1.99/head

\*Pete’s Greens sells only a baby greens mix, which generally garners a higher return in the marketplace than a head of lettuce making this an imperfect comparison.

While Pete’s Greens prices are consistently more expensive than Tops, Riverside Farm in East Hardwick is less expensive. This informal survey corroborates a 2010 study by the Northeast Organic Farming Association of Vermont (Claro, 2011), which compared grocery store and farmers market prices of 14 vegetables and fruits in nine Vermont towns, including Hardwick. (Claro, 2011) The study found that 4 out of 14 organic items at farmers’ markets were less than conventional items at a grocery store, and 5 out of 14 conventional items were less expensive at farmers’ markets than at grocery stores. Though only speculative, this cost comparison, along with the NOFA study, demonstrates that the local, organic produce in the Hardwick area is comparable and in some cases more affordable than the conventional grocery store.



But the larger question about the local impact of exporting high-value products to external markets is harder to evaluate. Certainly most of the owners of local agri-businesses believe that there is just not enough wealth in the area—if not Vermont—to support their businesses and that export is essential. For them, this is consistent with their mission to positively contribute to the local community. Andrew Meyer of Vermont Soy and Vermont Natural Coatings explains:

Farmers, land, processing, distribution, storage, awareness, education, healthy soils—to support that you've got to have people to buy the product and we don't have enough people here to support a critical economic mass. The interconnectedness supports the businesses to sell product and bring the money back here, and then you can say ok what do we need? We need better education, we need better infrastructure. Farmers markets are great but it's not about building a business model, it's about community. Selling produce to your neighbors will not support 10 employees. It contributes to a local economy but it's not a core economic driver.

This demonstrates the place for export within the shared vision of creating a regenerative local agricultural economy that supports the community. Andy Kehler of Jasper Hill Farms goes further and explains that their model is to sell their products to places where there is more wealth and bring that wealth back to the community.

I want to be able to support our community but that's not necessarily going to come from people in our community. Our business model is to build a pipeline to where the money is. We put high value products into that pipeline and get cash to redistribute to our local economy so that people who live here can buy our local food. We sell at a discount within our local economy, but we're interested in seeing more prosperity in our local community and we are contributing to that by selling our products where the money is.

From an equity standpoint, Jasper Hill's vision then might be described as sharing wealth locally through consumption of products more broadly and creating more good jobs locally. Jasper Hill currently employs 53 people, 43 of whom did not relocate for the position. In the case of Jasper Hill, this vision of contributing to the community through out-of-area sales also coincides with a mission to purchase locally as often as possible. In the last year, 92% of Jasper Hill's costs, nearly \$9 million, have been spent in Vermont.

In addition to being substantial contributors to (if not drivers of) the local economy, the local agri-businesses also contribute to the broader community in other ways, including donations to local food pantries, schools, and other community institutions and support for the Center for an Agricultural Economy. High Mowing Organic Seeds donates seeds to the Hardwick Area Food Pantry. They also donate gleaned produce from their fields to be processed and donated to the local outlet of the Vermont Food Bank. Jasper Hill donates \$60,000 worth of cheese every year to area institutions. Last year, they donated extra cheese to the Center for an Agricultural Economy, which processed it into individual, microwaveable macaroni and cheese dinners for the Vermont Food Bank. Pete's Greens is known for contributing to institutions in its village of Craftsbury but also grows, processes, and distributes root crops to schools below cost, a process subsidized by a private donation and offset by sales of other higher value crops.

The Hardwick Area Food Pantry also receives significant donations from area farmers. Farms like Snug Valley in Hardwick, which raises primarily beef and pork, donate approximately \$1000 worth of beef/year to area institutions. Last year they used a public root cellar in East Hardwick to store 800 pounds of potatoes that they donated to the daily community dinners cooked by churches in the capital of Montpelier. All of these donations are examples of other ways the benefits of the local food economy are distributed to the broader community, in particular the disadvantaged in the community. However it should be noted that these are all charitable distributions that are subject to change and are not necessarily durable changes in access to resources within the community.

### 2.3. Empowerment and Social Relations

Alternative economic arrangements have significant potential to contribute to the empowerment and quality of social relations within an organization and a community. Some of the ways individual businesses within the Hardwick area local food economy empower community members are through participatory planning and outreach, open book management, and a generally high level of collaboration across sectors. Within the realm of food and agriculture, research has considered how increased direct-to-consumer (DTC) sales through farmers markets and CSAs have enhanced consumer-producer relations by increasing consumer participation in food purchases (Thompson and Press, 2014). At the community level, early research by Mills and Ulmer (1946) and Goldschmidt (1978) long ago raised the possibility that communities with lower levels of corporate agriculture had higher levels of civic engagement.

One indicator of enhanced social relations within a community and specific organizations is the participation of constituents in outcomes important to their wellbeing. There are several indications that the Hardwick area local food economy is contributing to participation at the community and organization level. In 2004, the Center for an Agricultural Economy purchased a 15-acre parcel of land that had once been the site of a granite processing plant, Woodbury Granite Company. The property, known as Atkins Field, sits less than a half-mile from Hardwick Main Street and is home to trails and one of the few remaining granite sheds in Vermont. When flooding in 2011 wiped out the Hardwick Community Gardens they were relocated to Atkins Field, which is also the site of the Hardwick Farmers' Market. CAE's intention is to preserve the property for community and agricultural use and, to that end, it recognizes the importance of learning directly from community members what their vision for the space might be. CAE, which has a steering committee of community members for each of its community programs, established an Atkins Field Steering Committee to gather input from the community on a vision for the field through input boxes around the town of Hardwick, community forums, and surveys. This process has allowed residents to contribute their ideas for the future of a valuable town space.

Jasper Hill Farms' open book management system (OBM) is an example of a program at the organization level that has enhanced participation and decision-making among employees. Each department at Jasper Hill posts its budget on whiteboards throughout the office. This gives employees information about their own and other departments that they can incorporate into daily decisions and through the organized "huddles" or meetings. All balance sheets and company payroll statements are also posted and distributed via email to employees. If the monthly budget and minimum quality standard is met for each product (the quality standard, called the deliciousness factor or DF, is set ahead of time) then the share beyond the budget, or gain share, is distributed among employees. The program has been ongoing for three years and this year will be the first gain share, estimated at between \$50,000 and \$60,000.

High Mowing Organic Seeds also uses open book management and has an organizational structure that prioritizes two-way communication and participation among employees. Similarly to Jasper Hill, the open book system at High Mowing gives every employee access to all the company's financial information except for individual salaries, which encourages more engagement with the budget at all levels. Tom Stearns describes how this system encourages greater participation among employees:

In general, if you want people to act like they own the place, act like they're working for more than just a job, you need to treat them that way and provide transparency... One way that this translates is that if we're not hitting our sales targets for certain months or in certain departments people know and they want to know why and what they can do to help. It inspires a kind of we're all in it together attitude.

In addition to the open book system, the relatively decentralized organizational structure at High Mowing creates space for greater communication among employees. High Mowing has five departmental teams, each with its own manager. Each team member meets with their team manager weekly, with some exceptions due to seasonal employees, and each team meets weekly. Each team is responsible for creating and managing its own budget and when an issue, concern, or idea is brought up by any team member that team member is tasked with taking the lead to organize other team members to work on a solution. These examples from Jasper Hill and High Mowing demonstrate how transparency in budgeting

and system structure contributes to transparency in decision-making and a sense of community and cooperation.

While participation is an important indicator of the level of empowerment of constituents at the community and organization level, cooperation with organizations and across sectors of a community is another one. As described above in the introduction, the Hardwick area local food economy has an unusually high degree of collaboration among private and public enterprises. Through the informal business group meetings, area businesses found a forum for airing concerns, asking questions, and even among some members sharing resources in the form of business-to-business loans. The Center for an Agricultural Economy's work has increased cross-sector cooperation related to food and agriculture. Through its processing and distribution infrastructure, CAE has supported the ability of area farms to work with institutions and schools. At the time of writing, CAE was distributing 1000 pounds of local potatoes per week to the University of Vermont.

CAE also helps schools purchase more local food by processing local produce at the Vermont Food Venture Center. This has presented many challenges due to schools' limited budget and the unique needs of school kitchens, which prefer carrots to come diced and potatoes pre-cut to get them efficiently onto school plates. Annie Rowell, Program Manager at CAE, cites storage space and kitchen labor shortages as some of the biggest obstacles for schools and institutions to using local food. "Our goal is to provide a product that reduces some of the labor and would be available to institutions weekly so they don't need to, for example, buy 1000 pounds of broccoli in the summer to freeze." CAE has surveyed 80 schools in Vermont to learn about their buying patterns, budgets, and price points in order to create a comparative local product that is affordable and gives farmers access to these important markets. They have also experimented with the most efficient ways to do this, ranging from working with a farmers cooperative to co-pack processed food, to developing an in-store brand with a single retail outlet and processing local produce specifically for that brand. Through its different partnerships, CAE continues to explore new and creative ways to assist farmers, producers, and institutions to help meet each other's needs.

## **2.4. Environment**

Interviews for this project revealed that environmental impact is one of the primary motivations and concerns for agri-businesses and farmers in the Hardwick area. Unfortunately, data on environmental impact at the community level can be difficult to capture and are often unavailable. Data on agricultural practices are collected by the USDA Agricultural Census, but are only available at the county level. Despite this dearth of data on overall impact and agricultural practices, basic data were collected from farmers and businesses interviewed and can be considered a preliminary indication of how the Hardwick area food economy is impacting the environment.

Agricultural trends of the last 30 years in the Hardwick area and Vermont more generally have included a reduction and consolidation of conventional dairy farms, a transition from conventional dairy to organic dairy production, and more diversification into vegetable growing. Although not quantifiable due to lack of data, the transition of conventional dairy farms to organic dairies and diversified organic vegetable farms has likely decreased pesticide and herbicide pollution in the area. Although these farms are not fully closed-loop, many practice agro-ecological methods—indeed one conventional dairy farm visited for this project, Laggis Brothers in Hardwick, plants buffer strips (permanent areas of vegetation that reduce soil erosion and slow down runoff, thereby contributing to soil and water quality) and crops for threatened local bird species. Another area dairy farm, North Hardwick Dairy, transitioned from conventional to organic dairy production in the early 2000s. In addition to growing hay and forage crops for their herd, Nick and Taylor Meyers grow sunflowers and use the resulting oil as biofuel to power their farm and have a 10 kilowatt wind turbine.

According to NOFA-VT, there are 48 registered certified organic farms in the greater Hardwick area. Among the ten farms interviewed for this project, seven are certified organic, nine make their own compost on the farm, and all practice some agro-ecological methods, including high diversity farming, crop rotation, and reducing inputs, albeit to varying degrees. Growing a greater diversity of crops

contributes to overall biodiversity, crop rotation maintains organic matter in the soil, and reducing off-farm inputs minimizes the carbon-intensity of agriculture. (Altieri, 1995)

A number of the agri-businesses are also adopting practices to reduce their environmental impact either directly or indirectly. Pete's Greens is building a solar array on its barn roof that will produce between 150 and 170 kilowatts of electricity, meeting two-thirds of the operation's electricity needs. 90% of the land farmed by High Mowing Organic Seeds is under a conservation restriction. By creating a market for Vermont-grown organic soybeans, Vermont Soy has led many dairy farmers to diversify their growing practices to include a soy rotation.

Jasper Hill Farm has perhaps invested the most in offsetting its environmental impact. With funding from the USDA environmental quality incentives program, the NRCS alternative manure management program, the Vermont Northern Communities Investment Corp, and the Vermont Agency of Agriculture Food and Markets BMP Program, Jasper Hill has created an advanced system of nutrient management with three components: an aerated compost system for manure solids, an anaerobic digester for liquids treatment, and an advanced botanical system for phase two liquids treatment. This allows the farm to produce finished compost to spread on pastures, irrigate with treated water, and recover heat from the compost to replace fuel oil with heated liquid wastes and methane capture for their creamery broiler. In addition, Jasper Hill utilizes solar panels and has planted constructed wetlands on the property to enhance the natural filtration capacity of its farm. They also capture heat for vegetable production in their greenhouse.

These few examples demonstrate that reducing the environmental impact of agriculture and food production is one of the central motivations for area farms and businesses. Future research quantifying the effects of the agricultural industry on water, air, and soil quality at the local level will be essential to better understanding and encouraging the environmental implications of relocalizing food economies.

### **3. RESILIENCE, SCALABILITY, AND REPLICABILITY**

#### **3.1. Resilience**

How can a community, or a collection of communities as in the greater Hardwick area, cultivate adaptive capacity in the face of global environmental change? How can communities build the capacity to adapt to ecological and economic shocks? A chart hanging in the conference room of the Center for an Agricultural Economy gives one possible answer: diversity. The greater Hardwick area has more than 200 farms and small producers. In an area of the country that was once mostly dairy farms, there are now dairy, vegetable, beef, poultry, and soy producers of different sizes. The Center for an Agricultural Economy provides a place to process and distribute this food. The Buffalo Mountain Coop, numerous farmers markets, and farm stands provide consumer outlets. In addition, there is a more diverse local economy with a diverse range of locally owned businesses. Andrew Meyer of Vermont Soy explains, "The town of Hardwick, for example, has historically relied on one predominant industry to provide employment. Granite and dairy farming have historically been the primary means of procuring income for most residents. The recent increase in food and agriculture-related business has contributed to diversification of the economy by creating complementary businesses committed to growing in place."

Yet these businesses do rely on export to markets beyond the Hardwick area. Can a local economy that depends largely on export be considered resilient? An entirely export-based economy is vulnerable to regional and global shocks, both economic and ecological. Similarly, an entirely local economy would be vulnerable to local economic and ecological shocks. Perhaps a resilient "local" economy is one that combines enterprises that produce for the local market and those that produce for external markets, but where all are interested in and motivated by the particular assets of their communities. Sarah Waring of the Center for an Agricultural Economy shares her vision for this:

It's not about independence, it's about interdependence. We want to ensure that in the face of the global economy our communities don't die. And we believe that one of the best ways to do that is by taking care of the land, by producing food that we can eat here, and by making this culture attractive so people move here for it and supporting good jobs. If everybody did that in other

places, no matter what they focused on—in a way that didn't create a boom and bust economy—it would be different. You could be exporting minerals but doing it in a way that focuses on preserving community and abusing the land as little as possible. We're trying to be a solution to that kind of economic growth—we want to support the roots that exist here. Yes, we will export some things in part because there isn't enough wealth in this one area to support all of these things. The new economic growth can't be about something that depends on disposable income—it has to be a necessity and maybe that's why we believe agriculture can be a solution, because it is a necessity.

Adaptive capacity in Hardwick, then, is about encouraging the growth of complementary farms and businesses, local infrastructure, and new institutional relationships in ways that are regenerative to the social and ecological context. This is not a vision for an economy that is local in an absolute sense of imports and exports, but rather one that is local in inspiration and motivation. It is a vision for an economy that grows from its roots, building on the particular assets of its community and combining local and export enterprises for the benefit of that community.

### **3.2. Supporting Resources**

Factors that have contributed to the emergence and success of the Hardwick local food economy include a supportive legislative climate and access to state and federal funding. In general, the Vermont legislature is very supportive of the developing local food economies. In 2009, the State of Vermont passed farm to plate legislation with a strategic plan for job creation, economic development, and food access goals to be met by 2025. Another statewide program that demonstrates Vermont's commitment to supporting local agricultural development is the Working Lands Initiative. The Working Lands Enterprise Initiative was passed by the Vermont legislature in 2012 to administer grants to agriculture and forestry businesses and institutions across the state in order to support the economic viability of Vermont's working landscape. CAE and numerous farms and food businesses connected with it have received grants through this initiative in the last two years. Though it is difficult to assess whether these two programs have directly impacted Hardwick, it is nevertheless an example of a statewide commitment to encouraging growth of healthy local food economies.

In addition to being in a supportive state legislative climate, Hardwick is located in the historically underdeveloped Northeast Kingdom, which is a designated Rural Area Economic Partnership REAP zone area. REAP is a USDA designation for rural communities facing economic and community development challenges particular to rural poverty. This REAP designation makes Hardwick eligible for job creation and rural development funds. These funds have been crucial to establishing the Vermont Food Venture Center and to continuing the work of the Center for an Agricultural Economy. The VFVC received federal stimulus funds from the American Recovery and Reinvestment act to build the processing facility, as well as funds from the Vermont Community Development Program. In addition, CAE has received grant funding from the USDA, including two rural business enterprise grants to help small farms process local produce and a rural business opportunity grant in 2015. These federal and state funding sources have been essential to assisting the Center for an Agricultural Economy and many area businesses, large and small. Though it is difficult to measure how important these funding sources have been to the Hardwick area food economy, certainly in the case of building the Vermont Food Venture Center's infrastructure, external funding has been crucial.

### **3.3. Replicability**

The growth of the local food movement across the country has demonstrated that there is certainly interest in developing more localized economies around food production, distribution, and consumption. What is required at the community, neighborhood, city, or state level to continue to develop these localized food economies? It appears as if features of the Hardwick local food economy that have been crucial to its success could be replicated elsewhere. Many in Hardwick insist that what is happening there is not unique. Yet the history of agriculture in the area contributed to the emergence of the food economy there, including: a significant history of small farmers working together; a history of local retail institutions invested in local food; a history of cooperatives giving farmers opportunities to distribute crops beyond the local area; and private and public sector enterprises that have shared goals of growing their businesses in place and encouraging the incorporation of local food and the local food and farming culture into the

community. The organizational features of the Hardwick food economy that have been crucial to its success include: diversity of enterprises (seed producer, animal and vegetable producer, processing center, numerous retail outlets); a combination of smaller scale, locally oriented and larger-scale, export-oriented enterprises; a non-profit hub that supports public-private collaboration and provides processing infrastructure; and a broader characteristic of collaboration. These latter, structural features—diversity of enterprise, the right balance of local and export, a highly-networked and collaborative business community, and a non-profit hub—could be supported and encouraged in other communities hoping to develop a healthy local food economy.

Another crucial feature of the Hardwick local food economy is the shared sense of values and vision. Certainly not everyone in the community shares the same values, but most people interviewed for this project expressed values relating to protecting the economic viability of agriculture and the culture of farming in Vermont—the working landscape—and a commitment to place-based economic growth. Though these exact values cannot be replicated in other communities, the identification of a common vision and belief in building an economy around the natural and social assets particular to a place, whatever they may be, appears to be an important step in the development of other local food economies.

Yet for all of its success, it is important to note that the Hardwick local food economy represents a shift in the agricultural and economic landscape of a region and, as such, has potentially displaced some smaller operators. Seemingly, what is happening in Hardwick is a reinvention of what the agricultural economy looks like in Vermont—dairy farm diversification into other crops and added value products such as cheese, along with new kinds of institutional collaboration that open up new markets such as schools and hospitals. The other noticeable shift is from predominantly smaller, family-run enterprises to significantly larger food-related businesses that are ambitious and willing to take on financial debt and risks in a way that perhaps the average Vermont family farmer has not historically been. Some area farmers interviewed expressed feeling somewhat out-competed by the newer breed of agricultural enterprises in the area. They also expressed concern that in growing so much, the newer enterprises are displacing some small farmers. However, others were quick to point out that the consolidation of the dairy industry has necessitated smaller dairy farms to sell to larger farms anyway, a trend that has been observed in the Hardwick area. This suggests that any displacement occurring as a result of the ‘newer’ approach among the agri-businesses could be an alternative form of economic transition, wherein the community’s core agricultural industries are transitioning to different practices and scales, and not simply displacement and consolidation.

### **3.4. Vulnerabilities and Unintended Consequences**

One potential vulnerability of the Hardwick local food economy is its size. Sarah Waring of the Center for an Agricultural Economy explains: “Our economy is diverse, but not deep. The loss of three farms, or the loss of one of our businesses, would put tens of folks out of work, which in our area is a big deal.” This might be addressed by continuing to nurture institutional partnerships between farmers and businesses and larger, more stable institutions such as hospitals and schools. The greater the web of institutional interdependence, the more resilient the economy might be to individual enterprises failing. Another potential vulnerability of the Hardwick area local food economy is that in growing businesses focused on producing high-end food products, it might obscure the reality that much of the area population still lacks access to healthy food, though this is certainly being addressed by CAE’s work to connect local food to area hospitals, schools, and food banks. If the agricultural reinvention that Hardwick is leading is not accompanied by systematic investment in the broader community—in particular the disadvantaged population within the area—there is potential for the big agri-businesses to continue growing but without any benefit to most people in the area, aside from those who are directly employed at one of the handful of expanding enterprises. While it may be impossible to ensure that an economic transition such as Hardwick is experiencing directly benefits every segment of the population, if the Hardwick food economy is to achieve its goals of contributing to a vibrant community through agriculture, nurturing its roots in the community and emphasizing inclusivity and accessibility to those most in need will be essential.

## REFERENCES

- Allen, P., et al. 2003. "Shifting plates in the agrifood landscape: the tectonics of alternative agrifood initiatives in California." *Journal of Rural Studies* 19(1): 61-75.
- Allen, P. 2004. *Together at the table: sustainability and sustenance in the American agrifood system*. Penn State Press.
- Allen, P. 2010. "Realizing justice in local food systems." *Cambridge Journal of Regions, Economy and Society* 3(2): 295-308.
- Altieri, M. A. 1995. *Agroecology: The Science of Sustainable Agriculture*, 2nd Edition. Westview Press.
- Anderson, M. D. 2008. "Rights-based food systems and the goals of good systems reform." *Agriculture and Human Values*, 25: 593–608.
- Brodt, S., et al. 2013. "Comparing environmental impacts of regional and national-scale food supply chains: A case study of processed tomatoes." *Food Policy* 42: 106-114.
- Burrios, M. October 7, 2008. "United Around Food to Save an Ailing Town." *New York Times*. [http://www.nytimes.com/2008/10/08/dining/08verm.html?pagewanted=all&\\_r=0](http://www.nytimes.com/2008/10/08/dining/08verm.html?pagewanted=all&_r=0).
- Center for an Agricultural Economy. <http://www.hardwickagriculture.org/>.
- Charles, D. July 15, 2011. "Vermont Town's Food Focus Still a Growing Concept." <http://www.npr.org/2011/07/15/137499585/vermont-towns-food-focus-still-a-growingconcept>.
- Claro, J. 2011. *Vermont Farmers' Markets and Grocery Stores: A Price Comparison*. NOFA-VT. <http://nofavt.org/find-organic-food/price-study>.
- DeLind, L. B., & Bingen, J. 2008. "Place and civic culture: re-thinking the context for local agriculture." *Agricultural and Environmental Ethics*, 21(2): 127-151.
- De Schutter, O. 2010. "Agroecology and the right to food." United Nations.
- DuPuis, E. M., and Goodman, D. 2005. "Should we go "home" to eat?: toward a reflexive politics of localism." *Journal of rural studies* 21(3): 359-371.
- Environmental Working Group. 2011. *Meat eater's guide to climate change and health*. <http://www.ewg.org/meateatersguide/a-meat-eaters-guide-to-climate-change-health-what-you-eat-matters/>.
- Guthman, J. 2004. *Agrarian dreams: The paradox of organic farming in California*. University of California Press.
- Born, B. and Purcell, M. 2006. "Avoiding the Local Trap: Scale and Food Systems in Planning Research." *Journal of Planning Education and Research*. 26: 195-207.
- Feenstra, G.W., 1997. "Local food systems and sustainable communities." *American Journal of Alternative Agriculture* 12(1): 28-36.
- Goldschmidt, W. 1947. *As You Sow*. Harcourt, Brace.
- Gould, B. 2010. "Consolidation and concentration in the US dairy industry." *Choices* 25(2): 1-15.

- Harvey, D. 1996. *Justice, nature and the geography of difference*. Wiley-Blackwell.
- Henneberry, S.R., B. Whitacre, and H.N. Agustini. November 2009. "An Evaluation of the Economic Impacts of Oklahoma Farmers' Markets." *Journal of Food Distribution Research*. 40: 64-78.
- Hewitt, Ben. 2010. *The town that food saved: How one community found vitality in local food*. Rodale,
- Hinrichs, C. 2000. "Embeddedness and local food systems: notes on two types of direct agricultural market." *Journal of rural studies* 16(3): 295-303.
- King, R. 2010. "Comparing the structure, size, and performance of local and mainstream food supply chains." USDA Report Vol. 99. DIANE Publishing.
- Kloppenborg J., Hendrickson, J., and Stevenson, G. 1996. "Coming in to the foodshed." *Agriculture and human values* 13(3): 33-42.
- Lazor, Jack. 2013. *Small scale, holistic grain production for the home and market producer*. Chelsea Green.
- Lev, L., Brewer, L., and Stephenson, G. 2003. "How Do Farmers' Markets Affect Neighboring Businesses?" Oregon Small Farms Technical Report No. 16, Small Farms Extension Program, Oregon State University, Corvallis, OR.
- Lyson, T. A., Torres, R. J., & Welsh, R. 2001. "Scale of agricultural production, civic engagement, and community welfare." *Social Forces*, 80(1): 311-327.
- Lyson, Thomas. 2004. *Civic Agriculture*. New Hampshire: Tufts University Press.
- Mares, T. M., and Peña, D. G. 2011. "Environmental and food justice." In *Cultivating food justice: Race, class, and sustainability*, Cambridge: MIT Press.
- Martinez, S., et al. 2010. "Local Food Systems: Concepts, Impacts, and Issues." ERR 97, U.S. Department of Agriculture, Economic Research Service, May 2010.
- Macias, T. 2008. "Working Toward a Just, Equitable, and Local Food System: The Social Impact of Community Based Agriculture." *Social Science Quarterly*, 89(5): 1086-1101.
- Mills, C.W. and Ulmer, M. 1946. "Small Business and Civil Welfare: Report of the smaller war plants corporation to the Special Committee to study problems of American small business." 79th Congress, 2nd sess., February 13, S. Doc. 135.
- Otto, D., and T. Varner. 2005. "Consumers, Vendors, and the Economic Importance of Iowa Farmers' Markets: An Economic Impact Survey." Leopold Center for Sustainable Agriculture, Ames, IA.
- Pelletier, D., et al. 2000. "Values, public policy, and community food security." *Agriculture and Human Values* 17(1): 75-93.
- Sherman, M., Sessions, G., and Potash, J. 2004. "Freedom and Unity: A History of Vermont. 506-508.
- Swenson, D. 2006. "The economic impacts of increased fruit and vegetable production and consumption in Iowa: Phase II." Ames, IA: Leopold Center for Sustainable Agriculture.



Swenson, D. 2010. "Selected measures of the economic values of increased fruit and vegetable production and consumption in the Upper Midwest." Ames, IA: Leopold Center for Sustainable Agriculture.

Thompson, Craig and Press, Melea. 2014. "How Community- Supported Agriculture Facilitates Reembedding and Reterritorializing Practices of Sustainable Consumption." In *Sustainable Lifestyles and the Quest for Plenitude: Case studies of the New Economy*, Editors Juliet B. Schor and Craig J. Thompson. 125-148.

United Nations, Food and Agriculture Organization. 2006. "Livestock's long shadow." <http://www.fao.org/docrep/010/a0701e/a0701e00.HTM>.

USDA Vermont Statistics and Reports. [http://www.nass.usda.gov/Statistics\\_by\\_State/Vermont/](http://www.nass.usda.gov/Statistics_by_State/Vermont/).

USDA-AMS-Marketing Services Division. 2014. National count of farmers market directory listing graph: 1994-2014. <http://www.ams.usda.gov/AMSV1.0/ams.fetchTemplateData.do?template=TemplateS&leftNav=WholesaleandFarmersMarkets&page=WFMFarmersMarketGrowth&description=Farmers+Market+Growth>.

Van Hauwermeiren, A., et al. 2007. "Energy lifecycle inputs in food systems: a comparison of local versus mainstream cases." *Journal of Environmental Policy & Planning* 9(1): 31-51.

Vermont Economic and Labor Market Information. Covered Employment for Hardwick, Vermont. 2014. <http://www.vtlni.info>.

Weber, C. and Matthews, S. 2008. "Food-miles and the relative climate impacts of food choices in the United States." *Environmental science & technology* 42(10) 3508-3513.

Winter, Michael. 2003. "Embeddedness, the new food economy and defensive localism." *Journal of rural studies* 19(1) 23-32.