

## Executive Summary

# *Growing Jobs, Vermont-Style:* Skills and Knowledge for Vermont's "Sustainable Food System Cluster" and Natural Resources

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For the Vermont Department of Education



Regional Technology Strategies  
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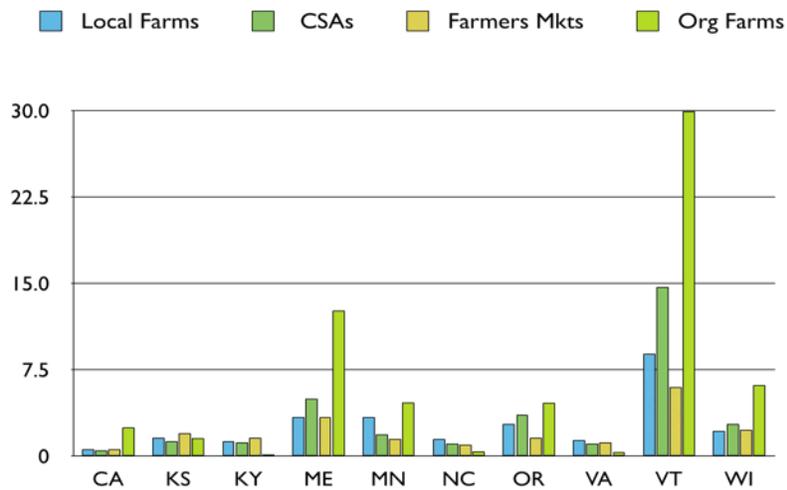
## Executive Summary

Vermont has one of America’s most prominent and dominant sustainable food systems and natural resources clusters, whether measured in terms of contributions to the state’s economy or growth compared to national trends. Adding “sustainability” to what once was an agricultural and/or natural resource cluster takes into account the long-term ability of the land to produce food and plants, the environment to support healthy lives, the economy to generate wealth, and of the community to retain that wealth.

The primary purpose of this report is to suggest strategies for career and technical education programs in the public schools that better support and meet the needs of this emerging form of sustainable food systems and natural resources.

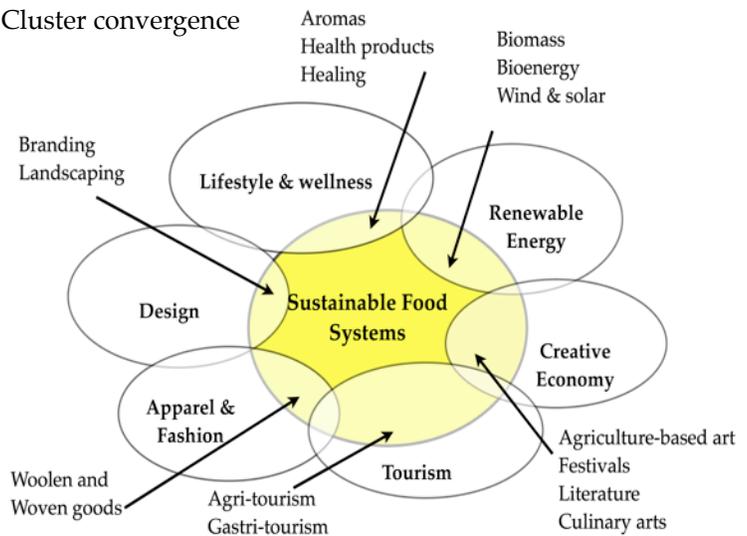
Vermont’s food systems and natural resources have very distinctive qualities that include a high predominance of small enterprises, a long-standing commitment to conservation, and, perhaps most strong, a long-standing interdependence with the state’s cultural heritage, populism, lifestyle, and image. The state is nationally recognized as a leader in selling directly to local markets, producing organic foods, and retaining more wealth within the community. It far exceeds any national or state comparisons in its concentrations of farmers markets, locally owned farms, community supported agriculture, and organic farms (Figure 1).

Figure 1: Number per capita compared to U.S. number per capita for Vermont and for selected states for local farms, community supported agriculture, farmers markets, and organic farms, 2008.



Clusters, which are characterized by distinctiveness and interdependencies among companies, are becoming more and more interdependent (Figure 2). Food systems are increasingly blended with tourism, energy, design, apparel, wellness, and the arts. The confluence of agriculture with the creative economy, for example, is obvious in the content of Vermont’s arts, crafts, literature, and performance. Vermont produces medicinal herbs and nutraceuticals used by health practitioners in the lifestyle and wellness cluster. Vermont’s tourism

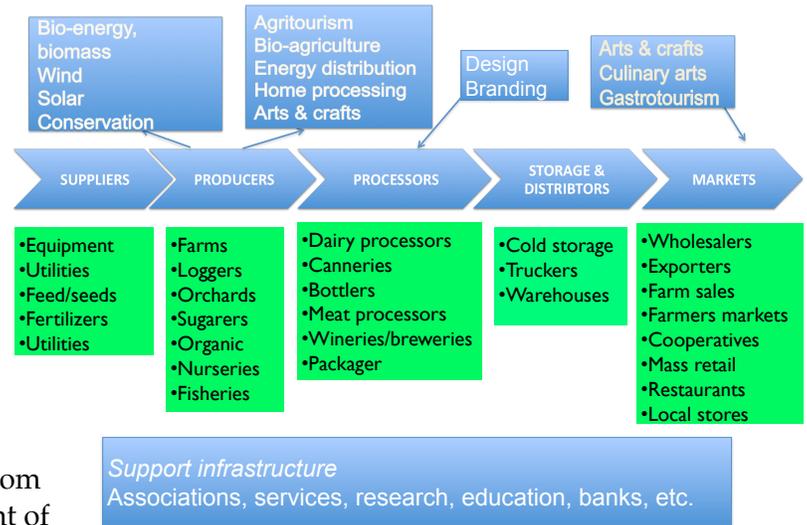
Figure 2: Cluster convergence



cluster includes agri-tourism and gastri-tourism, and biofuels and windfarms are also part of the energy cluster.

Figure 3: Cluster diagram

## Sustainable Food Systems Cluster



### Scale of the cluster

Combining data from the North American Industrial Classification System, the Census Bureau’s self-employment data, and Census of Agriculture, the sustainable food system cluster employed 30,499 workers in Vermont in more than 9,366 establishments in 2008. The 2007 Census of Agriculture reports that half of all owners report their primary occupation as farming, down slightly from 53 percent in 2002. More than 37 percent of the principal operators work more than 200 days off farm each year, up from 26 percent in 1992. The natural resource sectors employed 4,888 in 1,674 businesses, excluding those working for government agencies.

Total sales reported by farms in 2007 exceeded \$673 million, with dairy cattle and milk production farms accounting for \$538 million of that total. Ninety percent of the milk was sold out of state. Direct sales to consumers through farmers markets and CSAs, local contracts with restaurants, stores, and institutions, and sales on site have been rising steadily, from \$3.8 million in 1982 to \$9.6 million in 2002, to \$ 22.9 million in 2007.

In addition, Vermont’s clusters include, and depend on, an array of specialized resources and support services that provide information, advice, assistance, skills, and knowledge. The most important among these is the educational system, but the social infrastructure, labor market, technical and business assistance, discriminating markets, and capital are all parts of a cluster.

### Supply and Demand

Farmers surveyed expressed their greatest needs for additional education or training, in energy conservation, which was rated highest, marketing 2nd, farm operations 3rd, packaging and branding 4th, and organic farming 5th. They were quite uninformed, however, about or unfamiliar with the programs available in the state’s public or private educational institutions, and they looked first to agricultural extension or their farm associations for new skills and knowledge.

The sources of skills and knowledge necessary for careers in the cluster begin in the public elementary and high schools, which culminate in years 11 and 12 with career and technical education (CTE). The most relevant parts of the high school education is organized into pre-technical foundation programs in the comprehensive high schools and career and technical programs offered mainly at career and technical centers. The latter focus on, for example, diversified agriculture, including plant and animal, mechanics, forestry and natural resources, and horticulture. Further education for employment or self-employment in sustainable food

systems or natural resources is available in degree-granting programs at Vermont Technical College and at a number of private colleges in Vermont, nearby SUNY colleges in New York and not-for-credit programs or workshops through agricultural extension, regional food centers, certifying bodies, and various agricultural and natural resource business associations.

From a survey of, and dozens of interviews with, career and technical center directors and staff, we learned that occupational programs and career fields associated with food systems and natural resources are not highly regarded by counselors, public school teachers, parents, and higher education institutions. The experiential nature of the learning attracts both lowachievers seeking what they believe will be less demanding academic standards and high achievers looking for technical skills in an applied context but with high academic standards. In line with the goals of federal legislation, all career and technical education programs are moving toward more rigorous academic standards that prepare all completers for further education. Vermont's absence of a full-blown occupationally oriented community college system, however, limits transfer opportunities

## Goals and Strategies

The following goals and strategies emerged from results of on-line surveys of farmers and career centers, dozens of site visits and telephone interviews. From this information, we determined that although Vermont has one of the most well-known food systems clusters in the nation, there are changes in its career and technical education preparation that could more effectively align it with the new and more diversified skills for economic success. Among the most important are:

- Increase attention to the diversification of food production and distribution, the variety of revenue streams for modern farms, and the overlap with other clusters.  
*Expand the curricula by offering a wider range of sequenced courses or modules within courses that encompass the diversity of skills needed to supplement the economics of basic food production, including organic farming methods, alternative energy production, direct marketing, and specialty foods processing and branding.*
- Address the low demand among youth that exists despite many efforts to engage them in food-related activities.  
*Make sustainable food systems and natural resources (1) more prominent parts of the context for teaching basics in the early years and for remedial education commonly required for postsecondary programs and (2) better understood by those who influence the career paths of youth.*
- Narrow the gaps between academic and occupational programs and between experiential and classroom learning.  
*Establish courses with sufficient rigor to meet college standards and to appeal to contemporary youth interests to make it easier and more desirable for non-CTE students to enroll in CTE courses.*
- Ensure a community college system that enables easy transition from high school to higher education, a gap that is currently driving students to out-of-state postsecondary institutions.  
*Expand the in-state availability of one-year certificate and two-year associate or applied science degree programs in sustainable food systems and natural resources.*

- Increase the school-based programs that serve adults, who comprise a large proportion of the population of new farmers.  
*Develop more short term and/or non-credit programs for adults to fill skill gaps in, for example, business management, direct marketing, organic certification, GPS, and branding.*

Although Vermont has one of the strongest food systems clusters in the nation, there are improvements described in the following goals and strategies that could make it more effective for more people and more relevant to the changing demands of the cluster.

*A. Improve information about and stature of programs.*

Strategy 1: Rebrand the field of study as “Sustainable Food Systems and Natural Resources.”

Strategy 2: Develop the capacity to produce information about economic opportunities.

Strategy 3: Expand food and natural resource “literacy” by integrating examples, case studies, and/or problem assignments related to sustainable food systems and natural resources throughout the general curricula.

Strategy 4: Hold sustainability awareness seminars for elementary school teachers and counselors.

*B. Further increase the rigor of courses while continuing to serve all students.*

Strategy 1: Increase the fusion of sustainable food systems and natural resources with science, math, and English.

Strategy 2: Expand organic farming to meet science requirements.

Strategy 3. Provide summer externships and added support for teachers to improve curricula, upgrade skills, and develop stronger relationships with sustainable food systems and natural resource organizations.

*C. Expand the breadth of the programs to encompass diversity, niche interests, and opportunities in convergence clusters.*

Strategy 1: Develop clearly defined modules that can address new and emerging areas of interest while also meeting competency requirements.

Strategy 2: Encourage one-year CTE programs.

Strategy 3: Offer more educational non-credit and certification programs for adults.

*D. Expand centers’ resources through collaboration.*

Strategy 1: Each center will develop formal working relationships with at least two regional food centers, cluster-based business associations, and an “auxiliary corps” of instructors.

Strategy 2: Establish cluster hubs at two or three career centers.

*E. Increase focus on sustainability and entrepreneurship.*

Strategy 1. Increase understanding of triple bottom line outcomes.

Strategy 2: Broaden student entrepreneurial experience through more and closely monitored internships, school based businesses, and educational programming.

Strategy 3: Increase students' knowledge of the value associated with both local and export markets.

*F. Integrate the arts into the curriculum more intentionally as a required competency and relate it to value of products.*

Strategy 1: Focus on right brain thinking by integrating the arts and design into programs in the same manner and with the same emphasis as STEM.

Strategy 2: Develop a course or module on high value added processing and branding.

Strategy 3: Include art in the centers and an artist in residence in each career center.

*G. Expand postsecondary education options and connections.*

Strategy 1: Accelerate the coordination of articulation agreements with colleges within and near Vermont.

Strategy 2: Prepare all program completers to go on to some form of further education.

Strategy 3: Extend the certificate and associate of applied science (AAS) degree opportunities available in the state.

## Conclusions

Vermont, a rural state ensconced in an increasingly global, urban, knowledge and technology-based economy, is at a crossroads in choosing its future. It needs to find the competitive advantages that can best create economic opportunities and retain the wealth and quality of life of its citizens. Its past advantages have been closely aligned with lifestyle, environment, and manageable scale, all of which have been tightly linked to agriculture and natural resources. That interdependency is likely to continue to be important to talented people and firms across all sectors that are considering continuing to do business in or moving to Vermont.

Yet some of the traditional sectors of the economy that created the Vermont brand can no longer provide as many livable family incomes by operating the same way they did in the past, selling commodities. The new cluster will require a new, more creative, entrepreneurial, and technologically proficient individual, which, in turn, will require more expansive and different skills and knowledge and the ability to visualize and adopt a different business model. It also will depend on a better-informed public as consumers and supporters and a public sector that understands the full ramifications for career and technical and postsecondary education.

Agricultural education operates in a very different economic and learning environment. Many of the young people who will create Vermont's future in sustainable food systems and natural resources have not grown up on farms. Many other prospective farmers are adults from other places moving to Vermont for a new career and/or lifestyle—often already holding postsecondary credentials. And still others want the skills to grow food or raise farm animals without ever intending to earn their full living from that enterprise. These changes create a new set of opportunities for Vermont's educational system to:

- (1) alter the perceptions of career and technical education programs to reflect the future, not the past,
- (2) adjust the measures of economic opportunity and impacts to match the entrepreneurial, diverse, and interdependent nature of the sustainable food systems cluster and natural resource sectors,
- (3) serve the adult population and, working in collaboration with higher education and extension, become part of a lifelong learning system,
- (4) continue to strengthen academic content and rigor, and
- (5) expand opportunities in the state for pre-baccalaureate postsecondary education.

The State Department of Education is well on the road towards these outcomes, but it will take a systemic effort involving other agencies and organizations working within, and/or responsible for the economic future of, the sustainable food systems and natural resources to achieve these goals.

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