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The Transition of Appalachia

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In Brief:

The economic model of globalization has propelled rural communities in the United States and much of the world toward specialized, low-value, extractive economies for much of the twentieth century. This has been particularly true in the central Appalachian region of the U.S., where relatively diverse and self-reliant communities have gradually given way to increased dependence on external resources and greater extremes of poverty, wealth concentration, economic vulnerability, and ecological decline. In the Appalachian region of West Virginia, Kentucky, Tennessee, Virginia, and Ohio, the problems with this model have included a historic focus on the production and export of cheap commodities, particularly energy, wood products, and tobacco. The result has been economic uncertainty and generally declining opportunities in each of these core sectors, as farmers and rural businesses become price-takers and forests, farms, and other natural resources are overused and undervalued. We have also witnessed low levels of community wealth, limited local ownership, and a broad decline in self-reliance.

Whereas Appalachia's coal reserves and abundant hardwoods provided strong incentives for exploitation by external corporations, broader cultural trends also shaped the economy and communities of the region, including the conflation of freedom with consumerism, the increasing estrangement of producers from consumers, particularly in a global economy, and the environmental movement's dominant approach of policy advocacy and litigation to protect the ecosystem from human abuse. Fortunately, there is a new culture emerging in Appalachia and the nation, one focused on restoring connections between farm and table and utilizing the market to create ecologically healthy rural economies. This sustainable Appalachian economy is emerging through the efforts of several key entrepreneurial nonprofit organizations and hundreds of small businesses in food and farming, forest management and wood products, energy efficiency and green building, and other sectors. These enterprises use asset-based strategies, building on the ecological, cultural, and human strengths of the region. They are developing cooperative networks to overcome isolation and problems of scale, and cultivating self-reliance and community wealth.

Key Concepts:

- While coal mining has largely defined the public image of Appalachia, the industry is at an all-time low in terms of employment—it represents less than two percent of all jobs—and economic impact.
- Efforts to diversify the central Appalachian economy, underway for more than 30 years, have had some success. But until very recently these, too, have operated within the paradigm of globalization and comparative advantage, with little attention paid to ecological concerns or building long-term wealth.
- The national focus on growth and the inducements to unfettered consumption—what might be called the culture of "ubiquitous abundance"—have helped maintain the position of Appalachia as a provider of cheap energy, fiber, and other products, which, in turn, has led to enormous social and ecological problems.
- Over the past 10 to 15 years, a more sustainable economy has begun to emerge, led by community based, entrepreneurial nonprofits, key local and state officials, and innovative local businesses, often linked through networks of production, markets, and peer learning.
- This sustainable economy is diverse, with enterprises emerging in several sectors, including food and farming, forest-based enterprises, and renewable energy/energy efficiency and green building.

- The common and defining characteristics of this sustainable economy include: nurturing ecological sustainability, often beginning with restoration; building local assets, both infrastructural and institutional, that spawn innovation and self reliance; building relationships between consumers and producers based on regional economies and markets; and generating broadly held local wealth in order to decrease poverty and dependence and increase community resilience.

In early November 1996, workers arriving for the morning shift at the Louisiana Pacific plant in Dungannon, Virginia, were told to go home. After 10 years of operation, the plant, which used the region's forests to manufacture oriented strand board, a type of engineered wood commonly used in construction, had closed without warning. The facility was profitable, according to a company official, but not profitable enough to continue operations. For the 100 people who had lost their jobs and the small landowners whose forests bore the scars of poor logging, there was no recourse.

This has been a familiar story in Appalachia, and one that has its roots in nineteenth-century economic principles. In 1817, English economist David Ricardo put forth the theory of comparative advantage to guide trade policy between nations. The theory posited that nations should specialize in the production of a small number of goods that they could manufacture efficiently and then sell to other nations in order to generate income needed to buy the things they did not produce themselves. While many countries were quite capable of producing a broad array of products, Ricardo insisted that all would be better off concentrating on a few exports rather than developing broadly based manufacturing sectors. This notion of specializing in what you're good at has underpinned the trade and economic development policies of the United States—and most other industrialized nations—ever since.

A reliance on exporting a *few* things to generate income to import *many* things has created enormous problems around the globe, particularly in rural, resource-dependent regions like central Appalachia. In the Appalachian portions of West Virginia, Kentucky, Tennessee, Ohio, and Virginia, these problems have included a historic focus on the production and export of cheap commodities, particularly energy, wood products, and tobacco, as the defining characteristic of both economic and political thinking. This focus has caused economic uncertainty and generally declining opportunities in each of these core sectors, as farmers, workers, and businesses lack access to essential infrastructure and become price-takers—they are not influential enough to affect the price of their products and can't compete with less expensive, usually offshore alternatives. It has also fostered enormous ecological problems: Even though Appalachia has abundant natural resources, their ownership, and that of the land, has been concentrated in the hands of a few, who have overused and undervalued them in an effort to remain viable in the market. The coal industry has great political power—often at both local and state levels. The result is that Appalachia has relatively low levels of community wealth and has seen a broad decline in self-reliance among individuals, households, and communities.

Though coal is a finite resource, its role in the Appalachian economy has closely mirrored that of forests and farms, the region's two main renewables, in that many of the costs of production have largely been externalized, spilling over in the form of pollution and ill health to the Appalachian community and its ecosystem. The practice of dumping tons of overburden from mountaintop removal into adjacent valleys has led to the destruction of nearly 1,600 miles of streams, but
engendered little cost to the coal companies or coal-electricity consumers, at least until recent policy shifts by the Obama administration. Deflecting the enormous cost of stream destruction to local people or to the public sector certainly makes Appalachian coal more price-competitive globally, just as a lack of mandatory forestry regulations in most Appalachian states does the same for the region's lumber exports.

Even so-called "alternative" economic development strategies have operated within the same paradigm of global competition and comparative advantage. This has led to an extraordinarily expensive competition for a limited pool of companies, many of which stay less than 10 years. The resource that is being overused and undervalued in this strategy is people, whose low-cost labor is as attractive as cheap timber, at least for a while. A study by Thomas Lyson of Cornell University demonstrated that communities that win a corporate bidding competition are often the worse for it: comparing over 200 manufacturing counties around the nation, Lyson found that those with one or two large, dominant industries had higher levels of income inequality, substandard housing, worker disability, and crime than those with many small businesses.[1]

"A hardheaded look at the world suggests that the betrayal of work is only beginning," William Wolman and Anne Colamosca wrote in *The Judas Economy* more than a decade ago. "In the global economy of the mid-1990s no country can stay ahead for very long without continuing strenuous effort on the part of corporations to cut costs, reorganize their workforce, and shed employees. And no country surges to the head of the field without inviting rapid retaliation by its rivals."[2]

Organizations Active in the Appalachian Transition

The Alliance for Appalachia

www.theallianceforappalachia.org
The Alliance for Appalachia is a group of 13 organizations from five states in Central Appalachia that work together to end mountaintop-removal coal mining, stop destructive mining technologies, and support a sustainable, just economy through grassroots organizing, leadership development, strategic communications, alliance building, research, and litigation. By highlighting the dangers and true costs of the region's dependence on coal, the Alliance intends to move the nation toward a new ethic of conservation, efficiency, and renewable energy.

Appalachian Community Economic Networks (ACEnet)

www.acenetworks.org
ACEnet's mission is to build networks, support innovation, and facilitate collaboration with Appalachian Ohio's businesses to create a strong, sustainable regional economy. ACEnet utilizes key strategies to maximize asset development, economic opportunity, and sustainability in the region. ACEnet operates two business incubators and offers counseling, training, and loans to Appalachian Ohio businesses.

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Is there a viable alternative to the global comparative advantage model for the Appalachian region, one that can grow beyond demonstration projects and niche markets? This paper will explore this question, beginning with a deeper examination of the problems inherent in the prevailing economic model. Emerging initiatives designed to build community wealth while restoring or sustaining the ecosystem will be discussed, with their potential to expand and multiply given particular consideration. Lastly, a new model for sustainable rural development that might generate significantly better outcomes for people, communities, and the environment will be offered.

The Broader Context

The name of our present society's connection to the earth is "bad work"—work that is only generally and crudely defined, that enacts a dependence that is ill understood, that enacts no affection and gives no honor….All of us are responsible for bad work, not so much because we do it ourselves (though we all do it) as because we have it done for us by other people. —Wendell Berry, "Conservation is Good Work"

The economic model of globalization and comparative advantage helped propel a low-value, extractive economy in Appalachia. During much of the twentieth century, relatively diverse and self-reliant communities gradually gave way to increased dependence on external resources and greater extremes of high and low, boom and bust.[3] High levels of income inequality and poverty raised concerns, but were understood as glitches along the path toward prosperity. Widespread health and environmental problems, related especially to coal mining but also to logging, tobacco farming, and industrial development, were accepted as unfortunate but unavoidable byproducts of modernization.

Appalachia's coal reserves and rich timber resources certainly provided strong inducements for exploitation by outside investors. But broader cultural trends have played a critical role as well, particularly in more recent decades. Three of these stand out.

First, the conflation of consumerism with freedom fundamentally altered our perspective about the rights and responsibilities of citizenship and our obligations toward others. Buying things increasingly has come to be seen as an expression of personal liberty and civic involvement. Walter Wriston, former president of Citibank, put it this way: "Markets are voting machines, global plebiscites."[4] A growing belief in the immutable wisdom of the market, fueled by political and business elites, both accelerated and justified the centrality of consumption in our national psyche. This has led to what Thomas Frank has called "an ecstatic confusion of markets with democracy, markets with people, markets with empowerment."[4]

Second, the increasing estrangement of producers from consumers has made it manageable for most people to ignore the negative consequences of their daily choices in the marketplace. With food traveling an average of 1,750 miles from farm to fork, and with heat and lights available at the flip of a switch, the vast majority of Americans can comfortably ignore the devastation of mountaintop removal and the stench of confinement hog farms. Such consequences are virtually unfathomable to most people residing outside the impacted regions.

Third, the once dominant approach of the environmental movement, while helping to mitigate some of the worst abuses, has created its own form of estrangement by championing nature preservation rather than sustainable livelihoods. Urban and suburban environmentalists have focused on protection of the ecosystem from human degradation, often alienating farmers, loggers, fisherman, and rural communities for whom "the environment" represents a substantial part of their lives. As Wendell Berry has pointed out, this focus on protecting parts of the environment *from* people instead of developing the means to live *within* the ecosystem stems from the same hyper-specialized mindset that created many ecological and social problems in the first place.

Fortunately, a different mindset is emerging in Appalachia and the nation, one that seeks to restore connections between farm and table, country and city, and recognizes that consumer choices have consequences for which we must begin to take responsibility. Responsible consumption, though essential, is inadequate without civic and political engagement. This new culture is comprised of diverse and relatively self-reliant regional economies that will do much less harm to other places and other people while making their own communities more just, resilient, and perhaps even more satisfying in the years ahead. Appalachia can, and must, play a pivotal role in this global economic and social transformation, both for the sake of its own people and because of its critical role in national energy and environmental choices. If a region known primarily for coal mining, tobacco farming, and clear-cutting can come to exemplify sustainable development, it will be difficult to ignore.

Building a Resilient Appalachia

Much of the current public debate on Appalachia focuses on the benefits and problems associated with coal mining, even though employment in the region’s two largest coal-producing states, West Virginia and Kentucky, has declined by more than 70 percent over the past three decades,[5] primarily due to mechanization.

State resources intended to increase employment and diversify the economy still focus predominantly on the recruitment of companies from outside the region. As a 2008 study by the Mountain Association for Community Economic Development showed, Kentucky spent 80 percent of its total economic development dollars on recruitment incentives for outside corporations. And it’s not just Kentucky: economist Michael Shuman documents state and local government expenditure of $50 billion annually on such recruitment and other subsidies for large companies nationwide, while public resources devoted to homegrown businesses are minimal by comparison.[6] Federal subsidies of large businesses are greater still; the Cato Institute estimates that they total $87 billion each year.[6] It is likely that the majority of these federal funds subsidize ecologically extractive or damaging industries, according to a 2003 study by the Green Scissors Coalition.[7]

At the same time, a wide range of enterprises and initiatives designed to build a more sustainable economy and healthier, more resilient communities has begun to emerge in the region. They vary in scale and stage of development, but, in general, they are more ecologically sustainable because of the way they are produced and the greatly reduced transport distances to market. They use asset-based strategies, building and adding value to the ecological, cultural, and human strengths of the region. They cultivate self-reliance for producers and the broader community. And they build cooperative networks that help overcome isolation, estrangement, and problems of scale.

As these initiatives have grown in number and scale, elected leaders and local, state, and federal agencies have taken notice. The Appalachian Regional Commission, for instance, launched an "Asset Based Development" program several years ago, while the USDA more recently created a Community Facilities loan and grant program to spur local infrastructure development. Both of these programs were, in part, based upon successful initiatives in central Appalachia. In some cases, state and federal agencies have become active partners with these initiatives—for example, the Virginia Department of Housing and Community Development supports locally based agricultural and cultural enterprises in a number of ways. More broadly, public policy has begun to shift toward greater support for "sustainable development" and locally led economic strategies, though it remains inconsistent and generally inadequate throughout the region.

To understand the potential for these initiatives to model and help forge a resilient Appalachia, we will briefly consider examples from three sectors: food and farming, forestry, and green building.

Food and Farming

Having the Appalachian Harvest network available, with the big markets they've got, has made it possible for us to continue farming. —Grower near Bristol, Tennessee

The landscape of central Appalachia is a mix of mountains, gentle hills, and valleys. Nearly two-thirds of this land is forested. The remainder is rolling pasture and small acreages of moderately fertile land in cultivation, often alongside river and stream bottoms. Because the land is not suited to vast acreages of monocultures, Appalachian farms have always been relatively diverse, including livestock, small orchards, vegetable gardens, and tobacco crops. With the end of the federal tobacco program in 2005, the decline of tobacco farms and acreage accelerated; in Virginia, for example, the number of tobacco farms declined by 85 percent from 1997 to 2007.[8]

Several years before the federal tobacco program ended, local and regional nonprofits launched enterprises intended to improve farm incomes, access better-paying, larger markets, and promote sustainable farming practices. By 2009, there were more than 20 local healthy-food initiatives in the region, encompassing a range of crops, products, and business models. The Appalachian Community Economic Network's commercial kitchen initiative was started in 1994 and has helped launch or expand more than 250 food businesses that have generated over $6.5 million in annual sales. Food preparation, cooking, baking, and freezing equipment is available in their 6,500-square-foot facility, and extensive training and technical assistance provided by ACEnet staff enables entrepreneurs to source ingredients, develop recipes, test and build markets, and meet food safety and legal requirements. The ACEnet commercial kitchen allows local food entrepreneurs to add value to regional farm products: nearly 75 percent of the raw ingredients they use come from the Appalachian region. Although some successful incubator businesses ship their products nationwide, 60 percent of the markets are within a 200-mile radius of production.

Formed in 2000, Appalachian Harvest, an integrated field-to-table network in southwest Virginia and northeast Tennessee, includes 60 farmers, mostly former tobacco growers. The network grows and sells certified organic produce and free-range eggs to nearly 600 supermarkets within a 400-mile range. Colleges, small grocers, restaurants, and CSAs are also among Appalachian Harvest's market partners. The network provides training to farmers, along with a 15,000-square-foot facility where produce is washed, packed, and shipped to supermarkets and other buyers. Demand currently exceeds supply by more than 200 percent.

As an outgrowth of Appalachian Harvest, the Healthy Families, Family Farms program buys good-quality produce "seconds" from the network's farmers at discounted prices and then provides them to needy families. Supported by local churches, businesses, and individuals since 2004, Healthy Families has put more than 250,000 pounds of local organic produce on the tables of low-income families in the region.

There are other cooperative networks that link farmers, food producers, buyers, and markets: The Appalachian Farmers Market Association helps launch and promote rural farmers' markets in east Tennessee and southwest Virginia. The Appalachian Staple Food Collaborative in southeast Ohio supports regional production of healthy heirloom grains, which it then processes, markets, and ships to regional buyers. And the Monroe County Farmers Market in West Virginia aggregates and distributes produce, meat, eggs, and prepared foods from nearly 20 small farmers to customers using an online marketplace.

All of these food and farming initiatives are growing rapidly, reducing shipping by up to 90 percent and reconnecting consumers, from college students to supermarket shoppers, to the sources of their food. All are helping increase farm income, as well as jobs and businesses in farm supplies, distribution, and shipping. All are providing market-based incentives for sustainable practices that increase biodiversity and rebuild soil health and fertility. And all are creating or expanding community-based, value-adding infrastructure, a key component of durable local wealth.

Forestry

I want to leave the forest better than it is now, so that my grandchildren can come here and enjoy it and use it. —Chad Miano, horse logger, Scott County, Virginia

The mixed hardwood forests that cover nearly 70 percent of central Appalachia are ecologically and economically rich. Unfortunately, the clear-cutting of these woods for timber that is shipped out of the region for sawing, drying, and manufacturing exemplifies the overuse and undervaluing of the region's natural capital. Typically, less than 10 percent of the economic value of the wood accrues to businesses in the region, while most of the environmental problems remain.

Of all the region's resources, forests offer perhaps the greatest potential to simultaneously build economic assets and restore critical ecological functions such as water filtration, migratory bird habitat, and carbon sequestration. Properly managed, Appalachian forests will sequester up to 6.4 tons of carbon dioxide per acre per year, making them an essential part of any climate-change strategy.[9] At the same time, the Appalachian forests offer a particularly wide range of economic opportunities, given their diversity and resilience. The examples described below illustrate this potential.

The Forest Opportunities Initiative (FOI) was launched in 2008 by the Mountain Association for Community Economic Development (MACED). The Forest Opportunities Initiative is the first organized program in central Appalachia designed to pay private landowners for the ecosystem services their land provides. Forest landowners who manage their woodlands sustainably receive annual payments for the value of the carbon their forests remove from the atmosphere. This sequestration of carbon is maximized when sustainable practices are employed; therefore landowners must have their land certified under either the Forest Stewardship Council or the American Tree Farm System. Though the FOI program is new, $65,000 has already been paid out to landowners in eastern Kentucky. To date, 16,000 acres have been enrolled in the program, and landowners in Appalachian Ohio, Virginia, and other states will soon be on board as well.

While the sizes of their forest holdings vary, many of the participating landowners have low or moderate incomes. MACED uses its resources as a community development finance institution to loan landowners the funds they need to cover the costs of forest inventories and certification. MACED annually aggregates the carbon credits of these small landowners and then finds buyers seeking to offset their carbon emissions, returning nearly 75 percent of the sales revenue to local forest landowners. Any loans are then repaid out of the sale of carbon credits each year. In this way, low-income landowners use the ecological capacity of their woodlands as collateral, enabling them to participate in an enterprise that will pay them dividends for many years, long after the small loans are repaid.

Appalachian forests are also rich in non-timber forest products (NTFP), such as ginseng, goldenseal, and many other plants with medicinal properties. Building on the strong demand for ginseng and goldenseal in particular, Ohio-based Rural Action initiated an NTFP program 10 years ago that provided education to hundreds of forest landowners in southeast Ohio, along with seeds to help participants start or expand their ginseng crops using a method known as wild cultivation. The present value of the ginseng crop started through this effort is estimated at nearly $5 million. Compatible with both low-impact logging practices and enrollment in the FOI carbon credit program, cultivation of non-timber forest products provides another potential income stream for thousands of Appalachian forest landowners.

Green Building

We've made a commitment to EarthCraft building because we believe in environmental stewardship, but also because these homes will save lower income households thousands of dollars. —Rob Goldsmith, director of People, Incorporated

Green building initiatives in central Appalachia have largely grown out of affordable housing efforts underway for over 20 years, combined with more recent projects in sustainable development and forestry. Green building emphasizes energy conservation and efficiency, along with the use of regional, sustainably produced wood and other materials and renewable energy sources such as geothermal, solar, and wind. More recently, the economic development potential of green building and renewable energy products and services has become a focus. Affordable housing and green building initiatives of the Federation of Appalachian Housing Enterprises (FAHE), based in Berea, Kentucky, and People, Incorporated, based in Abingdon, Virginia, serve low- to moderate-income families; both of these community action agencies build and renovate hundreds of high quality, affordable homes for rental and for ownership. Their high standards for construction quality and efficiency have reduced maintenance and operations costs for the residents. Training programs have helped scores of people to acquire the more meticulous construction techniques involved and secure jobs with local private contractors, as well as FAHE and People, Inc. The green building trend has also created new jobs: energy auditors, well drillers for geothermal systems, and solar panel installers.

In 2007, several groups and businesses from northeast Tennessee and southwest Virginia came together to form the Holston Valley Green Building Coalition (HVGBC) to increase the use of green building practices while creating new business opportunities for local companies. The HVGBC has since become a branch of the U.S. Green Building Council and has accelerated awareness and utilization of green building products and services around the region. Local geothermal firms have seen a steady growth in their business, and startups in solar and wind installation have emerged. The growth in both LEED (Leadership in Energy and Environmental Design) and EarthCraft House as systems to certify green building practices has also helped expand the market for ecological services and materials, including sustainable wood products coming from the region.

Appalachia in Transition

We need to steer money…toward life, toward enterprises that enhance the quality of life, that preserve and restore fertility, biodiversity, and the health of bioregions and communities and the households that live in them, and away from enterprises that degrade quality in the name of quantity….We need to start thinking about money as irrigation for the *field of our intentions.* —Woody Tasch, Slow Money

It is essential to understand that the innovation and resourcefulness characteristic of these initiatives were not born in isolation. To be sure, the leaders of these efforts are creative, entrepreneurial individuals. But much of the impetus for initiatives like these has come out of the extraordinary peer networks that have evolved in the region over the past 15 to 20 years, which have accelerated the learning of key leaders, propelling innovation and helping to disseminate best practices more widely and more quickly. The networks have also increased the profile and credibility of community-based sustainable development among policy makers and key institutional leaders. In some cases, they have channeled and aggregated funding, maximizing the impact of the limited dollars available to the region.

Several critical networks have emerged, some at subregional or more localized levels, others encompassing nearly the entire region. Many of the initiatives are part of the Central Appalachian Network (CAN), originally formed in 1994. CAN has grown from a loose association of groups to a more deliberate, though still flexible, network of organizations whose central purpose is to build a sustainable economy in central Appalachia. CAN organizations are managing several other innovative, sustainable enterprises, including a Green Business Accelerator launched by the Center for Economic Options in West Virginia in 2009, following many years of work with small and nontraditional entrepreneurs. The Accelerator is a web-based tool designed to catalyze and strengthen green businesses by linking firms with information, markets, and one another. The Jubilee Project's Farm to School initiative and its Clinch Powell Community Kitchen in rural east Tennessee have created access to markets for small-scale farmers while helping them test and develop new food products. The Natural Capital Investment Fund, also based in West Virginia, provides loans and technical assistance to farming, food, forest product, and other green businesses throughout the region.

Envisioning a healthier and more sustainable central Appalachian region and a strategy to achieve it will require an understanding of the problems and the innovative responses emerging around the region. A viable strategy must also recognize that our national economic priorities, and even our definition of prosperity, will have to change. How can we get there?

Sustainable communities and economies are adapted to their particular places and will therefore look different in various parts of the world, even within the central Appalachian region. Nevertheless, from my experience and that of colleagues in the region, I'd suggest the following principles of sustainable economies, adapted from earlier frameworks I developed in concert with the Central Appalachian Network, as a framework for the Appalachian transition.

1. Sustainable economies are locally rooted, intimately adapted to the assets and challenges of their particular place. This "adaptation to place" should imply dynamism and resilience in economic design, as places evolve ecologically and demographically.
2. Sustainable economies fit within the ecosystem. This applies not only to the ecosystem where the community is located, but to larger ecological systems as well: water and nutrient cycles, energy, the air and atmosphere. Fitting within the ecosystem requires a thorough understanding of both limits and assets, regionally and globally.
3. Sustainable economies are more self reliant and resilient. This does not suggest total self-sufficiency or isolation from other communities or economies, but much reduced dependency on external resources, companies, and markets. Of necessity, self-reliant communities make the most of what they have and live within their means. Resilience comes in large part from this greater self-reliance and reduced dependency, along with the knowledge, skills, and technologies needed to increase efficiency, reduce and conserve energy, and adapt to a changing environment.
4. Sustainable economies are more just, with wealth much more broadly owned or shared. Substantial disparities in income or wealth lead to myriad expensive problems: poor health, alienation from civic and political life, economic dependence. More widely dispersed wealth, in the form of small farms and woodlots, windmills and other energy resources, and locally owned businesses and facilities, engenders participation and greater personal investment in the welfare of the community.
5. Sustainable economies have infrastructure that increases the value and marketability of their products. Depending on the natural resource base and cultural heritage of each place, this may include dry kilns and wood manufacturing facilities, aggregation and distribution centers for food, "waste to energy" facilities, venues that highlight historical, cultural, and artistic sites, and much more. The common denominator of these types of infrastructure is that they enable local people and communities to retain a much higher proportion of the end value of their products, while also creating market access for smaller entrepreneurs with limited resources.
6. Sustainable economies are engaging and empowering. They overcome alienation and estrangement between producers and consumers, between political and business elites and ordinary people. While this will undoubtedly take time, many of the initiatives described earlier have already begun to cultivate increased engagement among a broad segment of the community, resulting in improvements in public and institutional policies.

The enterprises and initiatives described in this paper have informed the development of these six principles for sustainability. They, and others like them, also provide a rich foundation on which to build healthier communities and a more sustainable economy in central Appalachia. Work to link them deliberately and strategically is underway, primarily through the Central Appalachian Network, the Appalachian Alliance, and the Ford Foundation's Wealth Building initiative in the region.

Given the extraordinary economic and ecological urgency of this work, I'd suggest a conceptual umbrella for these initiatives, a unifying framework: All of our work must seek to reach SCALE—Sequestering Carbon, Accelerating Local Economies. While not quite a litmus test, we might think of SCALE as an essential, unifying goal, pointing us toward three equally important and intertwined outcomes:

Sequestering carbon: To what degree does our strategy, policy, technology, or enterprise sustain or restore the ecosystem's capacity to sequester carbon?

Accelerating local economies: How effectively do our strategies and policies accelerate the development of diverse, resilient, wealth-building local economies?

Achieving meaningful scale: Are private investment, philanthropy, and public policy sufficient to enable rapid movement on a scale that is large enough to be transformative, while still adhering to the principles of sustainability?

Many of the initiatives and enterprises in Appalachia give hope that SCALE can be reached, perhaps within the next 20 to 30 years. One of the common features of these initiatives is that they channel limited resources strategically, usually through community-based networks that foster cooperation and innovation. In this way, ACEnet's community kitchen, Appalachian Harvest's aggregation facility, and MACED's Forest Opportunities Initiative create market access and help capitalize hundreds of farmers, forest landowners, and other green-minded entrepreneurs at a fraction of the cost of individually focused loans and grants.

But achieving SCALE will require greater investment in the emerging sustainable economy that supports this new way of thinking about prosperity and economic health. Such investment will need to be flexible and patient, what Tom Miller of MACED has called "nurture capital," and it will need to come from both within and outside the region, from foundations and investors. The transformation of regions like central Appalachia, which have historically fueled growth and affluence in other places, will be essential to achieving this new prosperity.

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