

# The CSAL Model for the Local Leadership of Sustainable Social Change

## CSAL: Community Supported Agroforestry-based Learning

by associates of the CSAL Network

### Introduction

On the premise of improving social order, economic justice, and democratic governance in the world, an international network has formed called the CSAL Network. CSAL is an acronym for Community Supported Agroforestry-based Learning. The term agroforestry conventionally refers to integrated ways to combine trees and shrubs with crops and livestock to increase the value of land that is not optimal for growing food and to benefit a diversity of life.<sup>1</sup> More recently this field has been extended to include the integration of land-based and sea-based food systems for long-run food security and food sovereignty.<sup>2</sup>

The CSAL Network is envisaged as a virtual organization of individuals whose interests and expertise can contribute to the mission of Community Supported Agroforestry-based Learning (CSAL): scientists, agriculturalists, educators, mentors of youthful business, finance experts, and others who wish to create opportunities for research, study, entrepreneurship, and lifetime careers in the interlocking disciplines of agroforestry. The associates of this Network<sup>3</sup> believe that many students and teachers with ambitions to lead social change will be choosing this study area as fundamental to surmounting the major plights of our planet, namely the interconnected problems of food, energy, water, and climate change, in addition to jobs and income. By building a global virtual organization of experts in the areas of business, forestry, agriculture, aquaculture, engineering, agro-ecology, marketing, permaculture, and related fields, the Network envisages a growing capacity to improve community wellness at the most local level through (our motto) “learning integrated with earning.”

Native (or indigenous) peoples around the world, having well-defined lands, deep cultural roots in the land, and natural resources that they aim to protect and develop, are in a position to be pioneers of the forthcoming global struggle to preserve, rebuild, and enhance the planet’s natural environment in the face of challenges arising from human degradation. The stakes are high: sustaining the quality of life for a diversity of living beings. These communities stand to prosper from this leadership, while preserving the cherished roots of their culture. People who have migrated (physically, socially, mentally, and spiritually) far from natural values will benefit also, because the results for the commons are inherently shared. Leaders of these native peoples have an opportunity to make a difference in their own communities and to demonstrate what can be done globally.

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<sup>1</sup> For a definition and evaluation of agroforestry, see <http://en.wikipedia.org/wiki/Agroforestry> and U.S. Department of Agriculture (USDA) National Agroforestry Center webpage <http://nac.unl.edu/#about>.

<sup>2</sup> Agroforestry is becoming intimately linked in modern science with programs for integrating land-based production of food and feed with ocean-based systems that are now rapidly emerging as the most likely ways to feed future populations of humans. See for example [\*Integrated Multi-Trophic Aquaculture: Growing Fish, Shrimp, Algae, and Irrigated Crops\*](#), by Kevin Fitzsimmons, University of Arizona, March 2014.

<sup>3</sup> Notes about the individuals who presently are associates of the CSAL Network are provided in the document [“CSAL Network Biographical Notes.”](#)

This document describes the CSAL Model of Community Supported Agroforestry-based Learning. Using this template, leaders anywhere with the necessary values, character, know-how and vision can create CSAL Programs to serve the enlightened interests of their communities in sustainable social change. The structure, functioning, and start-up of CSAL Programs are described here.

## **Initiating a CSAL Program**

The Initiator of a CSAL Program, designed to serve a given local area (which may be a political subdivision or a social ecosystem defined by geography and culture), is an associate of the CSAL Network having deep roots in this local area. The Initiator takes a leadership role in forming a Sustainable Local Enterprise Network (called a SLEN in the literature of development<sup>4</sup>) that over time acquires an interest in starting and sponsoring a CSAL Program serving this “beneficiary area.” The Initiator connects with local commercial businesses, including farms and farm organizations, which may benefit from agroforestry-based learning and are potential supporters or stakeholders of this CSAL Program. Other interested groups may include land owners and trusts, local (regional/district/municipal) authorities, universities, faith-based organizations, civil society groups, foundations, and other non-profits with goals related to health, food, feed, agribusiness, biodiversity, and natural resources. The function of the SLEN leaders of an area is to organize, sponsor, manage, and ultimately own the CSAL Program serving this local area.

The Initiator may start with the present general template (“The CSAL Model”) and feed it with specific local content. This content is likely to be generated by growing interest in the beneficiary community of stakeholders.<sup>5</sup> Building on this material, the Initiator oversees the preparation of a comprehensive Business Plan for this CSAL Program, which may be contracted with the Secretariat of the CSAL Network, an organization offering specialized expertise in this planning and monitoring function.<sup>6</sup> While the Secretariat and other associates of the CSAL Network can assist this process, the planning should be grounded in the knowledge, culture, research, and interests of local experts, including individuals and organizations that may well become contributing members of the SLEN as it progresses.<sup>7</sup>

Based on this Business Plan, as its factual content deepens over time, the Initiator presents ideas for discussion to a widening circle of local leaders who may have an interest in her/his proposal. As these ideas gain acceptance by these leaders, an informal network forms (the social basis for a SLEN) having growing capacity to sponsor the CSAL Program through its stages of development. This process is challenging because The CSAL Model is novel and, like any complex engine, has moving parts that must work together. The Business Plan as such will have

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<sup>4</sup> Research on Sustainable Local Enterprise Networks (SLENs) documents their importance for local-area development. For an introduction to SLENs, see *Creating Sustainable Local Enterprise Networks*, by David Wheeler et al, MIT Sloan Management Review, Fall 2005.

<sup>5</sup> The document “[The Concept and Rationale of CSAL](#)” introduces the ideas, terminology, and structure of a CSAL Program and may serve as an introduction.

<sup>6</sup> This organization is the non-profit company Centre for Research and Development, [www.ceredevo.org](http://www.ceredevo.org). For a note about its CEO, Mr. Joseph Tumushabe, see “CSAL Network Biographical Notes.”

<sup>7</sup> For a cautionary analysis of the role of experts in development, see *The Tyranny of Experts: Economists, Dictators, and the Forgotten Rights of the Poor*, by William Easterly, Basic Books, New York 2013.

a very narrow readership, but its parts should be presented to the community as a sequence of steps that are familiar from present local activities that are already going on with local support.

## **A CSAL pilot in the USA**

The CSAL Model is being piloted in America. Ayers Foundation of Rhode Island, USA ([www.ayers-foundation.org](http://www.ayers-foundation.org)), was conceived to turn an historic Southern Rhode Island Dairy into a working educational farm, called Hillandale Farm. According to the Foundation's CEO, "The owners fervently believe that if we are to restore our agrarian economies; replenish our soils; increase the frequency and volume of locally grown foods; and do a generally better job at nurturing our youth, then we must have a road map to make these common interests happen. Ayers sees the working educational model as essential to transforming the world's ill-conceived food production system on the basis of the fundamental principle of teaching by example. Taking into account looming energy shortages, the perils of climate change, and other salient natural resource concerns, the Founder, Maxson Hence, who is a consulting forester, espouses the practice of agroforestry and its integration into the working educational model. With his passion and over twenty years of professional experience, Max has made himself available to lead this initiative as manager serving the CSAL Network."

Ayers Foundation is currently supplying to local schools education services for agroforestry-based learning, demonstrating the potential of agroforestry to "integrate learning with earning" for the benefit of its local area, Westerly. These education services are building support for a CSAL Program being planned there. Potential profitable activities for which Ayers Foundation is currently developing business plans for start-up at Hillandale Farm and/or in Westerly include:

1. Town composting program, employing as many as four people, supplied by food waste and other inputs from schools, hospitals, restaurants, farms, forests, and even interested residents.
2. 1-acre solar array with under story for grazing by ruminants.
3. 1 acre Dutch-style greenhouse capable of producing in excess of 100,000 pounds of fresh organic produce and employing half a dozen or more people.
4. Commercial farm kitchen designed to produce wood-fired organic whole grain breads, gourmet cheeses, among other value-added products. This facility will employ at least three individuals and be available for educational programming as well as for use by other organizations on a fee basis.
5. US-Government-certified slaughterhouse with annexed butchering facility located downtown Westerly. This facility will be key infrastructure for enabling the revitalization of Southern RI's food-based economy.

For Max Hence and his Ayers Foundation, a U.S. tax-exempt philanthropy with a focus on education in food sciences, serving as Initiator for a CSAL Program is a smart financial strategy. Ayers routinely raises donations to fund its charitable programs and their overhead costs. By organizing a CSAL Program for its local area, Ayers becomes involved in raising capital to invest in installations used to enhance and compliment hands-on learning through real-world experiences that generate jobs, incomes, and careers for local youth. Thus, Ayers adds a learning-integrated-with-earning function to its education outreach, which leverages its regular

philanthropy and strengthens its capacity to raise grant revenue for its core mission of education. Moreover, as it matures, the Westerly CSAL Program will create opportunities for Ayers to earn revenue from services to profitable businesses that Ayers helps to nurture on Hillandale Farm. As a result, Ayers stands to become less dependent on grants to fund its conventional philanthropy.

The Initiator of any CSAL Program can adopt this strategy and achieve these results.

### **Education: the foundation**

The foundation of any CSAL Program is education, and the participation of local schools in agroforestry-based learning is essential for the long-term success of the Program through locally-led, profitable business.<sup>8</sup> These schools may not have the knowledge resources of institutions such as M.I.T. that are on the frontier of teaching and mentoring so-called Innovation-Driven Enterprise (IDE), but these schools are able to engage youth with ideas, know-how and passion, plus a will to learn, lead, be creative, take risks for gains, and share the benefits. These youthful leaders must drive the process, backed by their teachers, mentors, and the resources of their CSAL Program. Identifying these leaders is a challenge, but the case for trying seems strong.<sup>9</sup> Below, Innovation-Driven Enterprise in Agroforestry is a concept called IDEA.

The Initiator encourages potentially interested schools to consider forming a Local Area School League (LASL), to function as a key part of the SLEN that contributes to IDEA. The communities of interest served by these schools are naturally parts of the broader community to be served by the CSAL Program.<sup>10</sup> Schools of higher education affiliated with this LASL (e.g., focused on specific trades or technologies) may offer varied levels of education and research services, including advanced lab-based research essential for technical progress and commercial opportunities in agroforestry. Over time the LASL should underpin the process of exploring the business potential of agroforestry-based learning through research and experiment, in short, contributing local content to IDEA.

### **Marginal land: using an under-used natural resource**

Land is the central natural resource of agroforestry, especially land that is considered marginal for growing food but that can be improved through agroforestry science. NGOs and their partners in the protection of environmental resources (local, national, and international) have the capacity to contribute and/or assign rights to a CSAL Program for long-term use of land—land that can be used to demonstrate the participatory approach to agroforestry and the commercial applications of the knowledge it generates on the basis of research in the biological sciences. Where relevant law allows, such an NGO may be empowered in its mission by being part of the SLEN and a stakeholder in the future profit stream of the CSAL Program. This relationship

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<sup>8</sup> Commercial applications of a CSAL Program are here described as Innovation Driven Enterprise (IDE). A recent book (2013) describing IDE is Bill Aulet, *Disciplined Entrepreneurship: 24 Steps To A Successful Start-up.* In its participating schools, a CSAL Program may use this book as a basic text.

<sup>9</sup> Students interested in a self-appraisal of their suitability may use the questionnaire in the document “[A Tool for Assessing Personal Capacity To Lead a CSAL Program.](#)”

<sup>10</sup> More information is provided in the document titled “[Benefits to a School of Affiliation with CSAL and Requirements for Achieving Them.](#)”

enables the NGO to show how land protected by covenants with social, environmental, or cultural purposes can also be used for profitable enterprise benefiting the land owner. Lands owned and managed by faith-based organizations, schools, villages, municipalities, and other local government agencies are part of the potential for beneficial use of such land.

Land owned privately, publicly, and in mixed legal forms (e.g., private land with conservation easements or similar restrictions in the public interest) may be provided under long-term lease suitable for tree crops (25 to 100 years), in exchange for a nominal sum paid up front to the owner and a participation in future revenue from use of this land, as projected in a properly-qualified business plan submitted as a condition for the agreement. This financial participation is legally supported by a contract specifying the statistical basis of the expected stream of income to the land owner (e.g., a percentage of specific product sales).

Much has been written about using agroforestry sciences to combat the encroachments on food supply of climate change, stopping or even reversing the process of desertification, rebuilding and cleansing soils, reaching deep aquifers with tree roots, raising humidity and even increasing rainfall, stopping carbon emissions and increasing carbon sequestration. Also, many areas that are well fed by fertile valleys and have adequate rain are set to benefit. In the biospheres of many parts of mountainous countries, often relatively poor in cash income, marginal land amounts to those parts of the hills that are too steep or barren of good soil for profitable growing of food but not too steep for access by people and their vehicles. The job for agroforestry research, focused on this land, is to combine science-based invention with commercialization to produce innovative goods and services with potential for profit, taking social and environmental values into account. A desirable strategy will entail realizing synergies with existing production of grains and other foods in the fertile lowlands and supplies of natural spring water and pasture in the highlands. Investments in social and physical infrastructure (including better transport and communications and access to knowledge), made possible by CSAL's new business institutions (described next), should exploit these synergies. This strategy will also protect and enhance environmental resources and biodiversity, making these rough uplands attractors of human resources: places for research, contemplation, creative arts, physical and mental health, and enjoyment of endangered flora and fauna. The human species emerged from the uplands of central Africa, and in the long run the happiest humans may survive there.

### **The new business institutions of The CSAL Model**

In due course the Initiator of a CSAL Program helps the SLEN to create a new corporate entity, which is an establishment serving his/her local area. In the vision here presented, this is an establishment of a multi-location enterprise eventually to be registered in the USA as Agroforestry Business Development Services Corporation (ABDS Corp). This enterprise will serve as the central business institution of the CSAL Network. In concept this entity is a "triple-

bottom-line” for-benefit corporation.<sup>11</sup> It will function as an agroforestry-based research, testing and learning center for IDEA (Innovation-Driven Enterprise in Agroforestry).<sup>12</sup>

An establishment of ABDS Corp, created on the local initiative of The Initiator, is here called a BDSCom (BDS standing for Business Development Services). Contributors of value to a BDSCom, including members of the SLEN who wish to hold interest in it, are compensated by equity. Not all shareholders necessarily invest cash. Value may be contributed in proprietary technology, professional skills (including management), and hard work (“sweat equity”). Interested schools, having created an entity (the LASL) that can hold shares in BDSCom, may be a shareholder investing “human capital” in the long-run productivity of BDSCom, and thus have a voice on the Company’s Board. The schools are beneficiaries of BDSCom’s contributions to the practical education of future students, and their earnings will tend to flow back to their schools as alumni support.

Any BDSCom is privately financed by a kind of community-supported endowment called a Community Investment Trust (CIT).<sup>13</sup> A CIT is the dedicated arm for finance of the CSAL Program. A CIT builds and owns a professionally-managed fund designed to provide “patient capital” including private equity (PE) for early-stage financing of Community Supported Enterprises (CSEs) that conform to the principles of IDEA. This innovative financing instrument brings many advantages to the Program’s youthful entrepreneurs and to their schools. One of these is that BDSCom’s use of CIT finance for scaling its CSEs does not compete for funds with school fundraisers. On the contrary, by making their schools more productive in terms of what their students and graduates will learn and earn, school fundraisers become empowered to find grants for complementary programs. Why? Because the LASL improves the case for practical education through entrepreneurship.

Raising the capital of the CIT is an integral part of the process of forming any BDSCom and of establishing its foundation in education. By the time the SLEN is ready to launch BDSCom, schools, businesses, and other groups (private and public) that are interested in the planned CSAL Program have become educated about their potential stake in it. This education is key to the process of raising capital for the local CIT, which requires an IDEA pipeline of projects that should become qualified to be CSEs financed by the CIT. Evidence of opportunity for entrepreneurial leaders to make profits by commercializing innovative ideas is fundamental to motivating local contributions to the Community Investment Trust. This process is not just for the start-up: it continues as long as science, engineering, and education continue to feed this IDEA pipeline.

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<sup>11</sup> For information about the concept of benefit corporations as now applied in the USA (also called B-Corps), see [http://en.wikipedia.org/wiki/Benefit\\_corporation](http://en.wikipedia.org/wiki/Benefit_corporation) . About 20 U.S. states now have benefit corporation law, including California, New York, Massachusetts, Vermont, Delaware, and Rhode Island as well as District of Columbia. Benefit corporation law fits the needs of CSAL Programs, and the closest available approximation to it should be used by newly registered establishments of ABDS Corporation.

<sup>12</sup> The functions of BDSCom are similar to that of a Climate Innovation Center, an innovative program recently introduced in Africa by the World Bank’s infoDev unit. The World Bank, now rolling out “CICs” in many developing countries, may well become an ally of BDSComs. See [Crowdfunding’s Potential for the Developing World](#), 2013, infoDev, Finance and Private Sector Development Department. Washington, DC: World Bank.

<sup>13</sup> The principles of CITs are presented in the PowerPoint show “[Introduction To Community Investment Trusts.](#)”

The capital of the CIT may be gifts in cash or in kind (e.g., land), contributed by “insiders”-- people of means who are seen as leaders of the Beneficiary Community and derive benefits from such patronage. Capital may also be contributed with provisions for its return with long-term capital gains, subject to specified restrictions. Smaller investors may efficiently participate in such finance: local regulations permitting, numerous small equity investors resident in this Community and its diaspora may be bundled by an appropriate (so-called) crowdfunding platform, as recommended by the World Bank’s program called Climate Innovation Centers. This demonstration of local buy-in to the IDEA can then be helpful in leveraging gifts and equity capital by “outsiders.” A CIT, like any endowment, does not raise capital by issuing debt, which does not increase the net worth of the institution. Of course, when investing its capital in the equity of CSEs, the CIT can leverage its own funds with bank debt.

Crowdfunding now appears to be the ideal financial platform whereby a well-functioning SLEN raises capital for its CIT, which invests in BDSCom as the CIT’s arm for pipeline development and risk mitigation. Equity crowdfunding for development is a new technique, being a creature of the internet and its applications to social networking. It is just starting in sub-Saharan Africa,<sup>14</sup> appears to have much appeal in the Muslim world,<sup>15</sup> and evidently has the capacity to “leapfrog” fast-growing applications in the USA and other high-income countries, if enabled by intelligent policies and regulations at all levels of government.

### **Phases in the startup of BDSCom and CIT**

The participatory development of agroforestry ecosystems has developed over many decades into a kind of program implemented in many countries with the intellectual leadership of the C.G.I.A.R. (Consultative Group on International Agricultural Research), which is well represented in the Global CSAL Network. The Annex Table in the document “[Participatory Development of Agroforestry Ecosystems Including Oilseed Trees](#)”<sup>16</sup> provides a stylized list of activities in this sort of program, in chronological order. With suitable adaptations to local circumstances, this program could be implemented in many rural ecosystems, in countries both richer and poorer. A CSAL Program may be viewed as a specific structure of capacities for implementing this more general set of recommendations.

In the structure of a CSAL Program, early operations may be called the Research Phase, which uses land large enough for experiment and testing of both ideas and people. Of course, the Business Plan for any CSAL Program should specify detail pertinent to its location. On this land BDSCom builds a research, testing, and learning center to manage the new work. The emphasis on education during this initial phase facilitates finance by grants, near-grant equivalents, tax credits and other forms of public subsidy for rural development, depending on local law.

The Research Phase then dovetails into the Commercial Planning Phase, wherein BDSCom focuses on making the practical linkages from “learning to earning,” through the steps typically required to take a good IDEA “from mind to market.” By the beginning of this second Phase, BDSCom is already working with and helping a number of local entrepreneurial leaders to refine business plans for specific goods and services whose factual basis is work they have been doing

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<sup>14</sup> See <http://www.ideabounty.com/blog/post/2564/crowdfundingcoza-an-interview-with-founder-eve-dmochowska>

<sup>15</sup> See *Crowdfund Investing in Muslim Markets*, <http://crowdfundcapitaladvisors.com/>

<sup>16</sup> A practical guide to agroforestry prepared by associates of the CSAL Network.

as BDSCom clients. BDSCom has effectively been serving as a business incubator during the Research Phase, which has combined research, practical learning, and the generation of business ideas with evidence of what is needed to succeed commercially under competition in open markets.

Financing BDSCom during the Commercial Planning Phase focuses on pitching increasingly precise plans for CSEs to “impact investors” with firm demands for financial return, short time horizons, and critical need to mitigate risk. During this period of growth in the portfolio of its clients and their businesses, the BDSCom is shifting from dependence for operating capital on grants and subsidies to earned income from providing Business Development Services (BDS) to its clients as they begin to earn profit. Success in becoming independent of grants requires precise business development planning, since the professionally managed CIT must use rigorous project investment criteria to mitigate risk and minimize loss of capital.

### **Investment strategy and business opportunity**

BDSCom begins operations when its income from grants and initial business earnings covers its overhead costs and when the CIT has commitments of capital contributions to use as investment in start-ups assisted by BDSCom. For example, BDSCom may aim initially to fund 10 start-ups in the first year at \$10,000 each, requiring an initial commitment of investment capital of \$100,000, which the CIT will draw upon as permitted by its investment criteria.

What sorts of IDEA-based CSEs might these be? A preliminary pipeline of business ideas, based on the principles of agroforestry, is likely to combine high-value consumer goods with biomass-based sustainable energy. For example, edible oil and other products derived from oil-rich perennials such as peanuts may be produced by the same marginal land used to produce diesel fuel by crushing the inedible nuts of oilseed trees.

In areas subject to drought, investment in reliable water supply for irrigation of new planting will be a standard part of the portfolio, taking advantage of synergies with power generation by biomass, wind and sun. A smooth transition from fossil fuels to second-generation biomass for power and transport will improve both the environment and the quality of life both for natives and visitors. Of course, clean water is also a high-value consumer good that everyone needs and (like honey, another side industry of agroforestry) is shrinking in global supply and therefore rising in global price. Areas of ample rainfall can take advantage of this coming global water shortage. Both edible and inedible legumes, used for food and energy, are combined in agroforestry with agro-waste composting to rebuild the productivity of tired or thin soils, creating a sustainable and “sovereign” supply of food for humans and feed for animals, requiring little water once the plants are established.

In short, scientific agroforestry combines plants, animals, and people on land not optimal for growing food to maximize long-run beneficial impact on the local and regional natural environment. In the long run, the result is more healthful and satisfying livelihoods for long-time residents as well as for natives returning home from the diaspora who are seeking a better lifestyle in the countryside than they can have in the increasingly crowded and dysfunctional urban and peri-urban areas of the world. In areas close to estuaries and the seas, IDEA-based Community Supported Enterprises will be created by new technologies for integrating land-

based production of food and feed with ocean-based systems that are now rapidly emerging as the most likely ways to feed populations of humans in the distant future.<sup>17</sup>

The global reservoir of innovations in agriculture and aquaculture technology is vast and steadily increasing through science and engineering in the world's leading research centers. The challenge is to generate fruitful application for these innovations on the ground and in the sea and to motive their efficient use. The Forward of a new IFPRI study of food grains states: "Technology options are many, but transparent evidence-based information to support decisions on the potential of alternative technologies is relatively scarce. This is no longer a question of low- versus high-income countries but one of the planet: how do we achieve food security in a world of growing scarcity? Thus, a key challenge for our common future will be how we can grow food sustainably—meeting the demands of a growing population without degrading our natural resource base."<sup>18</sup> A central purpose of BDSCom's operations in Phase 1 is precisely to build "...transparent evidence-based information to support decisions on the potential of alternative technologies..." Then Phase 2 turns this information into income that can grow without limit so long as the IDEA behind it is competitive. The basic contribution of The CSAL Model to development programming is NOT to leave out Phase 2: till now, learning has rarely been integrated properly with earning in the practices of food security and sustainable uses of lands and oceans to produce the basics of life on the planet. This state of affairs is bound to change.

### **Funding a CSAL Program**

The importance of the Community Investment Trust (CIT) lies in its potential to mobilize non-debt-creating capital from local sources of funds, including groups having an affinity with the residents of a rural beneficiary community who are no longer permanent residents (that is, its urban diaspora). "Skin in the game" by locally-influential individuals and groups, which may be organized by a crowdfunding platform contracted by The Initiator of the CSAL Program, may well leverage outside-the-crowd funding needed for capacity building: investment in human capital and institutions. Then, access to program finance on a bigger scale and in appropriate forms is likely to be needed before the CSAL Program can be self-financing through earned income, given normal lags of production in the agroforestry sector. Below is a general assessment of prospects for such substantial financing for the long-run sustainability of the Program.

Funding for the start-up of a CSAL Program may be conceived in three parts: (1) funds for the planning and underpinning of the CSAL structure, particularly for education, training, and capacity building in the targeted service area; (2) capital for the start-up of the CIT and BDSCom (probably in the range of several \$ millions so as to achieve sustainable scale in a few years) ; and (3) "patient capital" (recoverable grants, Program Related Investments, as well as equity) to

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<sup>17</sup> See the report (cited in the Introduction) "[Integrated Multi-Trophic Aquaculture: Growing Fish, Shrimp, Algae, and Irrigated Crops](#)", by Kevin Fitzsimmons, University of Arizona, March 2014.

<sup>18</sup> See *Food Security in a World of Natural Resource Scarcity: The Role of Agricultural Technologies*, by Rosegrant, Koo, Cenacchi, et al, a publication in 2014 of the International Food Policy Research Institute (IFPRI), Washington D.C.

fund business preparation activities, particularly feasibility studies for an initial pipeline of enterprises that aim to qualify for PE investment by the CIT.

In addition, public grant funding may be sought for biochemistry research in cooperating university labs and research centers, for projects in which BDSCom functions as a subcontractor for the University, providing field testing facilities for new seeds and methods of growing and processing.

On the basis of this initial finance, “impact investment” in its varied forms (requiring return of capital plus some financial return as well as evidence of benefit to the service area) may be used in the Research Phase to finance physical capital formation (utilities and other infrastructure, plant, and equipment) on lands being used by BDSCom for research, training, and demonstration.

Is adequate funding likely to be found to bridge this gap between seed finance and ordinary company self-financing through profit, equity and debt? The current global context is becoming favorable. A movement in search of *food sovereignty*<sup>19</sup> is motivating an abundance of funds globally that are allocated to CSAL-type projects. Research in this field of food sovereignty ranks high on the agenda for the financiers of development. They want to respond to a demand for transformative social change in systems that is now well articulated by the people whom development is intended to serve.

There is an emerging consensus that, while governments must help (in part by asserting food sovereignty as a goal), private enterprise must lead. Farmers and other land users who want to make more productive use of their land should be innovating enterprises, moving from subsistence to profit. This transition will require innovations in *sustainable energy* especially through biofuel—not mainly fuel from converting agrowaste to energy but in much larger volume from long-lived oil-producing trees and perennials that are integrated with other profitable farming through agroforestry.

So large pockets of official money are now available to groups who are working on *food security* and *sustainable energy*, which in international discourse now carries the connotations of local autonomy in food, energy, health, water, and the basics of life derived from a vital ecosystem. One source is the Global Agriculture Food Security Program (GAFSP), a fund managed by the World Bank’s IFC. Another, now focused on Africa, is the Agriculture Fast Track (AFT) Fund, managed by the African Development Bank (AfDB). The Inter-American Development Bank has opened a new window on its website devoted to the same goals.

Many U.S. Government agencies are involved in this international effort, both for progress abroad (USAID, USTDA, MCC, et al) and at home (USDA, EPA, et al). American *impact investors* are becoming interested in *Promoting Sustainable Food Systems through Impact Investing*, the title of a path-breaking report by the Springcreek Foundation of San Francisco, which is available at <http://www.thspringcreekfoundation.org/>. The Corporate Council on Africa is helping to connect large U.S. businesses with Africa’s drive to supply enough power to

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<sup>19</sup> [http://en.wikipedia.org/wiki/Food\\_sovereignty](http://en.wikipedia.org/wiki/Food_sovereignty)

sustain high growth, and these businesses will benefit from being part of CSAL Programs. In Tanzania, for example, the Millennium Challenge Corporation is having successes in supporting large-scale infrastructure projects that will improve profitability in CSAL-supported enterprises there.

The CSAL Global Network is beginning to market The CSAL Model to the native people of America, who are *de jure* citizens of Sovereign Nations within the USA but have reason to doubt their autonomy *de facto*. Native Americans clearly have a special interest in the present global movement toward food sovereignty and sustainable energy. They have a strong case for not being left out of this movement, and their argument is not weakened by being located within a high-income country that dominates the globalized industry for monocrops.

Much the same might be said about people living close to the land everywhere. Many live in America in areas where poverty is increasing as conventional farming is fading, often to the benefit of oil and gas companies and to the detriment of the environment. On average these people may be relatively cash poor but have other resources including a distinctive culture and habitat. They may also have a sense of community of shared interest and a capacity to build trust within this community, which now in the Internet Age is the essential basis of crowdfunding for development. Often in so-called less developed countries the words family and community and tribe connote a capacity to build social cohesion through trust, which is a capacity that may be used to improve lives in rural areas through financial self-reliance with appropriate outside help.

### **A recommended 6-month start-up process**

[“Template: Income and Expenditure for Start-up of a CSAL Program in Six Months”](#) presents a scenario describing how any BDSCom might be launched. Seed investment is provided in the first month (here taken to be June, looking to launch the new company by year end) by the Initiator with a selected group of SLEN Founders. The Initiator intends that the SLEN Founders should have roles in the guidance and governance of the CSAL Program in matters of management, science, technology, education, commerce, and finance. According to their diverse individual interests, the members of this founding group may serve as BDSCom Board members, CIT Trustees, advisors for development of the portfolio of CSEs, and connectors to technical, commercial, and financial resources.

In this particular scenario, the SLEN Founders contribute a total of US\$10,000 to be used as start-up operating capital. They are each compensated by debentures issued by The Initiator that are convertible to shares in BDSCom when these shares are formally issued (at, say, \$1,000 per share) at the end of the start-up period, that is, at the formal launch of the Company.

This equity capital is then leveraged by matching grants. The Initiator will look for local sources of this cash. In this scenario, \$10,000 is contributed in July. Another \$10,000 is contributed in August by sources of the CSAL Network, which has an interest in ensuring the launch of this CSAL Program as part of its long-term vision of building the starship enterprise called ABDS Corporation.

Before embarking on this fundraising, the Initiator has found and enlisted the interest and support of a leader on whom success or failure of the launch depends. In the table she or he is called the Lead Scientist and Managing Director. This is the provisional manager and CEO of

BDSCom. A person of substantial experience, vision, and force of character, she or he may be identified by a corporate sponsor of this start-up that sees value in seconding her or him to this new assignment. In the six-month scenario beginning June, this person begins work immediately, with remuneration that is likely to be partly in non-cash benefits (housing, transport, etc.) and in debentures convertible to future stock if the fit of the person with the assignment is duly demonstrated.

Having this forceful leader in place at the top of the organization is essential for the rounds of fundraising necessary for the launch, since investors and donors must have confidence in the management of their money. In this scenario, during September-November the SLEN effectively expands to a “crowd” that raises \$100,000 --say, 100 individuals and groups who contribute \$1,000 each to an equity crowdfunding operation.

This demonstration of local support for the CSAL Program makes it feasible to raise matching grants (the table assumes 2:1 matching) during October-December. International sources such as the World Bank’s Climate Innovation Center initiative and its many cooperating partners are plausible candidates for this leveraging of local self-help. In this way, small fish begin to swim in a bigger pond where there is more food and room to grow--but also more danger from sharks (beware “The Tyranny of Experts,” to quote William Easterly’s latest contribution to development philosophy).

The bottom half of the table suggests how this stream of income during June-December could be spent to achieve the goals of setting up the CSAL Program to start running in high gear in the following year. Beyond overheads, substantial amounts of cash come available by the closing months to start funding substantive programs, including both preparatory work at available lands and enhancements of ongoing and new programs of participating schools that will be providing supporting education. Initial production operations are set to start generating cash flow in the following year.

The table “[Illustrative Projections for a BDSCom](#)” presents a scenario of annual projections for income and expenditure of BDSCom for the first ten years of its life, beginning in 2015 with reserves of \$10,000 carried over from 2014. The functions in this Excel file are intended to explain how the given baseline assumptions drive the various items of projected income and expenditure. This file may be used to test the sensitivity of results to these assumptions. The table’s main point: on plausible assumptions and with adequate scale, BDSCom will be profitable and able to finance its own long-term growth without grants beyond the first few years. With this capacity for growth, it will provide benefits to the supporting community that can be sustained. Investors in BDSCom can reasonably expect to get a return from capital gains after a required holding period of about five years.

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