

Understanding the factors of scalable success: Broader adoption of community projects in Cuba

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Abstract

Many government and non-government organizations and institutions fund and support a wide range of conservation and development projects all over the world. Many of them fail, many succeed within their own specific goals, and some achieve widespread success and are highlighted as model projects to be replicated. However, the political, economic, and social processes, and environmental conditions that influence the broader adoption and replication of community projects are poorly understood. In this study, I examined the United Nations Development Program's Global Environmental Fund's Small Grants Program's community initiatives in Cuba to determine the key conditions that lead to broader adoption of projects and their practices through six transformational processes: Mainstreaming, sustainability, up-scaling, replication, market factors, and diffusion of ideas.

I identified five key elements and preconditions that enabled broader adoption to occur. (1) Integrating diverse actors into community project planning and financing processes from the very beginning through the encouragement of co-financing, multi-scale networks, and institutional allotment of time and resources; (2) An interactive project approval process that facilitates the identification of urgent and important issues as well as formal and informal leaders. If conducted before the project is approved, this process develops the organizational and human resources that will enable broader adoption at later stages; (3) The presence of visible components, diverse benefits, and "open door" gatherings that allow for the informal diffusion of ideas at the local level; (4) Highlighting key early adopters can increase the project's chance of economic success and promote innovation to develop new value-added products, leading to increased demand for sustainable practices that incentivize wider participation from other community members and surrounding communities; and (5) Resource allocation is determined by a participatory group process, forcing project groups to address issues of equity and reciprocity within the project, instilling a sense of responsibility among direct beneficiaries.

Muchas organizaciones e instituciones gubernamentales y no-gubernamentales apoyan una gran variedad de proyectos de conservación y desarrollo alrededor del mundo. Muchos de estos proyectos fracasan, otros son exitosos dentro de sus propias metas específicas, y algunos logran un gran éxito y se enfatizan como modelos que se debe replicar a futuro. Sin embargo, muchas veces no se entiende los procesos políticos, económicos y sociales, y las condiciones ambientales que influyen en la adopción y replicación de proyectos comunitarios. En este estudio, yo

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investigué las iniciativas comunitarias del Programa de Pequeñas Donaciones del Programa de las Naciones Unidas para el Desarrollo (PNUD) y el Fondo para el Medio Ambiente Mundial (FMAM) en Cuba para determinar las condiciones claves que promueven la adopción amplia de proyectos y prácticas mediante seis procesos transformativos: la creación de normas, la sostenibilidad, la ampliación a escala, la replicación, los factores del mercado, y la difusión de ideas.

Identifiqué cinco elementos y precondiciones que promueven la adopción amplia: 1) La integración de actores diversos en los procesos de planificación y financiamiento de proyectos comunitarios desde el inicio a través de la promoción de co-financiamiento, redes multi-escala, y distribución de tiempo y recursos institucionales; 2) Un proceso interactivo de evaluación de proyectos que facilita la identificación de temas importantes y urgentes además de líderes formales e informales. Si se conduce antes del inicio del proyecto, este proceso desarrolla los recursos humanos y organizacionales que fomentarán adopción amplia en etapas futuras; 3) La presencia de componentes visibles, beneficios diversos y reuniones a "puerta abierta" que permiten la difusión informal de ideas a nivel local; 4) La identificación de actores modelos claves en etapas iniciales puede incrementar el chance de que un proyecto tenga éxito económico y promover la innovación para desarrollar nuevos productos de valor-agregado, lo cual promueve una demanda incrementada por prácticas sostenibles que incentivan participación más amplia de otros miembros de las comunidades cercanas; y 5) La distribución de recursos se determina por un proceso participativo y grupal, asegurando que grupos que implementan proyectos tratan temas de equidad y reciprocidad dentro del proyecto, y creando un sentido de responsabilidad al grupo entre beneficiarios directos.

Introduction

A shift in the focus of the international development community in the 1990s to “community-based” initiatives highlighted “model” communities deemed successful and worthy of further study (Brosius and Tsing 1996). However, the mechanisms through which successful practices are adopted more widely remains poorly understood. Many studies have analyzed how community characteristics (size, composition, norms, and resource dependence) and context (land tenure, cultural beliefs, and institutions) affect the success of individual community projects. However, less research has been conducted on how individual community projects affect their larger context to create change on a broader scale (Agrawal 1999, Brooks 2012). In this study, I address this gap by analyzing which processes and characteristics of community-based projects impact their ability to influence other communities and institutions within the context of Cuba. I seek to answer the question: *What are the political, economic, and social processes and environmental conditions that influence the broader adoption and replication of community projects?* Because of recent liberalization of exchange and diplomatic relations between Cuba and the United States, this

research is a timely glimpse into the nature of community-based conservation in the country.

The United Nations Development Program (UNDP)-implemented Global Environment Facility’s Small Grants Programme (UNDP/GEF-SGP) is an organization explicitly charged to “think globally, act locally” by delivering grants of up to \$50,000 USD directly to local communities around the world (Huq and Faulkner 2013). Since 1992, the program has supported over 14,500 community projects in over 125 countries (UNDP/GEF-SGP 2015). However, the SGP’s philosophy of disbursing small grants directly to local and indigenous communities is different from that of the other Global Environment Facility (GEF) sectors dedicated to much larger projects (GEF manages an estimated total of \$15.2 billion of environmental funding). The relative impact of these two approaches is unknown, emphasizing the need to understand the linkages between different scales of development (Berkes 2006). The UNDP/GEF-SGP provides a unique case study to examine the linkages and characteristics that determine how an initial small project can ultimately create a landscape-level impact (GEF 2015).

By identifying the key elements and preconditions that enable the broader adoption of successful

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practices, such practices can be explicitly integrated into the design of future UNDP/GEF-SGP projects and evaluative frameworks to increase the impact and utility of these small direct grants. The six key processes within the framework used to examine the broader adoption of community initiatives are defined as follows:

1. *Mainstreaming* affects the official functioning of civil society organizations, governmental agencies and for-profit businesses, normalizing the principles of a project using advocacy, lobbying, advising, training, and knowledge creation, among others.
2. *Sustaining* maintains a functioning project over time.
3. *Up-Scaling* expands the impact of a successful activity by adapting and applying it at a larger scale (geographic, financial, operational, etc.)
4. *Replication* copies and applies a successful activity in a different location.
5. *Market change* affects the supply or demand of a product or service by expanding the number of consumers who know about it and use it.
6. *Diffusion of ideas* describes the informal communication of information about the project to a larger public, from one-on-one conversations to interactions on social media.

National Context and Policy Framework

The Cuban case has many lessons to offer up to the international sphere in terms of the institutionality of broader adoption and how an extensive state apparatus can facilitate the spread of ideas and the broader adoption of community initiatives. Within Cuba, the application of community-based approaches varies widely (Spiegel 2001). For example, although the government has long advocated

the community-based approach in the area of human health, conservation and development are still heavily vertically integrated. Local communities are involved in the implementation stage, but most projects are initiated at higher levels and then communities are educated and recruited (Toledo et al. 2007). The approval of the 311 Cuban Lineamientos (Guidelines) for Economic and Social Policy in May 2011 bolstered the small farming and business sectors by allowing individuals to claim usufruct rights to small plots of land and supporting local development and small businesses (Lineamiento 259/300).

In each community where research was conducted for this study, at least 15 government entities were named as having a presence (individual or group) within the community itself, with numerous other representatives of municipal or regional institutions visiting communities on a regular basis. An estimated half of SGP projects occur within or around national protected areas. Research participants described the SGP approach as unique among other funding agencies and international programs because of its participatory process with local communities and governments, comparatively rapid results, agility in experimentation, simple methodology, transparency, voluntary Directive Committee, and accessibility to smaller countries that might have difficulties accessing larger development funds.

Project Profiles

Within Cuba, four main project case studies were selected for further research (Fig. 1). Final research field sites were determined by the SGP National Coordinator's perceptions of successful projects and community leaders' willingness to participate in the project. Other factors that contributed to field site selection were travel logistics from the capital city, operational phase of the project (last operational phase or project completion preferred), notable success or failure of the project, and maintenance of diversity in the regions and work themes represented.

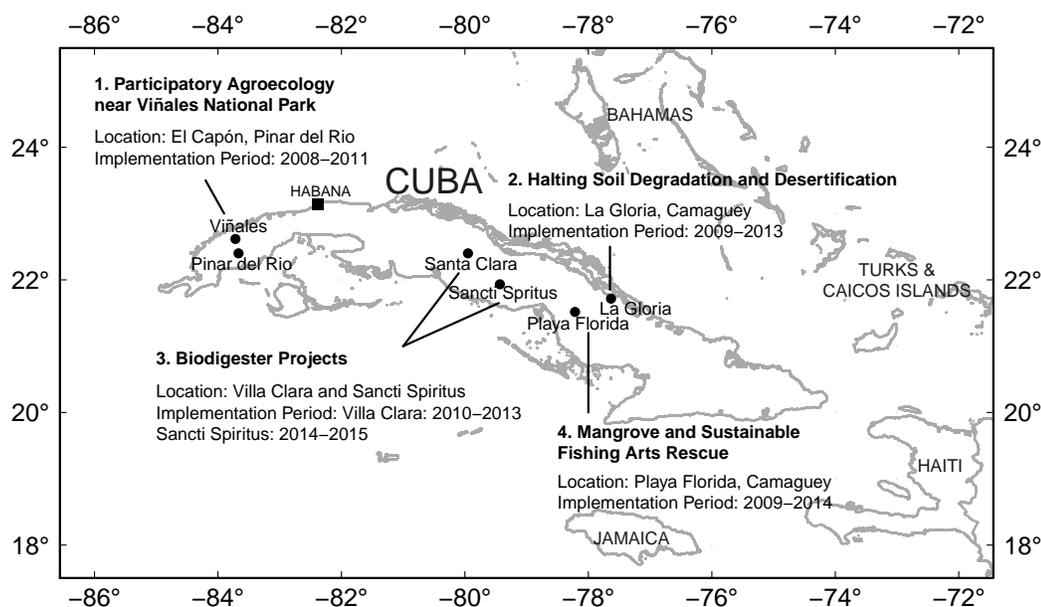


Fig. 1. Locations of research sites and projects within Cuba.

1. Participatory agroecology near Viñales National Park

SGP Project Objectives: *Improve soil quality, reforest and restore forest areas, improve quality of life through renewable energy and energy efficiency, train local actors in sustainable agricultural development*

Viñales National Park lies within the Viñales Valley World Heritage Site.¹ There has been an increasing interest in promoting sustainable livelihoods in the buffer zones around the National Park. Before the SGP project began, the park had 5 tourism hikes but only one of these involved local farmers. In 2008, the SGP began to work with communities and the Park to create seven agroecological farms, bring electricity to 45 homes, and to expand the number of tourism hikes that pass by local farms and actively involve local residents. Today, at least three of the park's ecotourism hikes pass by multiple local farms. In 2010, three of the agroecological farms in the project obtained the new of-

ficial status of "eco-tourism agroecological farm" from the local government. The project has been awarded prizes at the provincial level and at the national level from the Ministry of Science, Technology and Environment (CITMA) and Ministry of Agriculture (MINAGRI). In 2015, the project participated in a South-South information exchange between farmers' organizations in Cuba, Fiji, and the Solomon Islands.

2. Halting soil degradation and desertification in La Gloria, Camaguey

SGP Project Objectives: *Improve soil quality, reforest, train community members in sustainable natural resource management*

La Gloria town is located in the Sierra de Cubitas area of northern Camaguey province. La Gloria, or "La Gloria City," emerged in 1900 as a destination for 200 U.S. men and women who bought plots of land in Cuba with the Cuba Land

¹Viñales Valley. <http://whc.unesco.org/en/list/840>

²Grant, W. La Gloria: An American corner in Cuba. BBC News. <http://www.bbc.com/news/world-latin-america-33330432>

and Steamship Company of New York.² Initially misled by false conceptualizations of what awaited them in Cuba and disappointed by the subsequent lack of infrastructure, many of the settlers returned home shortly after arrival. The current residents of La Gloria derive their income from livestock ranching and growing citrus and fruit trees. Before the SGP project was approved in 2009, the larger UNDP-GEF Sabana-Camaguey project³ was active in the surrounding area and many environmental problems in La Gloria were identified through the community's participation in a FAO diagnostic process but had remained unaddressed. From 2009–2013, the community conducted a SGP project to reforest 72 hectares, restore 140 hectares of degraded land, use livestock to control an invasive species, and install greenhouses. In addition to the environmental benefits, the removal of the invasive tree marabú (*Dichrostachys cinerea*, Fabaceae) and incorporation of sustainable land use practices has led to large increases in the productive capacity of the farms involved in the project.

3. *Biodigester projects in Villa Clara and Sancti Spiritus*

SGP Project Objectives: *Reduce atmospheric methane emissions through biodigesters, improve soil fertility, train beneficiaries in new technologies and sustainable natural resource management*

From 2010–2013, agricultural cooperatives from the Caibarién, Camajuaní, and Remedios communities of Villa Clara developed a cluster of nine biodigester technology transfer projects to reduce greenhouse gas emissions, installing 34 biodigesters on smallholder pig farms at a cost of \$36,000. These projects produced a cohort of trained agriculturalist biogas experts and were later replicated in different regions prioritized by Cuba's Environmental Strategy, supported by the Ministries of Agriculture, Economy, and the National

Commission on Renewable Energy. The second wave of biodigester installation, from 2014–2015, occurred mainly in Sancti Spiritus province, where 44 of the total 130 biodigesters were installed. A third wave of biodigester projects launched in 2015 in collaboration with government ministries and community cooperatives with the goal of installing 432 biodigesters in 5 provinces, making the Villa Clara and Sancti Spiritus projects the epicenter of a growing renewable energy movement in Cuba.

4. *Conservation of mangrove and sustainable fishing arts in Playa Florida, Camaguey*

SGP Project Objectives: *Recuperate mangroves, improve sustainability of fishing practices, implement a community biodiversity monitoring program, train community members in ecologically sustainable practices*

Playa Florida is one of the Cuban coastal communities most vulnerable to climate change and most isolated from its neighbors, being separated from the mainland by a large swathe of mangrove. The town is now linked to the mainland by a 4 km elevated road, the construction of which divided and caused the death of parts of the mangrove inland from the road. Of all the towns in the Southern Camagüey municipality, Playa Florida is the town that most frequently evacuates during storm events and the entire community was evacuated twice in 2008 during storms Ike and Paloma. Cuba's Environmental Agency (CITMA) predicts that the town will need to relocate further inland by the end of this century.

The largest employer in the town is the fishing Entrepreneurial Grassroots Unit (Unidad Empresarial de Base, UEB) – Playa Florida, that employs 137 of the estimated 500 community members. When the SGP project started, there were only 17 fishermen approved to sell to the UEB, giving them higher percentage of profits, greater in-

³Mainstreaming and Sustaining Biodiversity Conservation in three Productive Sectors of the Sabana Camaguey Ecosystem. http://www.thegef.org/gef/sites/thegef.org/files/gef_prj_docs/GEFProjectDocuments/Biodiversity/Cuba%20-%20Mainstreaming%20and%20Sustaining%20Biodiversity%20Conservation-Sabana%20Camaguey/11-11-04%203254%20Revised%20Concept%20Sabana%20Camaguey%20for%20Pipeline%2018.doc.doc

come stability, and access to resources and protection. By 2015 there were 25 approved UEB members. At the same time, the project encouraged improved environmental practices such as not cutting mangrove for firewood, using wider-holed fishing nets to reduce bycatch, respecting fishing bans, and organizing and following monthly fishing plans. The project partnered with government agencies to construct sea passes under the road, allowing salt water to flow again to the eastern inland mangrove, and more than 50 community members have since been involved in monitoring mangrove regrowth following this intervention.

Results: Evidence of broader adoption

In this section I highlight some of the key factors that influenced how the six transformational processes manifested themselves within the case study projects visited. Examples of all six transformational processes were present to different degrees among the projects.

Mainstreaming

One of the key ways that community projects were mainstreamed was through the early integration of diverse institutional actors that produced a **prolonged dedication of resources and institutional time to SGP projects and the priorities they address**. For example, in the biodigester case, residual management requirements had existed for a long time before the establishment of the SGP project, but the sector had never been enthusiastic or organized enough to reconcile policy with the implementation priorities of government agencies. Through involving diverse agencies (Ministry of Science, Technology and Environment (CITMA), the Pork Production Industry (Empresa Porcina), and the Public Works Division (Dirección de Planificación Física), among others) the SGP biodigester project helped to elevate and integrate the role of control and auditing organizations so that there was a greater general enforcement of environmental waste management standards at the provin-

cial and national levels, including the enforcement of stricter requirements for managing of porcine waste. In large part due to this early integration of diverse institutional actors, successful SGP projects are frequently asked to appear as models on regional or national tours or displays. All case studies had been showcased by local or national actors during and after the implementation of the projects.

Community projects also commonly achieved mainstreaming through **precedent establishment**. For example, the Viñales project facilitated the creation of “eco-tourist agroecological farms” and the recognition of three new farms in the project under this classification, increasing the number of eco-tourist trails that included local farms. During and after the implementation of the SGP project, both Camajuaní and La Gloria were invited to host the annual Earth Day Celebrations in their provinces, recognizing that they obtained the best annual regional indicators out of all municipalities in their province. Since working on the SGP project, Playa Florida has been an active participant in the co-management planning process for two nearby protected areas. One participant noted that differences between the ground planning processes for the GEF “Sabana Camaguey” Project in the 1990s and the current GEF “BASAL” and OP-15 projects may reveal an influence of the Small Grants Programme approach on the planning of larger regional projects. Further, by establishing these precedents, SGP projects were able to institutionalize their mission within government institutions and organizations, thereby contributing to sustained action on the priorities of the original project.

A big driver for SGP projects to integrate diverse actors early in project planning is the fact that the SGP cannot fund international travel or certain types of infrastructure. This restriction often leads to an early broad coalition of funders to support these other activities. This restriction creates an incentive for SGP and communities to collaborate with other funders to fill these gaps. SGP’s reliance on government co-funding in the construc-

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tion of Playa Florida's water passes was suggested as one of the factors in changing the way the municipality does its budgeting, increasing its flexibility in funding community projects. Similarly, components of the La Gloria project that involved electricity and water provision involved extensive collaboration with government agencies to provide the infrastructure needed to implement the project.



Fig. 2. Biodigester with round excrement tank innovation.

Sustaining

Evidence of sustainability of community projects can be found in the **high comparative durability of materials given to community members in successful projects** over other alternative arrangements. For example, individual smallholder farmers in La Gloria who had been given greenhouses

by their cooperatives have been more effective at maintaining them and more efficient at mounting them than large State-owned enterprises. Biodigester owners have made a series of modifications to biodigester design in order to increase effectiveness or adapt the biodigester to their farm. Adaptations to biodigester valves are one example where farmers have adapted, modified and repaired technology to make it more resilient. In one particular case, a recipient repaired a damaged biodigester and went on to become part of the biodigester training team. Another biodigester recipient modified the excrement storage container for easier processing (Fig. 2), a design that later became standardized in future biodigesters. Throughout each successive implementation stage of biodigester SGP projects, trainers have incorporated innovations in past projects as standard suggestions to farmers in the next round of implementation.

The scarcity of direct benefits combined with group decision-making for allocation of resources created a **sense of responsibility to both the group and the wider community among those who receive direct benefits** from community projects. In La Gloria and the biodigester projects, for example, cooperatives had to decide as a group which individuals would receive the direct benefit of a greenhouse or biodigester from the project. In Playa Florida, communities decided to provide tools for repairing boats instead of new boats, to allow for a more equitable distribution of benefits.

Although the economic benefit that each individual derived from these decisions were often unclear at the outset, direct beneficiaries felt responsible to others in their social group to implement and maintain the project, and if the project was successful, to share further benefits with the group and the larger community. For example, some biodigester recipients with few pigs relative to the capacity of their biodigester allowed neighbors with pigs to also use the biodigester and all shared the resulting gas benefits. Many beneficiaries train others (five out of six biodigester trainers on the current regional training team were early adopters) or

go on to distribute further benefits more widely (La Gloria and Viñales agricultural producers donated produce to different community organizations). The small nature of the grants combined with the fact that they are given to a group within the community forces communities to consider innovative ways to incorporate equity and reciprocity into project budgets.

The **selection of proven informal and formal leaders** in each community also facilitated success. Successful SGP projects often take the route of supporting leaders and innovators in struggling communities, so that they, in turn, provide the social recognition and resources needed for projects to be implemented by secondary adopters on a larger scale. One of the first biodigester installation pioneers in Villa Clara was the retired Director of the regional Forest Agency (Empresa Forestal). In La Gloria, the first person to implement management of the invasive marabú tree with goats was one of the cooperative's leading producers, who then went on to involve several of his neighbors in the project. To a certain extent, this producer leveraged his participation in the SGP project as a guarantee to acquire the credit needed to implement and expand upon the initial project. Two of the members of the Playa Florida project board were key people in organizing their community in their comparatively frequent storm evacuations to the mainland. In seeking biodigester early adopters, SGP's collaborating organization, National Association of Small Producers (Asociación Nacional de Agricultores Pequeños, ANAP), sought out leaders in Farmer-to-Farmer (Campesino a Campesino) training practices developed through involvement on past international projects. In a similar way, the positionality of the Cooperative or Association that implements a project is important. The cooperatives that pioneered the tubular biodigester technologies were some of the largest and most productive cooperatives at the regional and national level. Thus, the selection of "winners" or community leaders and groups, be they informal or formal, is critical to broader adoption.

When compared to other funding agencies, SGP's interactive application process allows them to uniquely seek out informal leaders as well as formal ones. For example, one of the key members of Playa Florida's project board was the person who mobilizes the community on her block to come to local meetings, and has since been given a formal position on the SGP project board. In La Gloria, another strong informal leader has since become the accountant and turbine-supervisor for the group. All groups included individuals who were innovating not just within the context of SGP projects but also in other dimensions (art, historical preservation, literature, gender relations, technological innovation, and business entrepreneurship are a few examples). Through the SGP project implementation process, some of these informal leaders were recognized and given formal leadership roles like those above, but many of them also bring their prestige and knowledge from past experiences to enhance the implementation of the SGP project.

Up-Scaling

Cuba's rigorous national SGP approval process ensures a **close alignment of project themes with national priorities**. This nation-wide organization of international and civil society funding facilitates the expansion of accomplishments and goals by other actors or programs. In Viñales, the SGP sought alliances with other programs that were able to double the number of rural homes electrified. The biodigester movement provided an implementation mechanism for an existing regional priority that had long gone unaddressed. Biodigester projects also aligned closely with the priorities of the collaborating implementing organization, ANAP, that organizes the "Movimiento por las 100 Toneladas" (Movement for 100 Tons), an agricultural initiative to increase national production capacity. In order to increase productivity while maintaining its focus on sustainability in farming, ANAP sought ways to better manage waste from its farms.

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In the successful scaling-up of SGP projects, community members embark upon **extensive multi-scale network formation through a required budget allotment and the initiative of SGP staff and collaborating institutions**. This network formation is closely linked to the institutional communication mentioned below that allows for the diffusion of ideas. SGP staff and collaborating institutions play a key role in connecting community groups to each other and to other larger funding institutions that implement the project more broadly. One agroecological farm and restaurant in Viñales has hosted ambassadors, the Minister of Tourism, and a donor for the World Food Program, among others.

Approval of a second project with increased non-SGP co-financing often occurs in successful cases. After the implementation of the SGP project in Playa Florida, a project by S.O.S. Pesca was able to provide continuity with the original project goals by greatly increasing funding, providing around six times the original SGP amount. Many of the same project board members who served on SGP's board now serve on the board of the S.O.S. Pesca project, and research participants observed that many of the organizational processes developed through working on the SGP project provided the foundations for the S.O.S. Pesca collaboration.

Replication

The **interactive SGP project approval process facilitates the identification of urgent and important community issues**. The paper application is merely a representation of a larger process in which the SGP national coordinator visits the communities to talk with community leaders and understand the situation on the ground. In this way, there is a significant amount of project development and organizational mentoring that occurs before the project is ever approved. SGP's success in La Gloria is due in part to the fact that the project was initiated in one of the town's most critical periods of drought (urgent) and could identify the strategies forward

to combat long-term degradation (important).

Because SGP projects often demonstrate that it is possible to address these urgent and important issues, formal and informal replications of SGP concepts are common. For example, in La Gloria, greenhouse technicians and owners often give informal lessons to fellow community members on responsible farming practices. Many producers are now demanding biodigesters to comply with increasing enforcement of environmental legislation. The interactive SGP process allows identification of key priorities, and key risks, of projects on the ground with communities and collaborators.

Distribution of projects within organizational governance regions allows information sharing between similar communities and allows officials whose jurisdiction spans those governance zones to easily apply successful models to nearby communities. Thus you see the proliferation of other SGP projects on similar themes in multiple communities within the same governance region. For example, leaders of Cooperatives with biodigesters reported their success to other leaders in provincial meetings of Cooperative presidents, who then sought biodigesters of their own. Since 2010, the number of biodigesters in Cuba has expanded from 40 biodigesters to the recent approval of a project to install 432 biodigesters in multiple provinces in 2015. Similarly, in Playa Florida, the town delegate and President of the SGP project board, regularly mentions the success of the project at meetings throughout the town and at the municipal assembly. In this way, neighboring fishing communities have also become interested in implementing Playa Florida's improved fishing practices.

Market Change

Economic success inspires interest among secondary adopters. Interviewed project participants frequently quoted the saying that *la vista hace fe* (seeing is believing), and that at the beginning, fellow community members thought that they were wasting their time participating in the project. It

was only once the economic benefit of the new practice was demonstrated that other community members became interested. For example, cooperative leaders in Villa Clara describe how initially it was very difficult to find takers for the initial 34 biodigesters, and now they estimate they have a waiting list of over 1000 interested farmers in the province. In Viñales, there has been a proliferation of unofficial “agroecological” farms that may not adhere to environmental standards but nonetheless represent a clear indication of interest in the economic opportunities offered by the newly approved agroecological tourism farm modality.

Community projects create a **further demand for labor and products through the creation of community mini-industries**. Examples include La Gloria’s fruit processing mini-industry that in the future could demand increased planting of fruit trees from other producers in the region, and the El Paraíso agroecological restaurant in Viñales that since 2011 has grown from 1 to 10 employees and now serves 250-300 tourists daily. This community restaurant also sources organic, agroecological produce from neighboring farms. Creating added value products at the community level promotes further demand for products and services that allows other community members to benefit. This phenomenon depends heavily on the success of first adopters, so the **strategy of choosing proven leaders within communities** to implement models of success further contributes to this process.

Another way that community projects can increase broader adoption through markets is through the **education of consumers and industry through the product itself**. Particularly in Cuba, technology transfer through importation of key technological advances facilitates information exchange. For example, when Viñales’ agroecological farms take tourists around to see sustainable agricultural practices or serve restaurant guests their products, they are directly educating them through their products. In La Gloria, SGP provided the fruit-processing mini-industry with state-of-the-art machinery, a huge incentive for govern-

ment and other institutions to collaborate in order to gain exposure to and information on these technological innovations. Thus, innovations in the production process facilitate information spread. The biodigester projects have developed familiarity with the tubular biodigester technology such that national agencies are working with SGP to develop a mini-industry to produce tubular biodigesters in-country to meet demand. Thus, an innovative product can itself create opportunity for broader adoption through market factors.

Diffusion of Ideas

Much of the diffusion of ideas happens through **institutional communication**, i.e., formal meetings or informal exchanges between work colleagues. Cuba’s case is particularly illustrative of how institutional communication can lead to broader adoption of community projects because of its high degree of institutionalization and the powerful role of government down to the community level. Involving a diverse collection of institutions in SGP projects allows communities access to the network of government institutions, academia, and international agencies. When community actors meet the local technician or project official in an early field visit, this interaction can lead to further phone calls and requests for support. Participants from collaborating organizations are key actors in organizing formal exchanges between groups and information sharing within their jurisdictions. Frequent visits by institutional representatives or international visitors can create an accountability that, in turn, contributes to the sustainability of the SGP project.

The **presence of the project in the media** is critical for massive informal diffusion of ideas. Cuba is unique in this respect, in that because it has limited internet accessibility (as of 2015) and only six centralized TV stations, any material shown on national TV has a wide viewership. SGP projects have been featured in full-length documentaries, music videos, and promotional tourism videos. Academic theses were written about two of the SGP projects



Fig. 3. The visible changes associated with SGP Projects create fodder for informal discussions on community environmental issues and a hook for others to get engaged. In this picture you can see the difference between a field in an SGP project and the invasive marabú species in the background.

visited, allowing for project integration into the academic communications space. Further, social media discussion, news articles and features in multiple languages, and online agroecological restaurant ratings are all examples of diffusion practices that reach larger international audiences.

Informal conversations are some of the most difficult elements of the diffusion of ideas to document, but have perhaps the greatest impact on the broader adoption of the project locally. In Playa Florida, the use of new fishing equipment led to conversations with other fishermen at sea. Members of agricultural cooperatives in La Gloria and Viñales frequently exchanged seeds and planting tips. After official initial visits and exchanges, SGP projects often continue communication with each other. Further, cultural events are often the most common places for informal conversations to occur. For example, after a formal exchange supported by the national SGP office and the provincial CITMA office, Playa Florida and La Gloria orga-

nized a sporting competition between the two communities, providing a further space for communication on project practices.

The **presence of a visible component in the original model project** facilitates informal conversation. In Playa Florida, roadside mangrove recuperation and the associated return of wildlife occurred on the popular beach route that is the only entry and exit to the town, drawing comments and photographs from passersby. In La Gloria, the noticeable absence of marabú, the aggressive invasive tree species, provoked comments from other community members (Fig. 3). Greenhouses and biodigesters are two other visible components in the projects studied that serve as conversation starters.

SGP's strategy of model establishment combined with a **policy of "open door" training sessions** facilitates informal idea spread within communities. In Viñales, the SGP project fed into the National Park's larger processes of environmental education, allowing a greater number of communi-

ties to become exposed to the project and benefit indirectly from the seven agroecological farms established.

The different levels and ways for community members to benefit directly and indirectly contributed to the informal diffusion of ideas. In particular, the **presence of diverse benefits** facilitated collaboration by a broad coalition of stakeholders. In La Gloria, some community members received connections to the water supply while others received greenhouses. This diversity of benefits allowed the project to draw in community members interested in water and in agriculture, as well as the government agencies that would need to collaborate on installation and technical assistance. In projects, like Playa Florida, where one component of the project is very conservation-focused or has intangible, long-term benefits (like mangrove conservation), tangible individual benefits like fishing supplies provided the “hook” that allows the space for the larger long-term environmental conversation.

Conclusions and Insights

Each of the four case studies mentioned occupies a unique national significance in Cuba that allowed it to expand its priorities to achieve broader adoption beyond its individual site. La Gloria developed successful strategies for combating an invasive species of agricultural land at the same time as the Cuban government emphasized a national priority to increase food production. Playa Florida is acutely vulnerable to climate change and so provides a model for how to increase resilience to rising sea levels. In Viñales, a new approach to sustainable tourism was developed that also integrated community and government priorities in one of Cuba’s most cherished UNESCO World Heritage sites. Lastly, the experimental biodigester program has now developed into a nationwide movement, with nine of Cuba’s provinces enforcing legislation on environmental pollution standards and gaining the support of the Ministry of the Environment and the Min-

istry of Economy and Finances.

The following insights emerge as key points to consider from our research for those hoping to encourage broader adoption of community projects:

1. Integration of diverse actors into community project planning and financing processes from the very beginning of a project facilitates the mainstreaming, sustaining and up-scaling of project priorities through encouraging co-financing, multi-scale networks, and institutional allotment of time and resources to the project.
2. An interactive project approval process uniquely facilitates the identification of urgent and important issues and informal and formal leaders. This project development process, which is conducted before the project is approved, develops the organizational processes and human resources that will enable broader adoption at later stages.
3. The presence of visible components, diverse benefits and “open door” gatherings allows for the informal diffusion of ideas at the local level.
4. Choosing key early adopters can ensure project economic success and innovation to develop new value-added products, which can then increase demand for sustainable practices that incentivize wider participation from other community members and surrounding communities.
5. When resource allocation is determined by a participatory group process, project groups are forced to address issues of equity and reciprocity, and so the limited nature of SGP funding instills a sense of responsibility among direct beneficiaries.

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Please note that all translations in this document, unless otherwise noted, are unofficial translations by the author. Appendix 1 contains unofficial English translations of organization names and acronyms in Spanish. All images, unless otherwise cited, were taken by the author in the course of performing field research.

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