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One Step at a Time*



## The Benefits of Synchronization

: A preliminary study of sustainable agriculture in Siem Reap Province

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The spread of globalization brings unprecedented access to previously disregarded parts of the world. Habitually plagued by foreign intervention, corruption, decades of infighting, unaccounted for landmines, seasonal flooding, and governmental instability, once neglected Cambodia has recently become the recipient of prodigious foreign aid. According to the 2007 World Development Indicators, Cambodia's official development assistance amounted to \$538 million in 2005, comprising 9.1 percent of Cambodia's Gross National Income dwarfing the low-income country average of 2.9 percent. At \$38 per capita in 2005 Cambodian aid was nearly double that of low-income country average of \$17. Progressive development in Cambodia has been primarily donor-driven, with Cambodian ownership seen as enjoyable unintended byproduct. The quality of external technical cooperation has been criticized since the provision of technical cooperation has been poorly coordinated among donors. Additionally, development organizations primarily offer capacity substitution in lieu of capacity building assistance (Chanboreth and Hach 2008). The influx of resource driven interest in the area begs the question as to what is the most efficient methodology for delivering assistance to the fledgling nation. With an all but impotent government, these organizations donating funds lack accountability focusing a majority of their funding directly to overhead expenditures. Approximately half of all international aid to Cambodia is spent on technical cooperation, particularly, on employing international staff working as project support implementation (Chanboreth and Hach 2008). While ultimately sustainability must be perpetuated by the government, aid organizations share the responsibility of pressing for the sustainable reformations of education, health care, social welfare, and rural development to ensure the viability of their work in Cambodia (Godfrey et al.

2000). For these changes to become reality a multifaceted approach must be developed that harnesses the abilities of all foreign aid organizations working in a given region. Within the context of reconstructing post conflict societies, bottom up development is imperative to procure basic necessities that guarantee inalienable rights, simultaneously working with larger multilateral organizations to galvanize government action and eventually achieve sustainability.

This aim of this paper is to delve into sustainable development via external mediums to show that multiple methodologies should be conjoined to improve holistic vitality. First, examining large multilateral organizations and then, at the opposite end of the spectrum, smaller localized nongovernmental organization (NGOs) highlighting their potential to function cohesively to produce the most effective outcome for their beneficiaries. The initial findings of development processes will be supplemented by an examination of a grassroots organization, using data collected over the last three years, to provide tangible evidence of the benefits ascertained working from the bottom-up. While both bottom-up and top-down approaches are used the world over, organizations at either end regularly operate independently and could enhance the lives of their beneficiaries the most by developing a multifaceted approach. Pressure from the top without the substantial local response capacity to support development endeavors cannot succeed, nor will bottom-up pressure without an established societal policy framework that can only come from an empowered government (Kearne 2001). Simultaneously, communication must be improved amongst organizations operating at the same level to increase transparency, reduce redundancy, and increase the scope of benefits offered.

As we will see, NGOs as an international community lack the transparency and accountability in terms of finances, agenda, and governance necessary to effectively facilitate the construction of democratic civil society (McGann 2006). The versatility of any overwhelming situation limits internationally motivated top-down efforts by their very limited understanding of response capacity at localized levels. This egregious lack of situational knowledge hinders projects ability to function with any sort of efficiency or regularity within the given context. With the mismanagement of resources projects are repeatedly implemented unsustainably or left unfinished rendering the entire effort all but meaningless. The sustainability of benefits from internationally driven development projects has come under heavy scrutiny in recent years, particularly where independent projects are implemented, and facilities and equipment are financed to a higher standard or intensity than the overall economy they are supposed to help rectify, rendering maintenance and improvements virtually impossible (Kearne 2001). To continually operate in this manner is an irresponsible and deplorable waste of valuable resources steeped in verisimilitude. Direct implementation by a multilateral organization at the communal level, without a local consort, should be ruled out as cost-ineffective (Godfrey et al. 2000, Kearne 2001).

These discrepancies persist due to the backwards nature of international development. In the private sector corporations are responsible to their consumers to produce quality products so they can remain competitive within the market. In the public sector elected officials are responsible to their constituents to act and vote accordingly or else they could fail to be reelected. Although the systems are flawed obligations to the general masses hold the people at top in check. But within the development sector the

beneficiaries, the people perpetuating demand, are oftentimes subject to what organizations decide to give them, organizations that operate in accordance with donor driven pursuits. To bring about the fundamental change necessary to maximize efficiency the structure, independent variability, and mechanisms of developmental process must be continuously reevaluated. When money is seen as the direct solution to many development woes it is supplied without adequate thought into empowering those it is meant to help, and in doing so creates a plethora of problems. From reducing democratic accountability to undermining bureaucracy, foreign support has often fallen short of producing local ownership of reform.

Financial leverage is not an alternative for debilitated domestic infrastructure or ailing political conviction and can impede essential reforms (Santiso 2002). Because development in Cambodia has been donor-driven there has been insufficient attention allocated towards Cambodian ownership. This problem is exacerbated by the ineffectiveness of technical cooperation stemming from the lack of coordination among donors (Chanboreth and Hach 2008). After examining domestic aid effectiveness the Royal Government of Cambodia stated that the lack of donor coordination diminishes government activity, policy formulation, program implementation and monitoring (2007). Due to the absence of proper mechanisms used to procure sustainable foreign investment Cambodia has become an aid dependent nation. In his analysis of aid dependence Stephen Knack (2000) points out that dependency can weaken accountability, bolster corruption, foster disputes over aid contributions, deplete talent working within the bureaucracy, stagnate reform, and alleviate incentives to collect tax.

The fundamental flaw in the system is not failure but failing to recognize and learn from previous mistakes. While the learning curve is slow due to sheer number of variables for every individual situation, INGOs and other multilateral organizations are beginning to take notice of the heightened effectiveness in developing countries with sound reform programs. Historically, multilaterals have trapped their beneficiaries in the cycle of debt while trying to provide a reasonable platform for underdeveloped countries. With the realization of the ineptitude of many relief efforts critics are requesting a more systematic approach to differentiate between demonstrated effectiveness and hopeless pleas for never ending funds (Krueger, 1998). Working in support of the government INGOs can advocate for proven successes and essentially increase the collective knowledge base for future planning. If multilateral donors can establish defined parameters to prevent superfluous expenditures then aid beneficiaries will have the ability to rise out of cyclical patterns of indebtedness. The credibility of aid dependent nations will be strengthened, allowing for the growth of domestic capacity (Santiso 2002).

Economist William Easterly (2002) delineates the current community of multilaterals as a cartel that habitually underperforms, lacks transparency, fails to adequately define aid allocation (outlining quantity of aid without setting specific goals within target countries), and is weighted down by redundant administration (McCoskey 2009). To assuage this persona, foreign governments, IMF, ADB (Asian Development Bank), United Nations and other multilateral organizations must avoid substituting their own unique methodologies and embrace national governments when approaching development. Operating through a government incorporated framework, larger

organizations can bolster the ability of developing governments simultaneously harnessing the localized potential of smaller NGOs.

In their assessment the Council for the Development of Cambodia (2007) highlights methods that can be used as support mechanisms to help Cambodia achieve their development goals. Firstly the major problems that are currently prohibiting the consolidation of resources were outlined. Cambodia's rise to prominence within the international aid community has seen the number of developmental organizations operating within its borders increase exponentially. In an attempt not to be marginalized and retain adequate financial standing all of these organizations vie to be included in each decision and have an input into every pertinent conversation. The result is fragmentation of processes, escalating costs because of increased transactions, which in turn delay progress. For this much needed aid to be used innovatively diversity must be preserved and carefully managed via governmental constructs. To accomplish this feat the Council for Development elucidated methodologies further synchronizing the copious efforts. They include promoting localized proprietorship through clarification of coordination and support, establishing effective dialogue and shared accountability, clarifying roles and functions that can support government implementation, focusing on results via program-based management, and examining support structures to ensure adequate aid management response. Embracing these ideologies will increase Cambodian ownership and eventually lead to domestic handling of dire situations. By harmonizing the efforts aid delivery and implementation processes can be streamlined reducing excessive technical cooperation in the same area and harnessing the versatility of organizations operating inside Cambodia.

Capacity has been most successfully developed when based within national programs or supportive efforts are locally managed. To garner support of the national programs and bolster the quality of aid given technical cooperation needs to associate more with partnership-based efforts to support national programs (Cambodia Aid Effectiveness Report 2007). No technical assistance projects should circumvent governmental totally. All that would be required of NGOs is registering with the relevant ministry to establish correspondence with the applicable branch (Godfrey et al. 2000). The knowledge gained would be twofold with the government supplying regional management and support to prevent overlapping and the NGOs contributing situational knowledge. Because there is almost no limit to the array of fields NGOs can delve into the localized knowledge ascertained working from the bottom-up many organizations is instrumental in understanding the science behind issues that governments and multinational organizations seek to address.

Whilst supporting the construction of government capacity is imperative for INGOs they must concurrently facilitate development at the most localized levels via community based NGOs. For processes such as democratization, pluralism and participation to thrive, advocacy must be encouraged from above while creatively demanded from underneath (Kearne 2001). The most pertinent variables for the synchronization of societal reconstruction and citizen organizations is the ability to form and utilize resources such as legal regulations, funding opportunities, and access to influential political actors and institutions (Reiman 2006). Subsequent research of the nonprofit sector has also found that these variables directly and substantially influence the size and ability of NGOs to materialize and operate effectively (Salamon and Anheier



1998). With their much larger pocketbooks and elevated clout multilateral organizations have the capacity to facilitate development for smaller NGOs who are oftentimes subject to the whims of government officials and exceedingly complacent lawmakers.

Another of the many repeatedly discussed factors affecting the orientation of NGOs is government supplied public space in which to operate. With more public sway and political mobility, this space may be allocated reluctantly and only after governments are coerced by INGOs. Under consistent pressure, copious developing governments have been compelled by international agencies to cede recognition and autonomy to NGOs (Fisher 1997). With the ability to facilitate development on a grand scale INGOs must then form relationships with smaller NGOs through which they can funnel resources for development projects.

Consistently redoubled efforts and underwhelming success, even with the globalization of technology, health care, and sustainable ideas lead to the realization that the status quo of third world countries is the result of a discrete yet interconnected series of conditions. To effectively address the multiple and interrelated casual factors, often lumped together as a solitary problem, all of these factors must be recognized and subsequently examined individually if the indigence of the third world is to be remedied (Riley 2002) Because of their intimate knowledge of local communities NGOs are in the best position to deliver aid in accordance with the needs of indigenous populace.

Historically, grass-roots development has been conflicted by the ever-constant struggle for ideological autonomy from local officials, state governments, political policies, multilateral organizations and the development matrix (Friedman 1992, Fisher 1997). These ideals relate directly to microcosms within the broader national context and

are vital for understanding the needs of the people. At this scale communities can be embraced on a much more individual basis by organizations with heightened cultural comprehension. Situated within the communities they are helping NGOs are in a better position to galvanize the impoverished beneficiaries into action. Concurrently empowering indigenous communities to change their own circumstance while allowing for a more comprehensive overseeing of the implementation process (Mannan 2001, McGann and Johnstone 2006).

In an effort to address the most fundamental needs two partner NGOs, The Trailblazer Foundation (TF) and Trailblazer Cambodia Organization (TCO) have been working from the bottom-up in Siem Reap province since 2004. Emphasizing the importance of earning what you get, by subsidizing available life altering technology for rural villagers, TF/TCO acts as a medium for delivery of projects. Approaching project construction from the bottom-up has given TF/TCO a very intimate working knowledge of the some of the poorest villages in Cambodia. It has also allowed them to attend commune meetings, talk to villagers and implement projects at the villager's request certifying that they do not receive things they neither want nor use. Grassroots organization prevents spreading projects too thin and leaving projects unfinished. Since its inception TF/TCO have been able to provide clean water to over 80,000 people, drill hundreds of wells, distribute thousands of mosquito nets, construct schools and libraries, establish a microfinance program with almost 100 members in 10 villages, maintain a pilot garden for agriculture projects and conduct mushroom farming workshops for both villagers and other NGOs.

Viewing access to clean water as an individual's most basic entitlement TF/TCO began making bio-sand filters (BSF). Considering unsanitary water accounts for 13% of the deaths and 14.8% of the health burden (Ashbolt 2004, Knobloch 2011) the importance of supplying access to clean water cannot be understated. BSFs increase the vitality and livelihood of the user by reducing viral contamination by 90%, bacterial contamination by 90-99% and protozoan parasites by more 99% (Stauber et al. 2009, Hurd 2009). Stemming the intake of contaminated water will save lives, increase quality of life, and quell unnecessary financial losses. Cambodia is a country of 14,000,000 with over 9,000,000 cases of diarrheal disease, which is estimated to be costing the nation \$448 million a year. Because of TF/TCO implementation thousands of people now have access to viable drinking water and has been proven effective (Hurd 2009, Knobloch 2011).

Repeated successful endeavors have enabled TF/TCO to venture into sustainable agriculture. In December of 2010 TF/TCO constructed a mushroom hut to facilitate their burgeoning oyster mushroom program. By combining sawdust, rice bran, calcium, sugar and water you can create the ideal environment for cultivating mushrooms. Growing in popularity throughout the world oyster mushroom cultivation offers the ability to provide sustenance and economic viability with low costs and minimal materials.

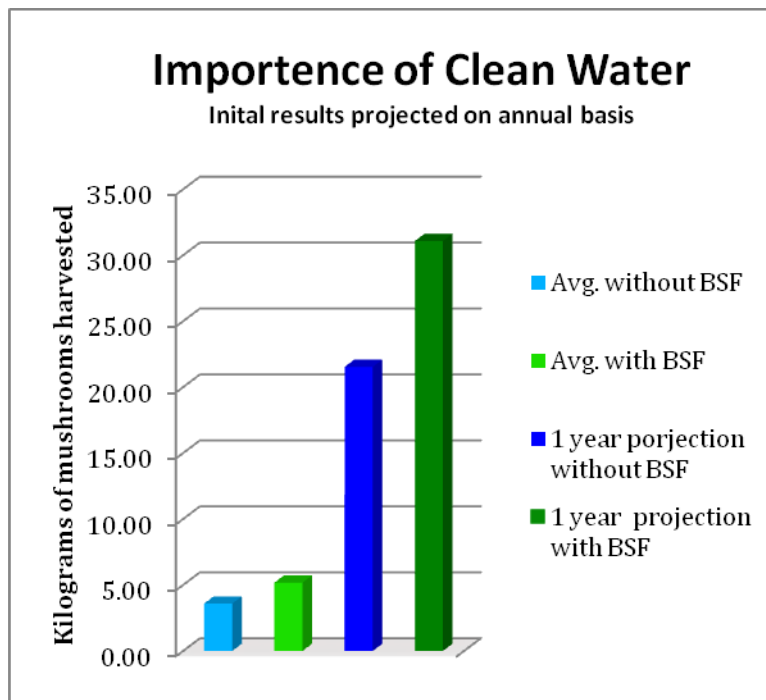
This paper culminates with a study of the recently implemented oyster mushroom training program at TCO. The training workshop lasts three days and the students receive a hands-on walkthrough of the entire growing process, which is supplemented by additional information. Beyond the correct methodology for making mushrooms students are taught how to market their mushrooms for sale at the market, the health benefits, how

to recognize when the mushrooms have gone bad, utilization of the bad mushrooms for compost, and temperature testing to assure the mixture is optimal before bagging. The first two classes, taught by TCO staff, enrolled eight villagers apiece usually with each village represented by two students. Requiring two pupils per village encourages discussion and can be a valuable troubleshooting asset. Upon graduating the villagers are supplied with enough plastic bags, sawdust, and mushroom spores to make approximately 75 small bags of mushrooms. The total number can vary based on how tightly the bags are packed, and how full they decide to fill each bag. While the villagers are attending classes transportation and lunch is provided to compensate for time spent away from work.

All of the graduates were interviewed at the start of the mushroom training to gather an understanding of their economic status quo. Two months following graduation from the TF/TCO mushroom training workshop the graduates were surveyed again. Because the study was conducted two months after the workshop, because the mushrooms can be grown year round the figures are projected on an annual basis if the current rates of growth continue. Growing oyster mushrooms year-round farmers harness the potential to procure surplus during high points of productivity and weather the storm in the face of low productivity. While the process of making, packing, steaming, and implanting spores is laborious one bag can continue to produce for 6 months meaning that the process only needs to be repeated twice a year.

Given that it is estimated that Cambodia loses out on 7.2% of their GDP (“Water and Sanitation Program” 2008) due to poor sanitation, having clean accessible water can drastically improve your economic output. Graduates of the mushroom program with

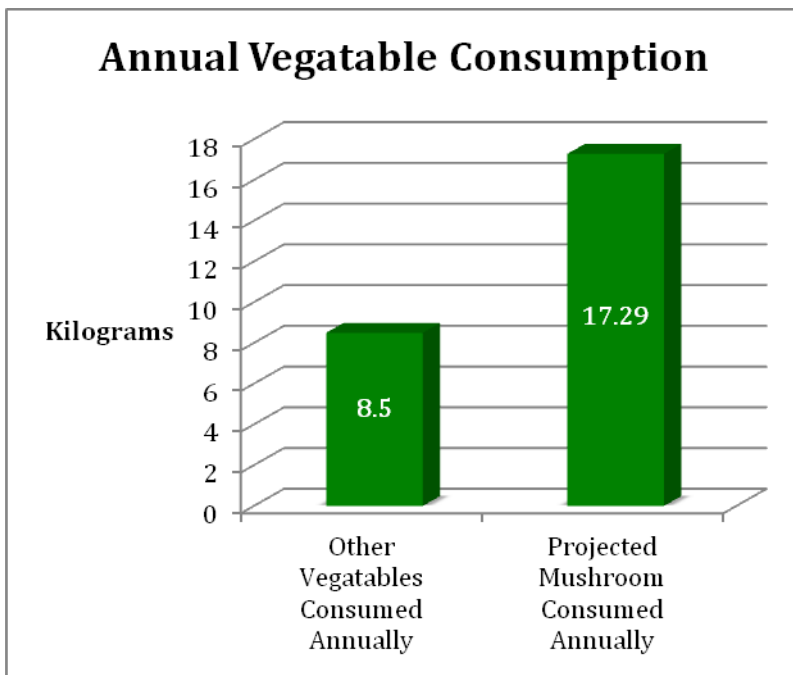
BSFs produced 5.18 kg of mushroom after two months, over 1.5 kg more than the 3.59kg



by those farmers without BSFs. When those figures are calculated for annual output the difference is almost 10 kg a year. This is an example of the compounded impact that small-scale development can have. The effect of 10kg of additional mushrooms is substantial

when you consider that they are high in quality proteins like glutamine and lysine, which only appear in animal protein thus reducing the need for more expensive meat products. Mushrooms also have elevated levels of biotin, folic acid, Vitamin C and the B complex vitamins rarely found in many vegetables. There are also minerals like phosphorus, potassium, sodium, zinc, iron and calcium essential for children, pregnant women and lactating mothers (Gateri et. al 2009).

Mushrooms also possess the versatility of going to market to bolster incomes or going additional sustenance for the farmer's family. Over 60% of the recently certified mushroom farmers produce less than 20 kg of vegetables a year, after just two months they have average 4.7 kg per grower while consuming over half. If the current



consumption trends progress at the same rate then the participants in the mushroom training workshop will be consuming double the vegetables than they had prior to entering the training.

A strong majority of the farmers surveyed were small producers but there were a few larger producers who would not have to rely on their mushrooms for sustenance. The market price for oyster mushrooms in Siem Reap is \$1 per kg of mushrooms. For the families who could use the mushroom training as purely a business venture there would be the opportunity to make \$30 a year or the equivalent of a month worth of supplementary income.

There are a host of intangible benefits that cannot be measured, such as the value added to the soil by composting the used mushroom bags. With extra emphasis placed by TCO on the value of composting farmers are able to reuse their resources more efficiently while increasing future growth. A practice that can have immediate far ranging effects within close-knit village communities.

While there has been positive correlation between the Trailblazer mushroom program and economic improvements subsequent research is needed to gain a more comprehensive grasp of the benefits. Only having two sets of graduates is a small subset

which can now be expanded upon because the additional workshops, one of which was representatives from a dozen NGOs and will have an exponential ripple effect. The surveys were also conducted just 8 weeks after the first graduation so to analyze annual benefits they should be surveyed periodically to show if trends continue, and to see the amount of bags that each farmer packs every time. The mushroom harvesting in this survey coincided with rice planting so the numbers may be improved if the villagers were not so preoccupied with their major cash crop. These are definitely positive steps in the right direction but follow up is needed for a holistic view of the benefits and shortcomings of the mushroom workshops.

The benefits offered by not only consuming mushrooms but doing so with regularity can greatly improve the lives of the workshop graduates. Coupled with the demand to sell them at the market could prove to be an economically viable option for those with minimal resources. There is also the potential to sell the small bags of mushrooms before they begin to grow reducing the workload and spreading the community of mushroom farmers. Educating other NGOs is a perfect example of an idea can percolate, increase the learning curve and stimulate discussion on improvements ten fold. With this model of bottom-up development based on spreading the knowledge by understanding who you are trying to help Trailblazer has been able to exponentially increase their impact. If you can take time to listen and synchronize the effort then will start to see the best possible results.

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