

STRATEGIC SUSTAINABLE DEVELOPMENT EXTENSION PLAN TO ALLEVIATE POVERTY

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FOR THE PAST SEVERAL YEARS SUDEX (Sustainable Development Extension Services, www.sudex.org) has been working with communities in developing countries to assess the resources, or lack thereof, that are available to them, and to develop strategies that allow them to overcome the obstacles that prevent fulfillment of their basic needs. Sudex, which is modeled after the Agriculture Extension Services of the U.S.,¹ provides communities with a systematic, self-deterministic approach to sustainable development, that is based on appropriate, feasible, applicable and practical solutions.²

Sudex supports communities in developing a practical roadmap for obtaining resources and implementing solutions, without passively waiting for help solutions to be dictated to them by third parties. Communities are supported by “extensionalists,” professional and student advisors who help the community identify problems, decide what solutions are most feasible, and what actions need to be taken. Since its founding, Sudex has worked closely with student and professional chapters of Engineers Without Borders in an extensionalist role in communities in Africa and Southeast Asia. Case studies from these projects are included to highlight the successes Sudex has had, as well as the challenges it has faced.

Sudex works with Engineers Without Borders student chapters at Columbia University (<http://www.cuewb.org>) in Ghana and California Polytechnic University (<http://www.ewb.calpoly.edu>) in Thailand. In addition, it serves as a mentor to the EWB New York City professional chapter project in Siem Reap, Cambodia (<http://ewbnycambodia.blogspot.com>). Through this experience, Sudex has developed the concept of the Sudex Plan, which includes assessment, problem definition, solution identification, implementation, performance evaluation, follow-up, improvement, and transfer of lessons learned.

The Sudex Plan provides a short and long term course of action for communities to meet their self-identified priorities by integrating social, business, scientific, and engineering practices to improve their standard of living without compromising quality of life as defined by the community.

The plan attempts to serve as a road map out of extreme poverty and to ensure there is no way to return to the point of origin.³ The objective is to empower the community to act for itself by charting a course that is relatively simple to navigate.⁴ The extensionalist provides suggestions, information and ideas, but not mandates and conditions. Once empowered, the community becomes its own extensionalist and is able to serve its neighbors in that capacity.

The Sudex method is based on the plan, do, study, act (PDSA) cycle of total quality management, which has been supplemented with a fourth “check” phase to incorporate performance measurements. The plan is also based on the Agricultural Extension Service model, which integrates engineering and scientific investigative techniques, community planning, and business management decision and system analysis methods.⁵ It provides a course of action for a community to meet its needs by applying qualitative weighted scorecards, expected value analysis, gap analysis, performance measurement practices and feedback loops to track progress and identify problems. The objective of the Sudex Plan is to develop a prototype model based on good science, appropriate engineering, and sound management with which the communities can reach appropriate decisions to meet their self-identified goals.⁶

Implementation of the Sudex Plan is highly dependent on indigenous ingenuity and wisdom, augmented by extension services, which provide information and guidance so the community can determine how and where to best apply available resources.⁷ Neither the model nor the extensionalist attempts to define quality of life or social responsibilities. The model incorporates concepts from the environmental, business, architectural and development fields, including designing with nature,⁸ multiple objective decision-making,⁹ and scorecards evaluating performance standards and other metrics.¹⁰

The general strategy is to conduct an initial investigation to define problems, assess causes, identify potential solutions, and set priorities. A feasibility study is performed to determine which priorities can be realistically addressed with the available resources and potential sources of funding. A plan of action and schedule is then prepared to implement the solutions to best meet the objectives. Subsequent progress toward meeting the objectives is monitored. The process is a feedback loop based on continuous investigation, assessment, action, performance measurements, and revision. As priorities are met, new ones are established, and maintenance and improvement procedures are implemented.

The following is a general outline of the scope of work to complete the Sudex Plan:

1. A Community Development Committee representative of all social strata and stakeholders is organized, and the extensionalist learns the socio-economic, political, and demographic structure of the community,

and to appreciate and respect the culture. Mutual trust and respect are nurtured.

2. Extensionalist conducts an objective comprehensive investigation (e.g. water resources, health practices, diet and food sources, economic and education access, taking into consideration infrastructure, institutional, cultural and political factors) to define the problems, identify the cause and effects, and determine potential ways and means to overcome obstacles weighing advantages and disadvantages of implementing various alternatives.
3. Findings are presented to the committee. Committee weighs and scores priorities based on importance relative to culture, feasibility and time line for applying solutions to meet needs. Conflicts are resolved by community leaders and elders, a list of priorities is agreed upon, reviewed with regional administrative officials and government, and revised accordingly.
4. Extensionalist prepares plan of action (Sudex Plan) to obtain resources to fulfill priorities and a schedule to implement priorities as resources become available.
5. Committee implements plan providing management, manpower and leadership.
6. Continuous milestone progress tracking and improvement revisions. Extensionalist provides oversight, guidance, and technical support and measures progress toward meeting objectives, problems encountered and potential improvements to the plan.
7. The plan is revised and improved on the basis of performance and progress (see 6) with community concurrence.
8. Community becomes self-sufficient with reliable sustainable capabilities to meet basic needs and take advantage of opportunities.
9. Community shares knowledge gained with neighboring communities, mentoring them using their committee as the supporting extensionalist.

CASE STUDIES

The plan continues to be researched in the field, and has been implemented through the initial phases of setting up communal committees to identify community development priorities. So far an alliance has been established with the EWB Chapters mentioned above, local NGO's including Faith International in Thailand, Human Translation in Balang, Cambodia, and The Lake Clinic (pending) at Tonle Sap Lake, Cambodia. Three Sustainable Development Committees have been established to date through Sudex, two in Obodan and Sakyikrom, Ghana,

and one in Mae Nam Khun, Thailand. Sudex has also provided extensionalist services to Human Translation and The Lake Clinic in Cambodia.

OBODAN

Obodan is a small rural farming community with a population of about 1,500 people. It is located approximately 45 miles from Accra, the capitol of Ghana. Pineapple, the village's primary crop, is produced at both large commercial and small individual farms that are the main source of employment. However, the unemployment rate is high, and in recent years the global pineapple market has been dominated by a new hybrid species developed in Costa Rica.

Obodan is located at the crossroads of major secondary roads between Accra and the large commercial centers of Abruri and Nsawam. Obodan's Sustainable Development Committee is comprised of representatives from all levels of the village social strata, including community leaders, women, youth, farmers, elders, and school and church officials. Their list of priorities includes a police station, health clinic, post office, community center, playground, and employment opportunities. Once constructed, these facilities will establish Obodan as a regional center providing business opportunities and government services for travelers to larger commercial centers.

The next step, with the help of a Sudex extensionalist, was to create a strategic development plan focusing on how to accomplish the identified priorities, as well as basic infrastructure such as a water distribution system, erosion control, and sanitation facilities. In the plan, organizations that may be willing to offer resource assistance (funding, equipment, information) are identified, and preparing and submitting proposals is incorporated into the strategy. EWB-Columbia has already responded to Obodan's proposal and is considering taking on the police station and/or playground with merry-go-round pump. Economic development projects are being considered by entrepreneurs. Projects under consideration include agricultural ventures, such as pineapple farming, snail farming, palm oil production, chicken farming and commercial ventures such as internet provision, entertainment centers, and telephone access.

SAKYIKROM

The village of Sakyikrom is approximately 15 miles from Obodan, in the outskirts of the business center of Nsawam. It is located on the planned route of a new major highway from Accra to Kumasi, the two largest cities in Ghana. Once completed, the new highway will by pass Nsawam and the economic base will shift from Nsawam to Sakyikrom. Sakyikrom is ill prepared to handle the anticipated "boom town" growth. Already, speculators are buying up properties within the community, and it has been difficult for the village chief and elder caucus to delegate work assignments to others. While they have set up a Sustainable Development Committee, it is made up of themselves. SDC priorities to date have two focal points; the first is to meet immediate sanitation needs, and the other is to develop a large new central market area.

Recently, the local school principle has taken an active leadership role and has been instrumental in setting up subcommittees to develop a strategy to meet

the community's needs and prepare a more substantive community development "master" plan, that takes into consideration the significant projected growth for the village within the next 10 years. Affiliations have been established with two universities in Ghana, the Ghana Telecom University College (GTUC) in Accra and the Kwame Nkrumah University of Technology (KNUST) in Kumasi. In addition, the Chiang Mai University in Thailand has expressed an interest in providing student support. Each affiliation offers logistical advantages for the villages and provides a unifying, synergistic strength to the proposal.

MAE NAM KHUN

Mae Nam Khun is remotely located in the "hill country" of the famous hill tribes of Thailand, located in the northern region between Chiang Mae and Chiang Rai. The village is made up of about 3,000 people from four different tribes: the Ahka, Lahu, Ahkeau, and Chinese. Each has different needs but all are very receptive to the idea of forming a committee comprised of representatives from each tribe and social strata. Their remoteness makes it difficult to get to the main markets, so their main priority is to build a serviceable road over very difficult terrain. Recognizing the enormity of the road project, the committee suggested that more direct health problems be the focal point, and that clean water was the first objective. CalPoly is now working on completing a water treatment system for their school and planning workshops to transfer the treatment technology to the community that will provide entrepreneurial opportunities for installation, maintenance, and suppliers. The committee is seeking to identify an extensionalist from the village who can be trained to act as local coordinator. There is a lot support and proactive leadership from the village that can be difficult to hold in check to avoid the disappointment of unfulfilled expectations, since it is difficult to regain momentum after perceived failure. The Joni Morse of the Faith International, the lead hosting NGO, is involved in many in development projects throughout north Thailand and is planning to apply the Sudex model in the many villages he is working with.

BALANG

The commune of Balang is located in the vicinity of the World Heritage Site of Angkor Wat in the Siem Reap province of Cambodia. Cambodia is making great strides in improving its economic conditions, but it has a poorly defined and rather chaotic strategy, which could portend significant infrastructure problems in the future. Almost all development in the rural areas is initiated by a myriad of NGOs, and the communal hierarchy is relatively complex, with various degrees of corruption permeating through the post-Khmer Rouge system.

Creating self-reliant committees in Balang has been a difficult process and seeking leaders that work well together on behalf of the commune has been a challenge. However, a local Buddhist NGO, Human Resource and Natural Development (HRND), helped determine that restoring a large irrigation dam system believed to date back to the Angkor Wat era, circa 1100 AD, would benefit all villages within the commune. HRND enlisted the help of the American NGO Human Translation (HT), which has subsequently taken the project lead and submitted a proposal to

EWB-USA seeking engineering support. EWB-NYC elected to undertake the dam restoration and provide construction oversight. Once completed, the system will provide a second crop for nearly 3,500 people and provide economic benefit for the community at large. In addition, the reservoir will provide both protein and financial benefit through fishing. HT is responsible for the funding and “translating the need for the dam into action,” as well as community capacity building by incorporating the concept of the Sudex Plan into their process and identifying the people within the communities to act as extensionalists.

TONLE SAP LAKE CLINIC

The Tonle Sap Lake Clinic (TLC) project is in the initial stages of implementation. Its objective is to bring shipboard healthcare facilities to the people living on or near the Tonle Sap Lake in the Siem Reap Province in Cambodia. Tonle Sap Lake, which is the largest fresh water lake in Southeast Asia, is an impressive hydrodynamic ecosystem. It covers an area of 16,000 km² at depth of up to 9 meters in the high season, when the Mekong River back flows into the lake. It has been identified as a UNESCO biodiversity reserve because of its vast variety of bird communities, mammals, reptiles, and fish species including a rare and protected giant catfish that weighs over 600 pounds. As a result of its two directional transboundary flows it is one of the most productive inland fisheries in the world, supporting over 3 million people and providing over 80 percent of Cambodia’s annual inland fish catch and 60 percent of Cambodians’ protein intake.

There is relatively little information about the lake’s environmental complexity and vulnerability. There is even less information about the estimated 1.1 million ethnically diverse populations of Khmers, Cham, and Vietnamese who live along its transitional eco-zone, including those living in 60 “floating villages” on the lake itself. The villagers reportedly live on an average daily income of \$0.40, isolated from the high rate of development occurring around them, and many living a full day away from any medical care.

Jon Morgan, a public health specialist, hopes to change this. Mr. Morgan has been the Executive Director of the renowned Angkor Hospital for Children in Siem Reap since its founding, and continues to be instrumental in its success. He now plans to transfer that success to the Lake Clinic. The Lake Clinic ship will be dedicated to bringing basic health services, disease surveillance, and proper medical assessment to the severely isolated and under-served Tonle Sap region of Cambodia. In addition The Lake Clinic will provide a Women’s Center offering family health education and counseling for Khmer women suffering in the aftermath of the Khmer Rouge. The objective is to improve the infant and child mortality and morbidity rates, increase the availability of health care and information, empower women, and generally improve the health of all the communities, thereby increasing individual productivity and reducing poverty levels.

Cambodia is experiencing an immense amount of economic growth and development. While there are strategic development plans on record for the Tonle Sap area, their implementation is difficult to discern. It is imperative that these plans be proactively implemented and monitored; otherwise, significant social, environmental and health problems will be inevitable. It is reasonable to an-

ticipate that development will ultimately diffuse into the Tonle Sap Lake, and unless the reported development plans adequately address the environmental issues coupled with the welfare of the indigenous people living on the lake and in the surrounding area, it is also reasonable to expect that the sensitive natural ecosystems within the Tonle Sap region will be grossly impacted, and the livelihood of the people in the area will be compromised. The challenges facing TLC will become even more challenging.

Environmental systems are extremely difficult to protect and restore once the system is disrupted. The time to implement a preventive plan is before any damage is done. Sudex hopes to contribute by assisting with the development of a regional Sudex Plan, which utilizes local plans already in place, and ensures that the indigenous people have basic essential needs and opportunities to improve their standard of living. When successful, it will serve as a model for Cambodia to build on successes at the regional level.

THE VISION

The lessons learned will provide invaluable experience, which communities can use to tailor the Sudex Plan to various cultures and circumstances in developing and developed countries by self determining viable and feasible programs and opportunities to the welfare of the community on a continuous and long term basis. It is hoped that the ultimate Sudex Plan, after the lessons learned through pilot programs have been incorporated into it, will become a model that communities all over the world will be able to use as a road map out of, or to avoid, poverty. In addition, the UN, multilateral development organizations and banks, and private NGOs will be able to use the Sudex model to determine, with community guidance, where and how they can most effectively use their resources and avoid a fragmented approach to development.

NOTES

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