The Failure of the La Zin Farmers' Assocation: How Aid Creates Perverse Institutions and Incentives

Benjamin Timms
December 7th, 2002

I. Introduction

After sixty years of development activities to help people of the relatively impoverished parts of the world improve their material and livelihood conditions, the gap between the wealthy and poor has continued to grow. Past aid approaches of top-down development have failed for the most part to trickle down to the lives of the every day person. Hence, there has been a switch of strategies to make funding for development available to groups at the local level to improve their own conditions. However, this project is not without its growing pains. Simply focusing on making aid available at the local level is not sufficient to improve development conditions. Aid must be matched to appropriate institutions and incentives.

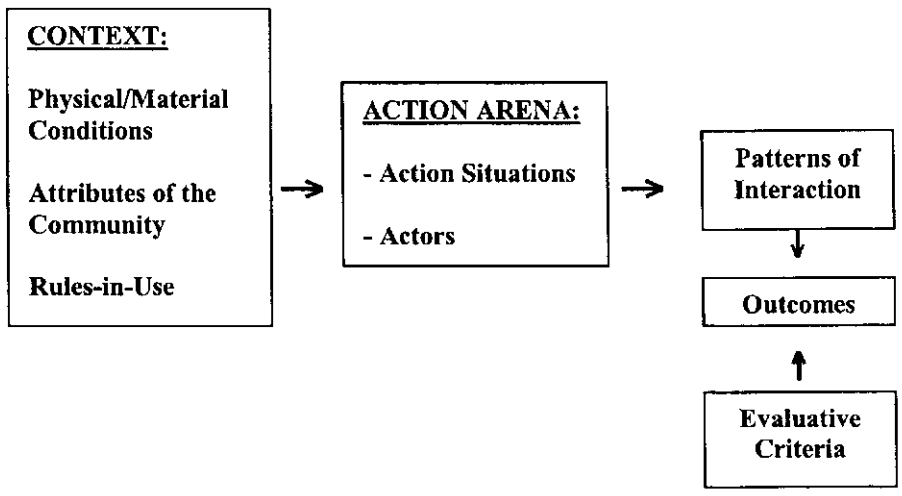
Using the Institutional Analysis and Development framework, this paper will analyze how donor aid created perverse incentives that weakened institutions and created a common pool resource dilemma. The author worked with several farmers' organizations during service in the United States Peace Corps in Jamaica from 1999-2000. Using the example of one of the these groups, the La Zin Farmers' Organization, this paper exhibits that regardless of good intensions and money, the lack of appropriate institutions and resultant incentives can create sub-optimal outcomes than otherwise possible (Ostrom et al 2002).

II. IAD Framework

Developed by researchers at the Workshop in Political Theory and Policy Analysis at Indiana University, the Institutional Analysis and Development Framework (IAD) is a general organizing tool that helps in understanding a wide-variety of situations where the outcomes are affected by physical and material conditions, attributes of the community, and rules-in-use (Ostrom et al 1994). The basic components of the LAD include an action arena, context, interactions, and evaluation of outcomes (Ostrom et al 2002). A focus on institutions is inherent in the framework, as defined here, "[Institutions] are the humanly devised constraints that shape human interaction" (North 1990, 383). Institutions are often associated with rules that guide behavior at the individual level in order to create outcomes at the collective level that were not possible before.

The action arena consists of an action situation where actors interact in regards to the exchange, appropriation, and/or provision of goods and services, which entails problem solving and/or conflict. The context is made up of factors that affect action arenas, comprising the physical/material conditions of the good or service of interest, the attributes of the community, and the rules-in-use that help guide human behavior. Through interactions within the action arena outcomes are created, for better or worse, which then must be evaluated upon selected criteria. Examples of evaluation criteria can be efficiency, optimality, fairness, adaptation, and sustainability, among others. In a repetitive situation the outcomes in turn influence the context and action arena, both positively and negatively.

Figure 1: A Framework for Institutional Analysis (source Ostrom et al 1994, 37)



III. The La Zin Farmers' Organization's Reforestation of the Rio Cobre Watershed

A. Project Background

The La Zin Farmers' Association organized in 1992 and originally sought to educate local farmers on soil conservation techniques and raise environmental awareness. The chairman of the association had participated in a past foreign donor funded reforestation project, where he had learned of the environmental plight of the Rio Cobre watershed, one of the major rivers in Jamaica and source of water for both small rural farming communities and the urban areas of Spanish Town and Portmore. The Rio Cobre watershed area is located in the east-central part of the Jamaica, approximately 25 miles from the capital of Kingston. It covers an area of 250 square miles with mountainous to rolling terrain in a humid tropical climate with annual rainfall of between 52 inches and 75 inches. Population density in the area is approximately 760 people per square mile with the majority living in rural settlements (Annikie and Smith 2000). The degradation of the Rio Cobre watershed is popularly attributed to deforestation by small hillside farmers leading to water siltation and a decrease in water availability to farmers and households, among other detrimental effects (Eyre 1996).

While still in it's infancy, the La Zin Farmers' Association prepared a project proposal for the Environmental Foundation of Jamaica (EJF) in order to purchase trees for a reforestation project. The original proposal was revised by the EFJ to include the institutional development of the farmers association to the point where it would be capable of implementing the project, cooperatively market fruit tree crops, and becomes sustainable after the funding concluded. Once revised, the project was accepted with funding of US$100,000 and a donated truck for transportation of the trees.

The specific objectives of the project were; (1) to plant lumber trees and fruit trees, (2) to create a sustainable farmers' association, and (3) to cooperatively market the fruit tree crops to raise farm income. The addition of fruit trees was seen as an incentive

for farmers to participate since they would be able to deliver on-farm income in a much shorter-term time frame than lumber trees. However, receipt of fruit trees was contingent on the planting of lumber trees. Additionally, the income generated from fruit marketing could begin to replace the EFJ funding in the long-term. Other benefits included watershed rehabilitation, soil conservation, food production, and the creation of human capital in working together as a community. Types of fruit trees distributed included coconut, naseberry, sour sop, coffee, breadfruit, custard apple, June plum, mango, and avocado pear. Lumber disbursed included cedar, Honduran mahogany, and Spanish elm.

By 2001 the association had grown to almost 600 registered farmers and had distributed approximately 100,000 fruit and lumber trees but had failed to strengthen the organization or begin marketing endeavors. After seven years the EFJ ended the project funding and, left to there own resources, the association also soon came to an end. The institutional analysis that follows will delve into the role of aid, incentives, and institutions in the success and failures of the La Zin Farmers' Association reforestation project.

B. Institutional Analysis

1. Action Arena: Actors and the Action Situation

The action arena consists of an action situation with actors interacting within. The set of variables within the actions situation include participants and the positions they hold, the potential outcomes and how they are to be realized, control that a participant has in this function, information available to participants at different points in the process, and the costs and benefits of outcomes (Ostrom 2002). Within the bounds of how collective-action can achieve reforestation in the Rio Cobre watershed a repetitive situation affects the strategies of the participants. In the end a Samaritan's Dilemma unfolds where recipients adapted over time in order to maximize their benefits with the least cost, which in turn created a less than optimal situation for the La Zin Farmers' Association.

Environmental Foundation of Jamaica (EFJ)

The Environmental Foundation of Jamaica (EFJ) was founded in 1993 through the debt-swap arrangement Enterprise for the America's Initiative between the governments of Jamaica and the United States to fund sustainable development projects at the local community level, namely environmental projects and child survival and development projects (EFJ 2002a). The EFJ funding by the United States is a sinking fund, meaning that it will end when the money is completely disbursed, estimated to occur in 2012. The position of the EFJ is as a source of funding for NGOs, community groups, and educational institutions, with priority given to projects involving local communities and NGOs such as the La Zin Farmers' Association.

In light of the degrading natural environment of Jamaica, one of the main efforts supported by the EFJ is the Spinal Forest Project, which aims to re-forest the entire central mountain ridge of Jamaica to improve water supplies, reduce landslides, increase

livelihoods, and promote biodiversity (EFJ 2002b)[1]. It is within this overall initiative that the La Zin Farmers' Association was able to acquire funding for their reforestation activities. It is important to note that the initial project proposal by the Association was refused by EFJ. However, the merits of the initiative of farmers and the consistence of the project with EFJ goals led to the reconstitution of the proposal with the help of an EFJ project manager to conform to the edicts and priorities of the foundation. The potential outcomes of this action included formal registration as an NGO, a formal constitution, plans for self-sufficiency after the funding expires, and eventually a rehabilitated watershed.

The EFJ monitors performance through annual field trips by EFJ staff with the chairman of the La Zin Farmers' Association as well as annual reports and budgets. If EFJ is not satisfied, they can propose changes and end the funding if they perceive that these changes are not being met or the association is not meeting goals. However, the EFJ has a stake in the success of funded programs, which in turn reflect on the success of the foundation. Since the EFJ funding is expected to expire in 2012 it will be required to look elsewhere for funding if it is to continue, and has begun fundraising activities. Success of funded projects goes a long way in promoting fundraising.

La Zin Farmerss Association Board of Directors

In conformance with the EFJ mandate, the La Zin Farmers' Association was required to have a Board of Directors. The Board consisted of seven members selected by the Chairman of the association. None of the seven members belonged to the farmers' association and included the brother of the future chairman and six other acquaintances from Kingston, the capital of Jamaica lying 25 miles (1.5 hour trip on bad roads) from the project area. The Board of Directors oversaw the implementation of the reforestation project, but has little to do with the operational level rules of the farmers' association itself, although it has the power to remove the Chairman. Meetings occurred more or less bi-monthly where the Chairman presented the accomplishments of the project and plans for the following period, with input from the Board of Directors for future improvements. The benefits of serving on the board include community prestige and association with a highly funded development project.

Chairman of the La Zin Farmers' Association

The Chairman was the original organizer of the La Zin Farmers' Association and author of the original project proposal to EFJ. The ties between the Chairman and the Board of Directors, through kinship and close acquaintances, creates a symbiotic relationship where the position of each at the top of the La Zin Farmers' Association hierarchy is ensured by the other. The Chairman was in charge of the operational activities of the project and association, included hiring workers, organizing farmer meetings, registration of members, disbursement of trees, and follow up care for the planted trees. In the long-run the Chairman was also responsible for organizing

The current status of the "Spinal Forest Project" calls for a 5 year reforestation project totaling US$30 million, with EFJ contiibuting US$1.5 million (EFJ 2002b). The project is to span the entire "spine ridge" of Jamaica, running the length of the island from Negril in the west to coast of the parish of Portland in the east.

cooperative marketing opportunities for the fruit trees produce. Hence, all of the operational rules and actions stemmed from this one position.

The Chairman was the fulcrum point around which the EFJ funding was realized into tree disbursal, as well as developing the institutional strength of the La Zin Farmers' Association. In turn, information about the project flowed directly through the Chairman to the Board of Directors and the EFJ as well as down to the members of the association, creating an asymmetric information and action authority that can be considered a dictatorial situation, where one person is assigned full authority to select an action (Ostrom 2002). The benefits of holding the Chairman position include a salary, community prestige and control of the association and reforestation project, and use of truck donated by the EFJ. At the same time, holding the position came at the cost of great responsibility, time, and effort.

Registered Members of the La Zin Farmers Association

In the course of seven years, almost 600 farmers in 44 communities of the Rio Cobre watershed were formally registered as members of the La Zin Farmers' Association. In order for a farmer to belong, he or she would have to fill out an Application for Membership and agree to pay a J$100 (US$2.50) membership payment. In addition, the farmer would be required to fill out a Grower Contract and Partnership Agreement, which stated an intention to plant fruit and/or lumber trees on their property, agreement not to destroy or harm the trees, and included a partnership with two other members of the family for future continuance. As members, they were entitled to receive fruit and lumber trees for planting and future cooperative marketing endeavors.

However, while the requirement for a J$100 membership fee was a formal rule, it was only enforced as a rule-in-use during the early stages of the project. There were at least two reasons for having a membership fee. The first was to develop a fund where a small investment by each member can contribute to the operational funding of the La Zin Farmers' Association. Secondly, and more importantly, requiring a farmer to pay for membership would protect the association to some degree from free-riders, those that seek to benefit from the cooperative-action of the association without having to contribute anything to the effort. By having to pay an amount in order to participate in the collective-action situation, each member would have stake in the success of the project. However, the rules-in-use changed within the first two years of the project to not require payment, and hence the incentive was not realized.

Rest of Community - Non-members

Formally, non-nonmembers were not to receive benefits from the La Zin Farmers' Association unless they formally joined. However, the rules-in-use saw the disbursement of trees to any community member who asked for them, usually during delivery to members at the side of the road in a sort of "optimal foraging" behavior. Hence, non-members also became recipients of the benefits of receiving trees from the La Zin Farmers' Association without having to pay the costs of registering.

2. Contextual Factors Influencing the Action Arena

a. Physical/Material Conditions

The nature of the goods is an important part of analyzing an action situation. In this case categorization is a bit difficult. For trees, the main good to be appropriated, the formal rules of access to the resource should make them a private good with easy excludability (only members would receive trees) and high subtractibility (there are only so many trees to give out with the funding available). However, the rules-in-use create a situation where the tree resources still have high subtractibility but exclusion is not enforced (difficult exclusion), creating the conditions for a common-pool resource (Ostrom 1990).

Fig. 1 A general classification of goods (source Ostrom et al 1994, 7)

		Subtractability: Low	Subtractability: High
Exclusion	Difficult	Public Goods	Common-Pool Resources
	Easy	Toll Goods	Private Goods

The source of the trees was a tree nursery 40 miles (2.5 hours on bad roads) from the project area. The Chairman of the La Zin Farmers' Association was given use of a Toyota pickup truck for association activities. In order to help with transport, distribution, and planting of the trees the Chairman would occasionally hire a laborer with association funds. The recipient of the trees would help with the unloading and be responsible for planting and caring for the trees. However, given these limited physical resources it was difficult to service 600 farmers in 44 different communities. When the large numbers of non-members are factored in, the situation becomes impossible.

b. Attributes of the Community

The farmers of the Rio Cobre watershed area of the parish of St. Catherine are characterized by low incomes, small land holdings (5 to 20 acres) on hillsides with often steep slopes, lack of basic services such as water, telephones, intermittent or non-existent electricity, poor schools, and bad roads. These factors have led to a feeling of neglect by the farmers of the region and demands for development projects.

The 600 formally registered farmers of the La Zin Farmers' Association come from 44 different communities within the Rio Cobre Watershed. Ages range from 14 to 84, with about 40% women with land holding size ranging from 1 acre to 50 acres, 6 acres being the average. The farmers association is relatively homogenous in terms of

ethnicity and religion. However, it is important to note that due to rules-in-use non-members of the association also participated in the project to a great extent. The general characteristics of these farmers are the same as the formally registered farmers, although no records could be associated with them.

Since degradation of the Rio Cobre watershed has had negative repercussions on the water supply for the large downstream urban areas of Spanish Town and Portmore, as well as impacts on coral reefs and fishing due to algae blooms from excess nutrient discharges from the silted river, attention has recently been focused on reforesting the watershed and promoting soil conservation strategies for the farmers (EFJ 2002b). Hence, development projects aimed at alleviating these problems have surfaced in the region.

In the past, rural farmers in Jamaica worked cooperatively to achieve goals, most notable in the practice of field days where neighbors would take turns helping construct houses or plant crops for one of the local farmers. In return, food and libations were provided by the recipient farmer with reciprocity in future workdays for other participating farmers expected. Memories of a time when collective-action was a norm still resonate within the older members of the area.

However, within the past generation this practice has been largely abandoned with a sense of suspicion and malice toward farmers who were perceived to be prospering under favoritism. Much of this can be blamed on the political culture of Jamaica with patron-client relationships tied into development projects were assistance was seen as handouts to the favored. Examples of retribution abound, spanning the spectrum from destroying crops, poisoning goats, and even outright violence. In effect, within the communities either everyone benefits or no one benefits. In this social environment, perceptions of fairness and expectations of free handouts have dominated the development projects implanted in the region, making collective-action problematic at best.

c. Rules-in-Use

Ostrom has identified seven types of rules that affect the action situation, their effect on the structure of the action situation, and how they influence behavior and outcomes (Ostrom 2002). These are: position rules, boundary rules for exit and entry, authority rules, scope rules, aggregation rules, information rules, and payoff rules. While formal rules often exist and are easy to analyze, they are seldom followed in this action situation. Hence, only relevant rules-in-use are discussed here as important factors influencing the action situation.

Position and Boundary Rules

Position rules define the positions of the actors while boundary rules determine how an individual is able to enter or exit a position (Ostrom et al 2002). The position of the EFJ existed as the funding source for development projects. The Board of Directors of the EFJ consists of one representative from the Government of Jamaica, one from the Government of United States, one representative of the University of the West Indies in Mona, Jamaica, and six representatives from NGOs appointed by the Government of Jamaica (EFJ 2002a). Members serve a term of two years with the possibility of

reappointment. The future existence of the EFJ after funding from the United States ends (in 2012) rests on its ability to attract other funding, which is contingent on the funding of successful projects. Hence, the EFJ would receive a benefit for the success of the reforestation and institutional strengthening project of the La Zin Farmers' Association, and a cost if it failed.

The position and boundary rules for the Board of Directors and Chairman have a symbiotic relationship in that each determines the entry and exit of the other. As long as the Board of Directors is distant from the project (living in Kingston) and tied to the Chairman (by kinship or close acquaintance), the Chairman is allowed to remain in his position. Additionally, since information on the Board of Directors is only available to members of the association through the Chairman, it is unlikely the association can take action to change the structure.

Members of the La Zin Farmers' Association have simple boundary rules for entry. They must sign a respect for the environment agreement (including basic information on their age, sex, and landholding), a partnership agreement with two other members of their family, and may pay their membership dues (J$100 = US$2.50). Since the dues are miniscule and have little or no impact in relation to EFJ funding, there is little incentive for the association to collect them and no reason for members to pay them. In terms of rules-in-use, the only entry requirement to be a formal member is to sign the agreements, which have no sanctions associated with them if they are broken.

Authority Rules

Authority rules define within a deontic logic what actions a participant must, must not, or may do (Crawford and Ostrom 1995). Most of the authority rules within this action situation fall under the "may" category. For example, the EFJ may withdraw funding from the La Zin Farmers' Association if the project is deemed to be not succeeding in the implementation and/or handling of the funds. The Board of Directors may remove the Chairman from his position if they feel the Chairman is not carrying out the project. The Chairman must distribute trees, however he may give them to either members or non-members. The dominance of the deontic term "may" causes ambiguity in this case, which in turn destroys the incentive structure designed to block free-riders from extolling the benefits to the detriment of others.

Scope Rule

Scope rules define the possible outcomes of the actions. The main scope rule affecting the action situation stems from the EFJ mandate to plant an excessively large number of lumber and fruit trees[2]. If this occurs to the satisfaction of the EFJ, then funding would continue. In the end, this one rule came to dominate the agenda of the La Zin Farmers' Association to the detriment of another scope rule - the institutional strengthening of the La Zin Farmers' Association. The project must demonstrate that the

[2] The Chairman of the La Zin Farmers' Association reported that the EFJ was aiming for the planting of 1,000,000 lumber and 480,000 fruit trees over the lifespan of the project. However, upon reviewing the numbers this estimate does not seem to be possible. For instance, 1,480,000 trees with a US$100,000 grant means each tree seedling would cost US$0.07.

farmers' association is developing into a self-sufficient organization. If not, then funding may be withdrawn.

Aggregation Rules

Aggregation rules deal with the issue of 'who is to decide' what actions to follow (Ostrom 2002). The La Zin Farmers' Association can be viewed as having nonsymmetric aggregation rules in that the Chairman was in charge of both the operational activities and the sole decision maker on actions taken. Even if the Board of Directors dictated an action to be taken, it would be the decision of the Chairman as to whether or not to operationalize such an action. In essence, the Chairman can be considered a dictator for the sole reason that this person had full authority to select actions (Ostrom 2002).

Information Rules

Information rules specify the information available to all actors in the action situation and the flow of the information. The Chairman of the La Zin Farmers' Association again was saddled with an extraordinary amount of influence in regards to information flow. The Chairman effectively was a bottleneck for the flow of information from members to the Board of Directors and the EFJ (and vice versa). The EFJ required an annual report, budget justification, and site visit with the Chairman for continuance of funding from year to year. The Board of Directors and the Chairman met approximately bi-monthly for project status and inputs. Members and non-members met sporadically (both temporally over seven years and spatially between the 44 communities) during "farmers' meetings" which the Chairman called to discuss recent project activities in that particular area and listen to grievances from the farmers. Additionally, during tree delivery, planning, planting, and follow up care visits information is exchanged. But at each of these information exchanges the Chairman is able to filter information from one actor to the others.

Payoff Rules

Payoff rules define the benefits and costs of actions taken and outcomes reached for the different actors. For the EFJ, a successful reforestation project by the La Zin Farmers' Association has long-term benefits in improving their chances for more financial support of the foundation. At the same time, funding a project that does not meet the objectives of the foundation is detrimental to the cause. As a result, the EFJ has an incentive in the continuation *and* success of the La Zin Farmers' Association reforestation project, but at some level of non-compliance or missed objectives the foundation must cut its losses and end a project.

The members of the Board of Directors receive a measure of prestige and importance for being associated with a well-funded reforestation project, as long as it is funded and still operational. Hence, they have an incentive in maintaining the functioning of the association and project. The costs are relatively minor, consisting of a small amount of time for meetings.

The Chairman of the project has great value as a position of prestige within the community, access to a vehicle, a salary, and personal gratification for helping other farmers and the "environment". In addition, there is a level of reciprocity from some farmers which also is a benefit. Of course these are contingent on the continuation of the

farmers' association and, more importantly, on the funding that enables the distribution of tree resources to members and non-members. The costs of being the Chairman are also considerable. The time and effort needed to run the farmers' association and the tree distribution takes away from time and work on the Chairman's own farm. Any complaints or grievances are also shouldered by the Chairman due to the nonsymmetric aggregation and information rules. These can become destructive and even violent if not addressed, as is evident in the discussion of the attributes of the community.

The benefits to members and nonmembers are the same in that they are recipients of free tree resources. The structure of the action situation influenced by the rules-in-use minimize the costs to both, although members who pay their dues are slightly more invested in the project. Of all the actors listed, the nonmembers appear to be the ones maximizing their benefits with minimal costs (receiving free trees only by asking at opportune times). However, the costs of not investing in the farmers' organization and its strengthening mean there are missing future benefits that cooperative marketing and long-term sustainability would have provided.

3. Patterns of Interaction

The patterns of interaction based on the above factors created a Samaritan's Dilemma (Ostrom et al 2002). In this situation the Chairman of the La Zin Farmers' Association is the Samaritan and has a genuine interest in helping the impoverished and disillusioned farmers' of the Rio Cobre watershed attain trees for environmental and economic benefit. His dominant strategy is to give trees to the farmers. If the recipient farmers expend effort in return by joining the La Zin Farmers' Association, paying dues, and participating in the institutional strengthening of the association, then the Samaritan maximizes his benefit and the recipient will benefit as well. However, if the recipients do not expend effort by joining they will receive a maximum benefit to themselves (free trees without effort) while the Samaritan receives a lesser degree of benefit. The result is a situation where the recipient will not expend effort and the Samaritan will help, achieving the maximum outcome for the recipient and a less than maximum benefit for the Samaritan.

Figure 3: The Samaritan's Dilemma (Ostrom et al 2002, 30; original source from Buchanan 1977, 170)

		Recipient	
		High Effort	**Low Effort**
Samaritan	**No Help**	**2,2**	**1,1**
	Help	**4,3**	**3,4**

The pattern of interaction between the EFJ and the La Zin Farmers' Association can be implicated in the creation of this Samaritan's Dilemma. The association had physical limits to the resources available to plant a large amount of trees (one Chairman and hired labor, one truck, large area, many communities). By creating a lofty goal of tree planting numbers, the La Zin Farmers' Association had to exert most of its efforts toward this goal before the association had developed strong institutions that perhaps could have expanded its physical capacities. In the end, once the funding for trees stopped, the association had actually weekend in terms of institutions and quickly ceased to function.

4. Outcomes and Evaluation

The outcomes of the action situation are evaluated upon selected criteria, which in a repetitive situation returns to influence the context and action situation. The selection of evaluative criteria is important in the results, and here efficiency, optimality, fairness, sustainability, and adaptive ability will be discussed.

In terms of efficiency, quantity over quality became the goal of the tree distribution due to the unrealistic goals of the EFJ to plant an apparently immense number of trees. As discussed previously (footnote 2), the Chairman of the association reported that the EFJ created a goal to plant 1,000,000 lumber and 480,000 fruit trees. While these numbers are questionable, the fact that the Chairman *perceived* them to be accurate created a perverse incentive that led to the action of distributing as many trees as possible at the expense of actually monitoring their planting and aftercare. The attempt to meet these goals meant that trees were given to anyone who would take them, without regard to membership. In many cases, non-members would be given trees they did not have a stake in, which were disposed of without planting. In turn, fewer trees were given to members who showed at least a minimum stake in the resource. The criteria of efficiency can be considered a failure if one characterizes the results as quantity over quality.

Efficiency also can address the physical number of participants in the situation. It is generally considered that larger groups face more difficulty in solving collective-action problems (Agrawal 2002, Gibson et al 2000). In the rush to distribute trees, and in turn register farmers, the numbers soon spun out of control. 600 farmers in 44 different communities were formally registered, which could not be organized or serviced by what effectively turned into one person's project. The optimal number of members is far lower in a much smaller area for the human and physical resources of the La Zin Farmers' Association. Further, the lack of institutional strengthening of the association compounds the problem, "The bigger the community and/or the larger the relevant terrain the more important is the development of explicit rules and monitoring mechanisms" (Ostrom et al 2002, 35). Again, efficiency was compromised by numbers.

Optimality of benefits for actors is a bit more complex. For the Chairman, who previously has been labeled both a dictator and a Samaritan, benefits accrued in helping farmers receive trees and community prestige. However, after the project ended the benefits did as well. In the short-term benefits were realized, in the long-term benefits were not in terms of continuation of the association. For members, the fact they had to invest (however minimal the investment) but had to share the benefits with free-riders

creates a sub-optimal outcome. For the non-members, receiving benefits without investment meant they maximized their outcomes for an optimal solution. However, for the La Zin Farmers' Association as a whole, benefits of a strong organization and cooperative marketing were never met and hence the outcome was far below optimal. Since optimality differs across the different actors there can rarely, if ever, be a purely optimal situation, only a mixture of positive and negative outcomes (Alchian 1950). The goal becomes selecting the course of action where the possible outcomes have the best distribution. Given the overall distribution of outcomes, however, the situation appears to be at some level far below the optimal distribution.

Fairness of tree disbursal can be evaluated from two different perspectives. For members of the association who paid membership fees and registered, it was unfair to give trees to those who did not invest (free-riders). Additionally, some members did not pay membership fees. While the fees were minimal, the principal of the issue was not and dissent occurred between farmers and toward the Chairman, lessening the chance of success of the development of the institutional strength of the La Zin Farmers' Association. However, from the scale of the entire community of farmers in the Rio Cobre watershed, the distribution appeared to be fair as a large segment of the community benefited from the project.

Sustainability refers to the continuation of development cooperation's effects rather than particular projects or activities (Ostrom et al 2002). The fact that the association ceased to function once the funding ended signifies another failure in the evaluative criteria. Institutional development and self-sufficiency is required for an association and/or project to continue after the funding ends. Development strengthening of the La Zin Farmers' Association disappeared in light of the more pressing concerns of tree distribution, and hence the association failed to continue functioning. In turn, this had a negative effect on the resources available to distribute the trees and the Chairman became the sole agent. One person is not enough to meet the lofty goals of the EFJ, which in the end meant the goal was not meant, funding was cut, and the association no longer functioned.

Adaptability in a repetitive situation such as this refers to the ability of the actors to adjust the structure of the situation to create more favorable future outcomes, tying the present outcomes back to the context and action arena. The initial adaptation of the Chairman of the La Zin Farmers' Association was to alter the rules-in-use from only giving trees to due paying members to giving trees to anyone who would take them due to the requirements of the EFJ. Once it became apparent to the association members and non-members that it was unnecessary to pay dues or even register, they adapted by exerting less effort in the process and in effect everyone became free-riders. Once this occurred, it became impossible to revert back to the original rule-in-use. Social expectations and bargains were created that are difficult to overcome without excessive costs of conflict (Knight 1992, Levi 1990). To alter this structure within the context of the communities expectations would have caused dissent at best and possible destructive or violent behavior at worse. The abandonment of the incentive structure that was meant to protect the organization from free-riding and develop institutional strength was a perverse adaptation.

While on all of these accounts the evaluation of the action situation appears to be a dismal failure, from a different perspective it can be seen as having a few rays of

success. International money was used to distribute trees to a wide variety of people, and some of the trees did survive. Fairness among the entire community can be seen. From this evaluation, there is a small degree of success. Trees were distributed at little or no monetary cost to recipients.

V. Conclusion: The Role of Aid, Institutions, and Incentives

While the IAD analysis of the La Zin Farmers' Association reforestation project is quite complex, it is helpful to simplify the discussion by looking at how donor aid affected the institutions guiding incentives to create a sub-optimal outcome. In this case a collective-action situation of how to strengthen a farmers' association to implement a reforestation project and increase incomes through cooperative marketing became a collective-action problem when the participants chose actions that created outcomes that were less desirable than the potential of other outcomes (Ostrom et al 2002).

The Environmental Foundation of Jamaica detrimentally affected the structure of the action situation by granting a large amount of funding to be used in the planting of trees. Having a large financial resource, there existed little incentive to collaborate in achieving goals through collective-action. Tying funding to goals of tree planting also shifted focus to getting as many trees out as possible, which became a perverse incentive that led to lower acquisition of skills and motivation for cooperative action. While the EFJ formally stated the goal of developing strong institutions and a strong organization to handle the financial resource, the implementation of this principle was never realized. A lack of monitoring and enforcement can also be blamed in this respect. The end result of the donor funding led to less self-sufficiency and more reliance on donor inputs for the project. When the funding disappeared, the association was not able to function independently and soon came to an end.

For the beneficiaries, the lack of investing in the project became a case where free-riding became the norm due to institutions that created no incentive to participate in collective action. Without a stake in the provision of the resource and weak institutions to manage the resource, a common pool resource dilemma occurred where the resource eventually was destroyed. Without an institution to manage future provision of the resource after external funding ended, the resource disappeared.

This paper has analyzed a situation where donor aid created perverse incentives that created inappropriate institutions and created a common pool resource dilemma. The EJF weakened the La Zin Farmers' Association's institutions by creating dependence on aid and a perverse incentive of focusing efforts toward appropriating the resource at the expense of creating provisional activities through a sustainable self-sufficient association. The results exhibit that the core problem is not intentions or resources, but the lack of appropriate institutions and resultant incentives that assist individuals in improving their well-being through collective action.

Bibliography

Alchian, Armen. 1950. "Uncertainty, Evolution and Economic Theory." *Journal ofPolitical Economy* 63: 211-221.

Annikie, Zithroy and Chris Smith. 2000. *The Rio Cobre Window of Sustainability Final Report.* The Inter-American Institute for Cooperation on Agriculture (IICA) and the German Technical Cooperation (GTZ). Accessed online 10/19/02: <http://www.agroinfo.org/caribbean/iicacarc/jamaica/riocobre.htm>.

Agrawal, Arun. 2001. "Common Property Institutions and Sustainable Governance of Resources," *World Development* 29(10): 1649-1672.

Crawford, Sue. E.S. and Elinor Ostrom. 1995. "A Grammar of Institutions", *American Political Science Review* 89(3): 582-600.

Eyre, L. Alan. 1996. "The Tropical Rainforests of Jamaica," *Jamaica Journal* 26(1): 26-35.

EFJ (Environmental Foundation of Jamaica). 2002a. *Agreement Between the Government of the United States of America and the Government of Jamaica Concerning an Enterprise for the Americas Foundation.* EFJ: Kingston, Jamaica. Accessed online 10/19/02: <http://www.efj.org.jm/pdf/Governing_Agreement.pdf>.

————. 2002b. *Spinal Forest Project.* EFJ: Kingston, Jamaica. Accessed online 10/19/02: <http://www.efj.org.jm/pdf/spinal_forrest.pdf>.

Gibson, Clark C, Margaret A. McKean, and Elinor Ostrom. 2000. "Forests, People, and Governance: Some Initial Theoretical Lessons", in Gibson, McKean, and Ostrom (ed.) *People and Forests: Communities, Institutions, and Governance,* pages 227-242. Cambridge, MA: The MIT Press.

Knight, Jack. 1992. *Institutions and Social Conflict.* New York: Cambridge University Press.

Levi, Margaret. 1990. "A Logic of Institutional Change." In Karen S. Cook and Margaret Levi, eds. *The Limits of Rationality.* Chicago: University of Chicago Press, 402-419.

North, Douglass. 1990. "Institutions and Their Consequences for Economic Performance." In Karen Cook and Margaret Levi, eds., *The Limit of Rationality.* Chicago, University of Chicago Press.

Ostrom, Elinor. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action.* Cambridge, UK: Cambridge University Press.

——. 2002. *Understanding Institutional Diversity in Open Societies.* Unpublished draft. Bloomington, IN: Workshop in Political Theory and Policy Analysis.

Ostrom, Elinor, Roy Gardner, and James Walker. 1994. *Rules, Games, & Common-Pool Resources.* Ann Arbor: The University of Michigan Press.

Ostrom, Elinor, Clark Gibson, Sujai Shivakumar, and Krister Andersson. 2002. *Aid, Incentives, and Sustainability: An Institutional Analysis of Development Cooperation.* Stockholm: SIDA.