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A NOTE ON INDICATORS OF SUSTAINABILITY FOR VALUE CHAIN PROJECTS

microREPORT #185

MARCH 2012

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I. INTRODUCTION

This note deals with the challenging problem of how to determine whether sought-after changes observed during the implementation of a value chain project are likely to be sustainable beyond the life of the project. The ideas and suggestions put forward here are intended to be useful for those charged with designing and evaluating value chain projects.

II. SOME DEFINITIONS

To clarify the discussion that follows and the presentation of potential indicators of sustainable value chain development, it will be useful to start with a set of definitions.

Value chain project: A complex and multidimensional but industry-specific package of interventions, usually aimed at improving the long-term welfare of participating farmers, micro and small enterprises, and other low-income participants in the value chain as well as the national and international competitiveness of the industry concerned, and implemented indirectly through activities aimed at facilitating appropriate actions by the private sector.

Sustainability: A flow of positive outcomes and impacts that continue beyond the duration of the project. Some projects may temporarily improve welfare, e.g., by providing subsidies, but the effect does not outlive the project. To have a sustainable impact the project must help bring about lasting behavioral changes. The sustainability of individual firms and even whole industries cannot be guaranteed by a value chain project because in business nothing is forever. Over time, individual businesses often fail or otherwise disappear and business relationships can break down for a variety of reasons. Yet a broader market system, once established, has positive characteristics that bring continued economic benefits, even in the face of change. Sustainability also has social and environmental implications: for example, development cannot rely indefinitely on the exploitation of non-renewable resources.

Indicators: An indicator is a sign of whether the desired outcomes and impacts are being achieved. It is not a direct measure of the project's goals, which in many cases are not measurable, but rather an indirect yet quantifiable reflection of changes that the project is trying to bring about.

Indicators of sustainability: Indicators of sustainability are particularly hard to define and measure. The basic problem is that while sustainability is something that only occurs in the future (if it occurs at all), the indicator must be something that can be measured in the present. Many of the changes that can be observed and measured now may not be sustainable. Conversely, many indicators of sustainability will become measurable only later on. The challenge is to identify currently measurable indicators that point to sustainability.

Upgrading actions: Actions taken by producers, processors, input suppliers, and traders at various points in the value chain to increase future productive capacity and competitiveness. Upgrading actions can be divided into three groups:

- Investment in physical capital: expenditure of money to acquire plant, equipment, and inventories.
- Investment in human capital: expenditure of time, effort, and money to learn and apply better ways of producing, processing, and marketing the commodity or commodities concerned.
- Investment in new and better business relationships: expenditure of time and effort to create and maintain new and more profitable business relationships that offer improved incentives to producers and foster growing trust among those involved in the business relationships.

As these definitions indicate, upgrading is not free. Each type of upgrading requires some form and degree of effort and sacrifice. Physical investment must be financed, either by saving, which involves foregoing current consumption, or by borrowing, which involves foregoing future consumption. Efforts to improve knowledge, skills, and business relationships also have monetary costs, but more importantly they require the dedication of time and energy that could be used for other purposes.

Business enabling environment (BEE): As defined by the Microlinks value chain wiki, the BEE "includes norms and customs, laws, regulations, policies, international trade agreements, and public infrastructure that either facilitate or hinder the movement of a product or service along its value chain… In addition to these more formal factors, social norms, business culture, and local expectations can be powerful aspects of the business enabling environment.

Understanding these unwritten rules of society is essential if practitioners are to understand why value chain actors behave the way they do, and reasonably predict how they will behave in response to value chain interventions."

III. SELECTING INDICATORS OF SUSTAINABILITY: UNDERLYING PRINCIPLES

The definition of indicators grows out of the process of designing a value chain project. That begins with the selection of an appropriate industry (or industries) for the project. The selection of an appropriate industry is a complex challenge. The industry chosen should have the potential for substantially and sustainably improving the welfare of large numbers of poor people. It is equally important that it meet two other criteria:

- There must be significant identifiable problems/limitations that leave room for improvement. These might involve:
    - Knowledge gaps (e.g., improved cultivation techniques that have not yet been widely adopted), which may be exacerbated by a low value placed on learning and pervasive mistrust that impedes the sharing of knowledge.
    - Market imperfections (e.g., monopoly, monopsony, or weak bargaining positions arising from government regulation or other causes).
    - Capital inadequacy exacerbated by lack of access to credit for primary producers and others in the value chains, possibly arising from lender beliefs (valid or not) that smallholders are unreliable borrowers.
    - Inefficient technologies (e.g., use of unselected and low-yielding seed) that may persist because to unstable or undiscriminating markets, making investments in improved technologies seems too costly or risky.

  While shortcomings may be numerous, they need to be clearly identified and prioritized to effect improvement. Only by easing prioritized constraints can we realistically expect to improve industry performance. Typically this requires some form of collective action that goes beyond what the individual farm or firm can do on its own.

- There must be plausible potential means for dealing with these problems/limitations to effect improvement. These are likely to be a mix of interventions to address tangible constraints and intangible underlying causes of these constraints.
    - Interventions to address tangible constraints may include
        - Training and other means of disseminating relevant knowledge
        - Policy/regulatory reforms
        - Credit programs
        - Programs to develop and disseminate improved technologies
    - Interventions to address underlying causes of these constraints may include:
        - Building lasting horizontal and vertical linkages among firms

- Increasing transparency in market systems
- Addressing policies that create disincentives to upgrading

It is clearly not enough to be able to identify problems and limitations that leave room for improvement. Promising means of dealing with these difficulties must also be defined. Addressing tangible constraints without addressing the underlying causes is unlikely to lead to lasting change. By changing the ways that business is done, value chain development programs can strengthen the ability of market systems to address these and other constraints as they occur without continued dependence on donor assistance.

Interest in leading and participating in collective efforts to deal with the industry's problems on the part of at least a few of the key participants in the value chain is important for the success of a value chain project. Facilitation of activities undertaken by these private sector actors is preferred to direct provision of commodities and services by donors. Donors can help to stimulate public sector and civil society actors, but a donor that tries to do too much on its own through direct provision of goods and services can undermine the sustainability of the value chain. By stimulating action by businesses and other bodies, the facilitation approach helps to increase the likelihood that changes brought about by the project will be sustained, since continued activity is less likely to be dependent on continued involvement by the donor.

Having selected an industry that meets these criteria and defined a set of problems/limitations to be addressed as well as plausible means of dealing with them, the next step is to define a specific and detailed causal model for the value chain project. A set of project activities is chosen on the basis of their expected impacts on the value chain. The anticipated effects of these activities are traced through the output, outcome, and impact stages. Appropriate budgets and time periods are defined for the activities planned.

A typical causal model will encompass activities aimed at raising the quantity of selected products that are produced and often also product quality and the average price received by the primary producer. These changes are expected to contribute to the twin goals of the project: raising the incomes of the primary producers and other low-income participants and improving industry competitiveness.

Indicators of sustainability seek to determine whether an ongoing process of transformational change is occurring, a process that involves both tangible and intangible factors that interact to define the development process of a value chain. They can measure efforts on the part of producers to upgrade their enterprises, growth in human and organizational capacity, and improvements in the business enabling environment, all of which foreshadow sustained increases in production, higher product quality, greater earnings from sales, and rising household incomes. Despite these improvements, unforeseen challenges may arise in the future. For this reason the emergence of resiliency—the capacity to adapt to changes in dynamic markets—is an important criterion for sustainability.

All indicators of sustainability will necessarily be measures of *outcomes* (observable changes along lines sought by the project). By definition, sustainable *impacts* (changes that can be attributed to project activities through comparison to a counterfactual) will only be achieved in the future and cannot be measured at present.

IV. SOME SUGGESTED INDICATORS

For a value chain to undergo sustained development, interrelated changes have to occur in several spheres. The locus of many of these changes is the individual farm or firm. However, both the ways in which these firms interact within the value chain and the environment in which their activities take place are also important.

Some indicators of potential sustainability that meet these criteria are suggested in the attached table. They are grouped into four categories:

- Indicators of changes in farm/firm behavior
- Indicators of changes in the business enabling environment, including both formal and informal elements
- Indicators of changes in supporting markets and institutions
- Indicators of changes in individual and household behavior

The indicators of potential sustainability that would be appropriate for a particular value chain project will vary by the industry involved, its setting, and the project's objectives. The examples of specific indicators listed in the table are illustrative and may or may not apply to a particular project.

Although many specific indicators are listed below, to gauge whether observed and measurable changes in a particular value chain point in the direction of sustainability requires the use of multiple indicators to provide triangulation. Value chain programs seek to bring about broad systemic change and no single indicator can tell us whether this is occurring. Consistently positive measurement over a wide range of indicators will provide much stronger assurance of sustainability than could be gained by measuring only one or a few indicators.

Table: Possible Indicators of Sustainability

AREA OF CHANGE	TYPE OF CHANGE	SELECTED EXAMPLES
Farm/firm behavior	Farms & other firms demonstrate greater responsiveness to market incentives	• Agricultural production increases when the farm gate price rises • Farmers shift land & other resources from crops that are expected to be less profitable in the long run to more profitable crops • Agricultural productivity (output/ha. of land) rises • Firms adapt product lines in response to changing incentives • Farms & other firms demonstrate resiliency in the face of market shocks, e.g., by coordinating responses with other firms • Firms become more specialized & gain multiple marketing channels • Firms become more innovative • Amount of environmental degradation declines
	Farms & firms upgrade by investing in physical & human resources	• Purchases of improved inputs & equipment increase • More trees are planted (for perennial crops) • More farmers participate in training events & spread learning to indirect recipients • Farm/firm management improves

	Farms & firms enter into new or modified vertical or horizontal relationships that demonstrate improved trust & incentives	• More transactions are based on commercial rather than familial or ethnic criteria • Supply contracts are renewed • Farmers' associations & other forms of horizontal linkages survive & increase their capacity & outreach • Farmers adhere to contracts, even at a short-term loss, to preserve relationships
The business enabling environ-ment	Policy, regulatory, & legal improvements facilitate upgrading by producers, processors & marketers	• Price controls & taxes that discourage production are removed • Dispute resolution mechanisms improve • Legal & regulatory reforms cut the cost (in time & money) of establishing & operating a business, building facilities, & hiring & firing labor • Government promotes new business creation, competition, & labor mobility
	The informal business environment becomes more transparent & equitable	• Predatory trading practices decline • Trust in business relationships rises (repeat customers, renewed contracts) • Rent-seeking behavior decreases • Benefits are distributed more equitably within the value chain • The speed with which innovations spread throughout the value chain increases
	Improvements in infrastructure support firm upgrading	• Farm-to-market roads are built & better maintained • Electricity supply becomes more reliable • Export facilities (ports, air freight) are expanded & improved • Information infrastructure improves
Supporting markets & institutions	Financial services are improved & made more accessible	• SME access to institutional borrowing on sustainable terms improves as better-tailored products are introduced • Safe & convenient savings vehicles are provided & used
	Systems & institutions that support firm upgrading are strengthened	• Input suppliers strengthen their distribution systems to small farmers • Research institutions become more market-driven & sustainably financed • Standards bodies become more market-driven & sustainably financed • Agricultural extension services improve • Export promotion activities improve
Individual & household behavior	Households improve their ability to withstand shocks	• Personal saving increases • Financial services are used increasingly to cushion potential shocks • Human capacity increases, enhancing the ability to compete in this or other value chains