Rural appraisal and sustainable development

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Abstract

The concepts of rural appraisal and sustainable development are discussed, and the different components of sustainable development are outlined. The Shared Control of Natural Resources (SCOR) Project is described. SCOR is a participatory watershed management project which aims to select a package of measures for environmental protection, which includes a production element as an incentive. A pilot project in a sub-watershed is described in detail.

Introduction

The terms rural appraisal (especially participatory/rapid rural appraisal) and sustainability are now firmly established in development rhetoric. Participatory appraisals are methodologies that bring community focus to rural development and allow local communities or beneficiaries to participate and collaborate in planning and implementation of rural development projects.

Chambers (1994) made a clear distinction between Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal (PRA), attributing more local ownership and participation to the latter. Moreover, he has stated that, because of the "dominant behaviour of outsiders" it took such a long time for (even) PRA to recognize local analytical capabilities.

Participatory Rural Appraisal describes a growing family of approaches and methods which enable local people to share, enhance and analyse their knowledge of life and conditions, to plan and to act. It has sources in activist participatory research, agro-ecosystem analysis, applied anthropology, field research on farming systems, and Rapid Rural Appraisal (RRA). In RRA information is elicited and

extracted by outsiders; in PRA it is shared and owned by local people. Participatory methods include mapping and modelling, transect walks, matrix scoring seasonal calendars, trend and change analysis, well-being and wealth ranking and grouping, and analytical diagramming. PRA applications include natural resources management, agriculture, poverty and social programs, and health and food security. Dominant behaviour by outsiders may explain why it has taken until the 1990s for the analytical capabilities of local people to be recognized and for PRA to emerge, grow and spread (Chambers, 1994).

RRA & PRA have undoubtedly contributed positively to rural appraisal processes: for example, unique characteristics of PRA such as the involvement of local people or beneficiaries and multi-disciplinary approaches have improved the quality of appraisals and therefore, strengthened rural development planning. This paper will not debate this issue, instead, the paper will briefly address issues such as:

- Objectivity and utility of appraisals: can we consider PRA as a "sufficient" (as against "necessary") tool for all kinds of Rural Appraisals?
- From PRA to sustainable development: Under what conditions would the application of RRA/PRA lead to successful planning and implementation of programs for sustainable development?

Objectivity and utility of rural appraisal

In general, appraisals are based on the collection, analysis and interpretation of information/data. This involves strategic choices aimed at maximising inferences and predictions from relatively low levels of appraisal inputs in the shortest possible time. Obviously RRA and PRA are driven by such objectives. However, standards of precision, accuracy and reliability should be judged in the context of the specific objectives of the exercise, costs involved, etc.

eg: If the objective is to estimate population characteristics based on projection from a sample, then correct random sampling is essential. Here both the sampling error as well as the measurement error are important.

If the study is focused on an analysis of input-output relations in farm business and if the farms are relatively homogenous, then measurement error is more important than sample error.

If the objective is "problem-solving" then a participatory multi-disciplinary approach is important.

Hence, a clear understanding of the specific objectives of the appraisal and the definition of target population is essential for such decisions as - type of information to be gathered, and the methods to be employed. For instance, RRAs/PRAs may avoid sophisticated sampling methods by involving local skills and interests as deeply as possible.

The role of objectively verifiable indicators in rural appraisal

In order to appraise the existing situation and identify constraints and potential, the analysts will have to select appropriate indicators and methods of evaluating/gauging/estimating those indicators selected. Systematic data collection on the basis of the most relevant indicators can give the analyst facts and insights that will greatly facilitate the follow-up planning, implementation and monitoring and evaluation.

Indicators are defined as "specific" (explicit) and are where possible, objectively verifiable measures of changes or results brought about by an activity. Ideally, the indicators used in rural appraisals should have such characteristics as:

- Validity and reliability
- Sensitivity
- Specificity
- Cost effectiveness
- Timeliness

Indicators can be defined as: qualitative and quantitative. Qualitative indicators though often used in rural appraisals, have an inherent weakness - they are likely to be loaded with personal biases and value judgments. However, the qualitative characteristics of an indicator can be transferred into some quantitative measures (eg. transformation into an index) by a skilled researcher, using an "acceptable" method.

Indicators relating to output, effects and impact are much more difficult to evaluate/estimate. Such an analysis may show association, though not causation. Inferences on causation should be drawn with

extreme care. However, if the causative mechanism is well established, then one may argue for concluding that observations are casually related.

At the impact level where "impact" results from a combination of factors - for example, both project inputs and external factors - a comprehensive analysis may be employed. Alternatively, cautious judgment based on a partial analysis and intuitive logic may be employed.

It is proposed that, as much as possible, rural appraisal should be research oriented. Research is a process of systematic observation and data collection. Through systematic analysis of information, research leads to verifiable and comprehensive understanding of situations or events such as why farmers do what they do research looks for patterns and relationships that may not be obvious to the naked eye. Research is different from everyday observation. Casual observations are usually neither systematic nor verifiable and sometimes provide only superficial explanations. Research, then, is not the same as the routine information gathering that is performed unconsciously every day.

In this context it is suggested that participatory/rapid rural appraisal should not be treated as a complete substitute for accurate and scientific evaluations. For instance, participatory methods may be used while maintaining statistical validity of appraisals. As much as possible PRA/RRA should include scientific and accurate data gathering and analytical methods.

Local knowledge and sustainable development

In regard to different aspects of sustainable development - for example conservation and production technologies - no doubt the indigenous knowledge is of crucial importance. The natural resources users have accumulated a wealth of experience and participatory appraisals are useful to collect and review such knowledge and to utilize it in the formulation of plans for wider application. However, the process of planning for sustainable development should not depend solely on indigenous knowledge.

Rahnema (1992) is of the opinion that the instrumental task undertaken by the users of participatory approaches is "to involve the patients in their own care".

In order to understand environmental cause-and-effect relationships, (for example, to plan for conservation-based production or "market oriented conservation"), and to evaluate their physical, economic, and social impacts, information on the environment as well as on environmentally friendly yet profitable production technologies must be available, relevant data must be collected, processed, analysed and made accessible in usable form for the resources users as well as for other decision makers at different levels. To help in the identification of potential opportunities, and to plan for sustainable development such information must encompass a wide range of sources. Information on new technologies, infrastructure, availability of natural resources such as water sources and quantities, marketing and prices, etc., become important when attempting to plan for sustainable development. Quickly and efficiently managed sets of spatially defined data, should also allow for combinations of variables (for example transportation network market potential and alternative cropping patterns) according to different criteria. The resulting combinations can be displayed readily as maps, charts, tables or other information dissemination methods. These spatial information systems are being adopted rapidly by planning agencies and others involved with natural resources management and utilization.

In regard to mapping of data/information, it should be clear that rural communities have an accumulated wealth of experience and are able to "visualize" and to draw detailed maps of local conditions. However, it is argued that such information/data can be augmented (by adding information/data on modern technologies and other aspects described earlier in this section) and other complementary methodologies not discussed here. It is understood that the workshop includes separate sessions on appraisal methods. Techniques such as GIS could be used in planning, implementation and monitoring and evaluation of rural development.

To conclude, it is proposed that both indigenous knowledge and information on modern technologies (related to production and conservation etc.), price relations, markets etc., should be considered in participatory rural planning processes.

This is justified because Sri Lanka's future prosperity relies heavily on the practical approaches the country adopts towards modernization and industrialization. The development strategies to achieve this end, have to originate from its agricultural base which still covers as

much as one half of the country's land area and is the main livelihood of an estimated nine million people (about one half of the country's population). Sri Lanka's agricultural sector can make substantial progress, more specially in assisting the small farmers to shift from a state of poverty and under-development to one of increasing prosperity. The agricultural sector can and will provide reasonably priced food for the increasing population while also earning foreign exchange through exports.

In order to initiate this transformation and to realise the broad base of benefits accruing from an open economic policy, development workers, analysts and policy makers should facilitate the emergence of a new production environment that motivates the rural communities to engage in profitable economic ventures. The desired development process can be facilitated but strengthening existing organizations and the establishment of peoples companies in rural areas, providing them with information related to modern technologies and linking them with financial institutions, markets etc.

From PRA to sustainable development

Under what conditions would the application of RRA/PRA lead to successful planning and implementation of programs for sustainable development? In this section it is argued that RRA/PRA should be an integral component of participatory/collaborative rural development.

Definition of sustainable development

The notion of sustainability has been subjected to such widely disparate interpretations in a variety of contexts. This creates potential for misunderstanding. Unless it is defined properly, "sustainability" will remain a mere rhetorical term which will lose its luster with time, rather than a useful operational concepts for policy makers, researchers, and others attempting to formulate policies and strategies to foster rural development.

The word "sustain" is defined in the Oxford Dictionary as "keep from falling or sinking, especially for prolonged periods". In the context of resources and the environment, "sustain" means to maintain or prolong the productive use of resources and the integrity of the resources base.

The Food and Agriculture Organization (FAO) defined sustainable development as:

"..... the management and conservation of the natural resources base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such sustainable development (in the agricultural, fisheries and forestry sectors) conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable" (FAO, 1992)

The dimensions of sustainability referred to here include the conservation of natural resources while satisfying human needs of both present and future generations to obtain the same benefits (or welfare) that are enjoyed today. In addition, this definition recognizes the importance of economic viability and technical suitability as important components of sustainability.

The World Commission on Environment and Development (WCED) defines sustainable development as a process "which meets the needs of the present without comprising the ability of future generations to meet their own needs" (WCED, 1987). "..... sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human need and aspirations" (WCED, 1987). This definition clearly accepts the existence of trade-offs between present consumption and future needs, and emphasize the need for integrating the different components or sustainability (resources use, choice of technology, institutional changes, etc).

Goodland and Ledec, in their definition of sustainability, attempted to incorporate economic and social changes and the need to project the rights of future generations. They viewed sustainable development as a pattern of social and structural economic transformation (i.e. development) which optimizes the economic and other social benefits available in the present without jeopardizing the likely potential for similar benefits in the future" (Goodland and Ledec, 1987).

Dixon and Fallon (1989) identify three distinct uses for the concept of sustainability. First, as a physical concept for a single resource; for

example ground water, fisheries, forestry and so on. Second, as a physical concept for a group or system of resources, such as agriculture; here the focus is not on a single component, but there is explicit attention to a variety of outputs from the system of resources. Third, as a socio-physical economic concept.

The Consultative Group for International Agricultural Research (CGIAR) in 1987 adopted the following definition: "A sustainable agriculture is one that, over the long term, enhance environmental quality and the resource base on which agriculture depends, provides for basic human food and fiber needs, is economically viable, and enhance the quality of life for farmers and society as a whole" (Crosson & Anderson, 1993)

In relation to agriculture, the term sustainability could only be approached as an eco-system where a set of elements - agricultural production units - interact with their natural environment. According to Conway (1987), agricultural systems should be assessed in relation to four properties:

(a) Productivity of the system, i.e. yield or income

(b) Stability of the system in terms of stable yields and income;

(c) Minimum fluctuations of yield and incomes; and

(d) Equity in terms of income distribution.

Different dimensions and components of sustainable development

The discussion of definitions of sustainability leads to an expansion of the concept of sustainability from the context of physical resources to broader goals of development, such as a sustained increase in the level of social and individual welfare. Hence, the major dimensions or components of sustainability (in relation to rural development) should include the following;

Biological: Production potential, pests and diseases, weed growth, health related variables, etc.

Physical: Deterioration of irrigation networks, loss of soil fertility/ soil degradation, water logging, erosion/siltation, salinization, natural hazards (droughts, floods).

Financial and economic: financing irrigation or other construction, operation and maintenance of such facilities, financial and economic institutions and organizations, support services, research and development, etc., prices, cost of production, profits, incentives to produce and protect.

Socio-cultural: Equity, including gender aspects, competition, health (irrigated related diseases) labour (supply/demand, wages), conflicts (values), welfare (eg. industry vs agriculture).

Institutional-organizational: User organizations, agencies, support services, eg., markets, extension; coordination, legal aspects.

Environmental: Ecological changes, water pollution, land degradation, salinity, water logging, depletion of ground water, influence on bio-diversity.

Policy and politics: Lack of appropriate policies, goal conflicts and inconsistencies, political uncertainty/instability, political will.

External issues: Links with other sub-sectors in agriculture, agriculture vs. industry or other sectors, international issues (trade, politics).

Technology is not identified as a separate component. However, this is an important variable which can be considered under many of the above components.

It is clear that these different components are not mutually exclusive, for example, declining fertility or soils may occur due to the combined effects of biological and physical factors. Similarly, as mentioned earlier, trade offs exist between different components of sustainability. For instance a goal of maximizing one aspect of sustainability may not necessarily help attain the goal of maximization of some other crucial element of sustainable development. It is suggested that Rural Appraisals may lead to sustainable development only if they involve these different dimensions of sustainability and their interactions. Appraisal should be treated as an integral component of rural development.

If rural appraisal is considered as the diagnostic analysis of problems and evaluation of alternative solutions in a specific area, then the logical next step is implementation of action plans developed/emerged from PRA/RRA or experimentation/Action Research. Action Research is a special type of research, dedicated to "learning through action". One explicitly accepts that there is a lack of knowledge about certain implementation issues and this is where research proves very valuable.

SCOR Project

PRA as an integral component of Participatory Action Research (PAR) Shared Control of Natural Resources (SCOR) Project.

SCOR is a participatory watershed management project aimed at developing and testing a holistic interdisciplinary approach to integrate environmental and conservation concerns with production goals. The conservation strategy being tested in SCOR is different from traditional approaches. SCOR hypothesizes that a package of measures-such as type of vegetation/crops, appropriate land and water saving and conservation practices, user rights to earn economic and other benefits from the (participatory) conservation of natural resources - are effective in protecting environmentally fragile lands in water basins and watersheds. The "package" is selected jointly by the professionals and users and both conservation and production or other profitable uses of natural resources are incorporated into the package. This means that the package provides adequate incentives - such as profitable enterprises, desired cash flow as well as non-monetary benefits - to the user to motivate her/him to protect natural resources. Unless the "actors" are informed of the potential impact of their actions and unless profitable alternatives exist, environmentally inappropriate decisions will continue to be made.

SCOR approach is being tested and demonstrated in two pilot watersheds in Sri Lanka, namely Huruluwewa in the north central province (dry zone) and Nilwala in the Southern Province (wet zone).

Strategy for achieving sustainability

The SCOR has mechanisms to effect, observe and ensure the sustainability of technology, organization, and resources in the physical,

biological, economic and socio-cultural setting at field, sub-divisional, divisional, district/provincial and national levels.

SCOR strategies for sustainability include the following

- Participatory planning of land, water and other resources, including the number of families to benefit, future resources use, sharing and updating information on changes to establish a self propelled mechanism of sustained efforts and adjustments in action.
- To provide technology through line agencies and to carry out research on their adoption and diffusion.
- To support organizations to grow horizontally and vertically from individuals, through groups, organizations, councils and production companies making resources users share holders and stake holders of economic ventures.
- To facilitate the availability of future resources by banks including the state banks and development finance and credit corporation accepting the SCOR proposed credit supply schemes to farmer organizations and farmer companies for investment.
- Formal links between users/user groups and the organized private sector.
- Training and involvement of volunteer catalysts selected from the sub-watersheds to take over the catalytic function within a two year period, promoting self assessment of change and conflict resolution under the guidance of the Institutional Organiser.
- Planned strategy for institutionalizing Watershed Resources Management Teams (WRMT), provincial and national steering committees, and integrated watershed resources management planning through participatory and local planning mechanisms, information systems and monitoring mechanisms that continue to bring technologies, line agency officials, non-government institutions, private sector individuals and people together to adopt practices for sustainable productivity of resources.
- To spread the effects of SCOR programmes as a result of interest generated among other adopters who will use SCOR models and experience in managing resources use change.

SCOR production-protection models for watershed management are being developed through participatory approaches involving users, relevant government agencies, NGOs, and the private sector. SCOR models include a mix of technology, organizations and resources aimed at sustainable use of land and water resources. For example, instead of heavy subsidies, production is used as an incentive for protection. Hence, sustainability of these models is expected to be very high. In addition, there are built-in-mechanisms to test sustainability. For example, SCOR models are being tested in sub-watersheds and IIMI's catalytic role will be gradually withdrawn from pilot sub-watersheds at the end of the second year. Hence the sustainability of this model can be tested to some extent, before the end of phase II. SCOR project's cost effectiveness, effects and impacts are being carefully evaluated using objectively measurable indicators.

SCOR–Participatory Action-Research in sub-watersheds-integration of conservation

Concerns with production goals

The selected sub-watersheds for SCOR action-research are contiguous areas of manageable size, having characteristic profiles of ecological, socio-economic and environmental features similar to that of the respective main watersheds. The size of these selected pilot sub-watersheds range from about 200-1000 ha. One such sub-watershed is used here to illustrate the SCOR participatory action research process aimed at testing hypotheses and developing models for integrated land water development. Action is being taken through a participatory process to learn, test and demonstrate an "ideal" land use pattern with emphasis on production and conservation. This participatory approach of developing methodologies for combining technology, organizations and resources illustrates the various production conservation elements that will have to be incorporated in the management of watersheds or tank ecosystems in a sustainable manner. Micro concentration on contiguous areas or tank ecosystems within which "every inch of surface" is carefully planned and monitored for the impacts of participatory research interventions is a unique characteristic of SCOR.

Participatory appraisal of sub watersheds/tank ecosystems

In the selected sub-watersheds, participatory appraisal of the characteristics of resource uses and users as well as mapping of current resource use were carried out by groups comprising resource users/farmers, local officials of government agencies such as Irrigation, Agriculture, Forestry and Agrarian Services Departments, IIMI-SCOR professional and catalysts. The catalysts took the lead role in preparing the resource use maps and recording information. The general objectives of this Participatory Rapid Appraisal were to:

a) Prepare a detailed map of the sub watershed or tank ecosystem indicating: the land use pattern of individual holdings in the entire tank ecosystem/sub-watershed (catchment, command areas, homesteads, drainage areas etc.), cropping/vegetation patterns, type and quality of cropping/vegetation cover, tank and the natural drainage system, road network, residential pattern.

b) Develop a database, including basic data such as: type and membership of user organizations, land fragmentation, ownership and tenurial patterns, cropping patterns and intensities (current and in the recent past), slope category, apparent degree of soil erosion, conservation practices, cultivation practices, input use of agriculture, production and productivity, and constraints to production and conservation, yield performance, profits derived from different holdings in different zones. Social organizations including farmers organizations, conflicts, assistance from government support services and NGOs.

c) Help establish a baseline for the resource use pattern using (a) and (b).

d) Sensitize the officials of relevant government agencies/NGOs, and resource users to the importance and need for this exercise and obtain their active participation in future work.

For this purpose, each group was provided with a line diagram/sketch map of 1:3000 scale with land marks indicating roads and streams for guidance. The groups collected data and mapped each land plot of a village. Refining the map to maintain accuracy to scale was done subsequently by the draftman supporting the group and the map was used for participatory planning of resources management of the village. Land and water use as well as other information collected

through the participatory mapping exercise have been incorporated into the SCOR spatial database using a Geographic Information System (GIS). This was repeated for each village in selected sub-watershed system and for all selected sub-watersheds. For example, the pre-project land use by individual plot of one such sub-watershed, in this case a tank system namely Maha meegaswewa. For this village, a participatory resource management "mini project" was formulated with an investment of Rs. 1.2 million (US$ 24,000). The project aims to change the present land and water use pattern to a more profitable and diversified resource use, combining production and conservation, and using appropriate technologies/techniques, novel shared control arrangements and resource augmentation. New commercial enterprises and conservation practices in a typical sub-watershed in the Huruluwewa Watershed include: integrated wet and dry season water management in command areas (eg: water saving techniques to improve cropping intensity and introducing short duration commercial crops in the dry season, cultivation of medicinal plants, fruits and vegetables in chena (shifting cultivation areas), processing industry for medicinal plants, stabilized cropping patterns for chena and highlands, contour bunds to cover the entire area, water harvesting techniques, etc.

The villages in such pilot sub-watersheds have "action plans" that guide them along a path to a planned future from the current status of resource use.

Components of Conservation Farming and organic matter management (adopted by users) in selected tank ecosystems include:

a) mulching (crop or weed residues) to increase soil moisture retention and to effectively use the limited rainfall and irrigation water. Promising results have been achieved in all sites: farmers managed to increase irrigation interval from 3 to 6 in chillies and from 8 to 16 in beans; time taken to reach wilting point was significantly higher when compared to areas without mulch; branches, leaves, flowers and pods per plant were significantly higher and consequently high crop yields have been achiever;

b) adoption of contour bunds and drains and stabilization by biological means as a water harvesting/saving technique and for soil conservation.

c) combination of agriculture and forestry eg: through alley cropping, home gardening (forest gardens), growing seasonal and perennial between contour bunds in the uplands,

d) green manuring

e) mixed cropping and integration of livestock

f) integrated pest management

Novel modes of state-user partnerships in land and water resources use have been arranged. The banks have agreed to provide loans for the user organization. A Colombo based company offered a forward contract to the user organization to purchase most of the expected produce under the "mini-project".

In SCOR pilot sub-watersheds such as Maha meegaswewa, a leadership pattern emerged from the community with leaders of groups, organizations and companies aimed at production and conservation. Leaders have access to information from outside and knowledge gained from their own experiments in their own farms with the support of government officers and others. They can mobilize resources to carry out their plans and finally become shareholders of their own company with control over the production process. This is a productive way for small farmers to gain and share prosperity in an open economy.

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