LAND CONSERVATION

INSTITUTIONAL REQUIREMENT OF LAND CONSERVATION \(^1\)
WITH SPECIAL EMPHASIS ON AGRICULTURE NEEDS

Tejoyuwono Notohadiprawiro\(^2\)

Abstract

Land conservation to meet agricultural needs is concerned with the management of land as a resource system to sustain its income producing capacity. As the objective has a strong socio-economic orientation, it implicates the performance of land rather than its structural existence.

As such land conservation is a mission-oriental endeavour based on policy options stipulated by an overall land use plan. Thus land conservation is an integral part of land development.

The biggest obstacle experienced in Indonesia to the formulation of a sound strategy of land development is the still weak institutional arrangement. Without strongly institutionalized, land development and conversation will only excite controversies among different interest groups.

Introduction

Much has been achieved in Indonesia in the development of techniques for the conservation of lands. But the putting on the ground of those marvelled efforts is still much left to be done. Three factors may be indicated as the cause of the lagging behind of the implementation.

The first factor is the incompatibility of the new techniques with the land management system traditionally practiced by the peasantry which constitutes the biggest part of the farming population. The second factor is the lack in an effective system of technology transfer, or the incapability of the extension workers to motivate the peasants to adopt the new system. The third factor is the very little exchange of ideas, experience and information among similar land management projects.

\(^1\) Project-Site Seminar on Sabo-Works. DPU-JICA. Volacanic Sabo Technical Centre. 1988
\(^2\) Guru besar ilmu tanah, Fakultas Pertanian UGM, dan anggota Dewan Riset Nasional Kelompok II membidangi sumberdaya alam, energi dan lingkungan.
Those factors are expressions inherent in a society where development programmes are not properly institutionalized. In fact, institution building is an integral part of any development scheme, especially when the development objectives will have a strong social and economic impact on the lower stratum of the community. A weak appreciation on the side of the programme instigators of the importance of the institutional infrastructure of development it may eventually actuate the disruption of the environmental balance.

**Background**

**The concept of land**

Freely perceived land is the solid part of the earth’s surface. It consist of a combination of various biophysical and cultural elements which together features the condition of an area for the sustainment of human life. The scientific definition of land is an area of the earth’s solid surface, the characteristics of which embrace all reasonably stable, or predictably cyclic, attribute of the biosphere vertically above and below this area including those of the atmosphere, the soil and underlying geology, the hydrology, the plant and animal populations, and the results of past and present human activities, to the extent that these attributes exert a significant influence on present and future uses of the land by man (FAO, 1977).

From the point of view of land use, land is a system of resources which provide the most benefits to mankind. Thus land is the overall natural resource. From the point of view of habitation, land carries ecosystem but in itself also a part of these ecosystems (adapted from Vink, 1975).

Land is a holistic concept as it is conceived as a system whose existence and behavior are determined by the interactive relationships among its components. It is also a dynamic concept as it is defined by the cyclic processes taking place in the atmosphere (season, weather), in the hydrosphere (temporal fluctuation in water regimes) and in the biosphere (life rhythms and cycles). As land has spatial dimensions due to the spatial variability of its attributes, it is a triple concept of land must always be borne in mind whatever use the land is proposed for. This is the key to a productive, sustainable and environment-conscious use of land.
Being of system of resources, or the carrier of ecosystem, the value of land is always attached to the needs and desires of man. Therefore, the value of land cannot be judged solely on its biophysical characteristics but is greatly influenced by social requirements, economic perspectives and political considerations. Different from its components which are biophysical entities, like climate, soil, geology, vegetation, etc., the term land has socio-economic and cultural connotations. In short, land is the total natural and cultural environment within which production takes place (Sopher & Baird, 1978).

The Concept of Conservation

In connection which renewable resources like land, conservation means the safeguarding of resources according to principles that will assure its highest economic, social and psychological benefits to people in perpetuity (adapted from Donahue et al., 1977). Thus conservation is concerned with function. It differs fundamentally from preservation whose objective is the maintenance of form.

The term land means different things to different people as the meaning is dictated by the function of land perceived by the user. To one individual or a certain interest group, land may mean space, unchangeable and fixed in quantity. To others land may be considered as nature and as such defined in terms of natural or man-made ecosystems influenced by natural processes. Land may be seen as a gene resource, as a production factor of capital, as a source of pleasure and recreation, as a location in economy and politics, and as a property (adapted from Brinkman & Smyth, 1973).

A parcel of land may be suited to several uses at a given time. As different uses may have different dimensional scales, the most appropriate use of land should not be judged in a limited context. Due account should be taken of the long term effects on the particular land itself and the spatial effects on other tracts of land as well.

What and how to conserve depend on the function the land is supposed to perform. Land for agriculture needs different conservation measures than for instance land for housing. Difference in need may result incompatible plans or even in contradictory implementations. To avoid possible conflicts and to assure effective safeguarding of resources against depletion and deterioration, conservation must be part of a sensible approach to land use (Hudson & Notohadiprawiro, 1983). It has been envisaged by Sopher
& Baird (1978) that land conservation is a combination of all management and land use methods.

**Theoretical Approach to Institutional Necessity**

Compared with other form of land use, agriculture is concerned most with land conservation. Its entire production cycle basically depends on and conditioned by the performance of land. Agriculture works with widely dispersed production units occupying vast portions of land, making it subject to great differences in production possibilities and in potential for growth and development. Taken as a whole, management of agriculture is distributed among a great number of farmers so that reaching decision is often very slow, going mostly through conservative avenue to finally resort to a compromise. Inventions of innovative agriculture production technologies are never directly potential, each of them has to go through a long way of adaptation tests and modifications to suit the broad range of land condition and farming systems.

By its very nature agriculture as an enterprise can never rejoiced the highly praised efficiency of industries. However advanced its system is, agriculture is in no position to compete equitably with industry or urban-based enterprises. This is why in every decision on land allocation and development agriculture inevitably gets a weak bargaining position. This is how the institution matter comes into the picture.

Institutional arrangements within the framework of agricultural development are to fulfil the following function:

1. To accomplish some order in the agricultural structure.
2. To establish delivery system:
   a. Channeling innovative informations to the rural population.
   b. Opening communication toward generation of a self-motivated participation of the rural population in land development.
   c. Bringing in technical assistance and financial support to rural areas.
3. To promote efforts to mitigate bypassed conditions of rural areas.
4. To provide patronage to rural matters in order to elevate their political image.
These exercises are intended to strengthen the position of the agrarian interest in facing big capital interest and power politics (industries, urban-based business, multinational corporations). At such a renewed balance of interest, land development and conservation will be appreciated with the proper agricultural outlook.

Much have been said about “conservation-style” land use by Hudson & Notohadiprawiro (1983). Here are the main points in relation to the institutional requirements:

1. There has to be a working hierarchy. At the the watershed level, planning calls for the integration of many disciplines and departments. At the sub-watershed level, it is likely that some aspects will not be relevant, for instance large storage reservoirs or major flood control works. Down at the level where conservation practices are put on the ground requires less concern about plans and planning, and more concern with the capacity to make things happen, meaning more emphasis on planning agencies.

2. Planners should also have responsibility for making their plans work, otherwise there is no real accountability and no opportunity to modify the plan during implementation. Planning consists of five steps:
   a. Collecting the necessary facts.
   b. Analyzing the facts.
   c. Making decisions.
   d. Carrying out decisions.
   e. Assessing the results.

3. The development of technical solutions is only part of solving the land degrading problem. It is also necessary to apply the solution on the ground. There are several approaches to achieving this objective:
   a. Education and extension.
   b. Financial incentives.
   c. The use of coercion which may range from low-key pressure of a kind of moral blackmail, to the outright enforcement of legislation.
The records suggest, however, that legislation alone cannot provide the solution. It is morally wrong to force on the populace theories and practices unless their validity has been established beyond question.

4. Conservation programmes can only be effective when they are “moved from below”, i.e. by full involvement of the rural population. Programmes which are imposed “from above” will not succeed even if they are technically correct. This means that education, channelling innovative informations, and generation of self-motivated participation are most important.

5. As land conservation is a long-term investment in land development, the time-scale of it is longer than that of the peasant farmer, the question of who should pay for it is difficult. One argument is for the State to pay the cost as it is in the interest of the whole Nation to conserve the land resource. Besides, the man with a hungry family has no time to worry about how much soil will be left in one Pelita’s time. Also it is unreasonable to expect the peasant farmer to pay now for preserving the land for posterity. It is a luxury he cannot afford. The counter argument is that it is unjust to make the city dweller or industrialist pay for improving the lot of the farmer. A compromise between these extremes is required.

6. There is the inherent disadvantage of all development through Project that there is a powerful thrust during the life of the Project which is difficult to sustain after the Project has finished. Operating within a Project structure makes sense when programmes are seen as short-term exercises to solves acute problems to be followed by massive attacks by the existing line departements.

**The Indonesian Lesson**

The Indonesian experience has given the following lesson to learn :

1. The duties and responsibilities of the ministries concern with land development and conservartion are heavily influenced by the legal status of the land. This is not a sound basis for separating the planning of watershed improvements, even if the land use corresponded with the legal status. Planning conservation must be based on what is happening, not on what is supposed to happen.
2. Governments seem particularly liable to forget that carrying out the plan does not automatically mean achieving the objective. The last stage of evaluation is as vital as any other, for there may have been some unknown factor which has prevented the plan from working.

3. Projects tend to become too sector-oriented in their approach which is a disadvantage. For instance, there is a widespread fallacy that forests or trees always reduce or prevent erosion. A pure-stand of trees with no understory and no surface litter can be more damaging than if the forest were not there. The reason is that once the canopy is saturated, the throughfall hits the ground surface in the form of large drops which, if the canopy is high, will be travelling at terminal velocity. The erosive power of the rain at the soil surface can be greater than outside the forest. The all important factor in reducing erosion is to achieve a good protective cover, and there are sometimes more effective or more remunerative ways of achieving this than by planting trees.

4. The attitude to soil conservation is focussed too strongly on repairing the damage caused by erosion, instead of being part of a constructive plan of improved land and water management. The over-emphasis on the mechanical side of building terraces and check dams increases the difficulty of getting across to field advisers and farmers the idea of controlling erosion through good farming practices or using the land appropriately. There may occasionally be a place for some mechanical protection, but the result can usually be achieved in the humid tropics by biological practices.

5. The weakness of the present system is that Projects are being institutionalized as substitutes for a line department of soil and water management. Although some projects may be seen as institution building, others can be counter-productive by reducing the need for the line department to improve its efficiency. The institutionalization of different Projects but which have similar lines of task may easily confuse the real issue.

6. Projects seem not very interested in establishing a strong link among themselves through which exchange of idea, information and experience can be accomplished. (adapted from Hudson & Notohadiprawiro, 1983).
Conclusion and Suggestion

Land conservation should be dealt with as part of land management. Institutional arrangement is central to the success of land management as it provides the infrastructure upon which the consecutive steps of planning and execution are taken. To be able to control effectively the land management process, the institutional set up has to observe these cardinal requisites:

1. One concept of land and conservation for all responsible agencies.
2. One understanding of land management which contains the following aspects:
   a. Regulation and control of the multiple interaction among land components towards the attainment of a more befitting environment for habitation and a more favourable condition for economic deployment.
   b. Facilitating, improving and/or effecting compensatory relationships among land components to increase the resistance of land as system to disturbances by natural or man-induced causes.
   c. Prevention of harmful intervention by man or removal of too strong a disturbance.
   d. Sustaining the beneficial functions of land through an equitably balanced land allocation to competitive uses.
3. Agencies working in the same watershed (river system) have to be led by one integrated plan which covers the whole region from catchment area to coastal plain.
4. Establishment of information diffusion and linkages among corresponding agencies.
5. Full participation of farmers and other land users.
6. Effective land management support services, including a well adapted technology transfer system with feedback mechanism, an adequate system of land suitability classification on which the optimum use of land can be based and a strong research component.

Experience has shown that unless the ultimate beneficiaries are actively involved in the planning and implementation of development projects, the projects are unlikely to achieve their goals. In order to achieve beneficiary participation, there are three management principles which should be observed:

1. Decentralized management
   Because of the wide variations in agro-ecosystems and social and institutional environment, a structure which places responsibility and authority at the lower levels
of government is the only practical way to manage the diverse conditions and specific needs of target areas. The multiple choices which will become available for the development of these areas rule out a monolithic approach as commonly exerted in Indonesia.

2. Unified management
   This flows logically from the justification for decentralized management. If the responsibility for land development is most appropriately placed at provincial or lower levels of government officials at those levels need to be vested with sufficient authority, including effective budgetary control, to insure the unified and coordinated management of the various human, technical and financial resources that are required for successful introduction of improve practices. All of these resources which reside within several ministries must be mobilized and allocated in an integrated manner if a sustainable process of land conservation and development is to be achieved.

3. Budgetary and credit system flexibility
   There is the need for sufficiently flexible budgetary and credit system to accommodate the inevitable variations found in any effort to introduce technology in diverse agro-ecosystem and to farmers with varying income levels, sources of employment, and attitude towards risk.
   (adapted from Watershed Assessment Team, 1983).

   An appropriate technology in terms of agro-ecosystem and farmers way of life will come out only from farming system research. The necessity of a farming system approach and the nature of the task which involves adaptations to conditions at the lowest operational level imply that a watershed programme should not be structured like most Inpres programmes. Most of the Inpres programmes give too little discretion and initiative to the local level in allocating funds to particular projects, locations and items within given types of expenditure. Flexible budgetary procedures at the field level are essential to enable local decision-makers to effectively respond to the inevitable variations found in any effort to introduce technology to varying biophysical and socio-economical conditions. Land development programmes by watershed require arrangements different from most of those currently used.

   In line with the concept of decentralized management, provincial and kabupaten’s administration should furnish the institutional framework for the organization of land
development. But the planning and implementation should be by watershed as it is the true resource unit. Since administrative and watershed boundaries often do not coincide, a certain cross-administration arrangement will be required, for which a Keppres (Presidential Decree) is needed.

It should also be emphasized that there is the need for a unified budgetary system. Multiple funding channels have several adverse results. Lack of synchronisation in arrival of financial authorization (DIPs) means late deliveries of inputs or service and occasional postponement of activities for and entire system season. Unified management is an effective if not impossible without financial control, and financial control can be achieve only with installation of a unified budgedtary system under the direct control of a water shed supervisory body. As exemplified in the Bangun Desa Project of Jogjakarta, the supervisory body maybe bappeda.

Consideration might be given to reorganize existing Project in way that would attach them firmly to the regional governments. Apparently the Bappeda shows itself as the most reasonable choice to function as this link. It stands to reason also that the cross-administration arrangement said previously to handle watershed matters which come under the jurisdiction of two or more regional governments may take the form of an Inter-Bappeda Body. The Bappeda or the Inter-Bappeda Body has to be mandated with sufficient authority to carry out unified management.

A farming system approach within the context of farming systems research and agricultural development refers to farming system programmes which integrate agricultural research and development strategies. The farming system is placed in the broader context of the economic and policy environment of a targeted region; in this case a watershed. The objective is the long-term transformation and development of agriculture in a designated region through both technological development for major farming systems and institutional and economic.