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**A SUGGESTED
NATIONAL SOILS POLICY
FOR JAMAICA**

Executive summary

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A suggested National Soils Policy for Jamaica

Executive summary

PART ONE: BACKGROUND AND OBJECTIVES

1. Origin and Objectives of the National Soils Policy for Jamaica

The Food and Agriculture Organization of the United Nations' (FAO) World Soil Charter and United Nations Environment Programme's (UNEP) World Soils Policy draw attention to the importance of soils as a basic natural resource, and the need for their conservation and sustainable use. These documents urge governments to draw up national soils policies. (1.1)¹

The Government of Jamaica (GOJ) entered into an agreement with FAO/UNEP for a technical cooperation project to draw up a National Soils Policy for Jamaica. The project team worked in Jamaica from August to September 1992. It consulted government officers, made field tours and held a National Soils Seminar to discuss the first draft. This document was subsequently reviewed by FAO, UNEP, the International Society of Soil Science (ISSS) and the Jamaican National Soils Coordinating Committee (NSCC). Following a meeting of all collaborating parties, which was held in Jamaica from 25 to 29 October 1993, the present document was agreed upon and finalized.

This document is now submitted to the GOJ for consideration as the basis for its National Soils Policy. (1.2)

A national soils policy comprises technical aspects, institutional aspects and legal aspects. The objectives of such a policy are to enable all aspects of policy that relate to soils to be viewed as a whole; to provide a framework within which specific projects can be evaluated; and to strengthen the ability of Government to conduct soils activities, including through opportunities for training. (1.3)

A soils policy forms a component of Jamaica's national policy on land use. It should also be integrated with Jamaica's National Forestry Action Programme (NFAP) and with its policy on environment. (1.4)

PART TWO: THE PRESENT SITUATION

2. Soils and Soil-related Problems

Jamaica is an island nation in the Caribbean with an area of 10 940 square kilometres. A basic division for soils and agriculture is the hill lands, the central core of hills and

¹ Numbers in brackets refer to sections of the main report.

mountains, and the plains, comprising coastal plains and interior basins. Most of the island receives a moderate to high rainfall.

The population in 1991 was 2.37 million, of whom 600 000 live in metropolitan Kingston. The economy is diversified, with three main sources of foreign exchange: tourism, bauxite and agriculture.

The agricultural sector is highly diversified, with many other crops supporting the traditional exports of sugar and bananas. There is a marked contrast in farm size, with predominantly small farms in the hill lands and large farms on the plains. The original natural forest cover has been extensively cleared and degraded. The Government continues to assign importance to agricultural development, for which soils form a basic resource. (2.1 - 2.3)

Jamaica is exceptionally well covered by soil surveys, continuing from 1953 to the present. It also has a system of land suitability evaluation, of which the physical evaluation section is based on computer-stored information. There is a wide range of climatic conditions, landforms and soil types. A consequence of this variation is the need to give attention to the differing responses to soil management. (2.4 - 2.5)

Soil productivity, in terms of crop yields, is generally high on the plains. On hill lands, management standards are variable, with substantial opportunities for improvement. (2.6)

For many years, soil erosion has been a serious problem in the hill lands. Past attempts at soil conservation were based on bench terracing and other physical structures. Viewed overall, this approach was not a success. A change has now been made towards methods based on biological conservation with emphasis on soil cover. (2.7)

Other soil problems, discussed further in Part Three, are:

- urban encroachment onto agricultural land;
- rehabilitation of mining land;
- soil salinization. (2.8)

A substantial amount of soil research has been conducted in the past, but staffing and facilities are at present inadequate to maintain this strong basis. (2.9)

3. Institutions and Projects

The major institutional responsibilities for soil activities within the MOA are as follows:

- Rural Physical Planning Division (RPPD): soil survey, land evaluation and land-use planning.
- Rural Agricultural Development Authority (RADA): agricultural extension, including soil conservation on farming land.

- Forestry Department: forests and forestry, including soil conservation on forest land.
- Research and Development Division: agricultural research, including soil research.

A statutory body within the Ministry of Public Service and Environment, the Natural Resources Conservation Authority (NRCA), has overall responsibility for environmental conservation and proper use of natural resources.

A wide range of other institutions also contribute to soil activities. (3.1)

There have been a series of attempts to improve soil conservation and watershed management through projects. Currently a major effort at improved productivity and soil conservation in hill lands is being made through the Hillside Agriculture Project (HAP). An ambitious programme on watershed areas is proposed in NFAP. (3.2)

Both Government and public awareness of soil questions in Jamaica is generally high. (3.3)

4. Legislation

Four statutes have a major influence on soil resources issues:

- The Forest Act.
- The Watersheds Protection Act.
- The Rural Agricultural Development Authority Act.
- The Town and Country Planning Act.

Other statutes also have an impact upon soil issues, these include the Jamaican Constitution (Annex 4).

PART THREE: PROBLEMS AND POLICY ISSUES

Problems and policy issues may be divided into:

- technical issues;
- institutional issues;
- legal issues.

5. Technical Issues

Current policy for soil conservation and agricultural development in hill lands is based on the strategy adopted for HAP. This is aimed at intensified agriculture based on tree crops. Soil conservation is achieved mainly by maintaining a ground cover of living plants and plant litter. Emphasis is placed on active cooperation with the farmers. Substantial increases in tree crop yields have been obtained, and soil conservation appears

to be good. RADA and other bodies are implementing this strategy. It is desirable to monitor the performance of this policy with respect to soil conservation. (5.1.1)

A second element in the strategy for hill lands is the reservation of steeper and more deeply dissected areas for non-agricultural uses. These areas have a particular value for production of water. This strategy is implemented through forest reserves, designated watershed protection areas, and a recently established national park. (5.1.2)

There is a need for further development of methods of soil conservation appropriate for Jamaica's different climatic conditions, soil types and cropping systems. A particular need is for methods to cover hill areas dependent on annual crops, particularly yams. The present emphasis is upon biologically based methods of conservation, but combinations with physical structures also have a role. (5.1.3)

There is an important potential in Jamaica for further development of systems of agroforestry. These can serve both productive purposes, e.g. for timber, stakes, fuelwood and fodder, and are also an effective means of soil conservation.

Urban encroachment onto Jamaica's limited resources of good agricultural soils could become very serious in the near future if steps are not taken to check it. Present planning controls are inadequate, both legislatively and with respect to their application. Better control could be achieved by legislative improvements, to facilitate better enforcement. Control should be based on a system of land zoning based on land suitability criteria. This problem is one of urgency. (5.2)

The rehabilitation of mined land and its restoration to agricultural use, including both mined areas and waste disposal sites, is well handled in Jamaica. This has been achieved by well-devised legal controls, coupled with a high sense of environmental responsibility on the part of the mining companies. (5.3)

Soil salinization has been encountered on some irrigated areas of the southern coastal plains. Early action to check this is needed to prevent costly loss of soil resources. (5.4)

There is a need for quantitative assessment and monitoring of soil erosion and other forms of soil degradation. Estimates in physical terms, such as tonnes of soil lost, need to be converted into economic and social costs to the people. (5.5)

Development of a system of land zoning, based on land suitability for different uses, would be of assistance in two respects. First, the designation of appropriate land for forest reserves, watershed protection areas and national parks; secondly, the control of urban encroachment. (5.6)

Soil research in Jamaica, which has substantial past achievements to its credit, needs to be revitalized. It should concentrate on applied and adaptive research. Priority areas for research are:

- updating of the national soil data base, in conjunction with the Land Information Council of Jamaica, using internationally accepted standards (e.g. FAO) to provide a sound basis for national soils legislation and conservation;
- methods of soil conservation, appropriate to different environments, soils and cropping systems;
- the potential of agroforestry;
- soil fertility;
- soil physical properties, particularly with respect to irrigation;
- soil restoration after mining operations, particularly reclamation of waste disposal sites;
- land use responses of soil types;
- updating of land suitability and land use planning criteria. (5.7)

6. Institutional Issues

All soil-related institutions in the Government are operating at the limit of their capacity with respect to staff and funding. To perform their work adequately, and still more to undertake additional tasks now required, institutional strengthening is required. This needs to be on a permanent basis. (6.1)

Institutional responsibilities for soils are quite well defined (see above). An institutional structure needs to be developed for agroforestry. This should be in the form of cooperation between existing bodies. It should be recognized that NRCA has overall responsibility for monitoring soils, as well as other natural resources. (6.2)

There is a strong need for continuity in soil activities, which this National Soils Policy is intended to strengthen. The recently created National Soils Coordinating Committee (NSCC) should play an important role in achieving this. (6.3)

Soil research activities are appropriately conducted by a range of institutions. These should, however, be coordinated through the Research and Development Division. For this purpose, a core of soil scientists is needed within that Division.

Whilst the standard of education of Jamaica's soil scientists is high, their numbers are insufficient for policy implementation, and additional education and training activities are called for. There is also a need for refresher courses to update staff in modern advances in soil conservation and agroforestry. (6.5)

7. Legal Issues

In order to adequately apply the Land Development and Utilization Act, appropriate criteria needs to be developed to determine improper land use. The Agricultural Small

Holdings Act does not define the responsibilities of landlords and tenants with regard to proper land use. The Watershed Protection Act requires to be supported by the promulgation of regulations. The new Physical Planning Act, which will incorporate the

Town and Country Planning Act and the Local Improvement Act, should include provisions to ensure the preservation of land for agricultural purposes. (7.1)

Many of the laws affecting soil conservation are inadequately enforced. Reasons are:

- staff shortages;
- low levels of penalties in relation to the present value of money;
- absence of regulations to support laws;
- fragmented legislation.

This last problem could be addressed by preparation of a digest of laws affecting land use, which could be made available to relevant agencies. (7.2)

8. Proposals and Recommendations

The following proposals are made for action to be taken under the National Soils Policy, for the achievement of its objectives of soil conservation and productive and sustainable use. Many of these proposals are interlinked. Some will require international cooperation and additional funding.

Brief justification for each proposal is given in the corresponding sections of Chapter 8. The proposals are for:

1. Strengthening of soils and related institutions with staff and operating budgets. This is a prerequisite for other proposals.
2. Establishment of a permanent soil research capacity.
3. Research into soil conservation.
4. Development of the potential of agroforestry.
5. Monitoring of soil degradation, including both erosion and other forms of degradation.
6. Land zoning, as a basis for land-use planning.
7. Education, training and retraining.
8. Recommending amendments to legislation.
9. Recommending better enforcement of legislation.

10. The formalization of NSCC.

9. Statement of Policy

Definition of Zones

In summary, Jamaica's National Soils Policy can be expressed in terms of three major regional units, or zones. These comprise:

1. **Steeply sloping upper watershed areas.** This comprises those parts of the central core of the country which are of high altitude, very steeply sloping (>40%), or both. Soils are frequently shallow or stony. A substantial part of this zone is still forested. It includes the Blue Mountains, John Crow Mountain, the limestone "cockpit country", and some other mountain areas.
2. **Hill zone.** This comprises the remainder of the central core including hilly land, which is for the most part moderately or steeply sloping (22-40%). Soils may be shallow, moderate or deep. Most parts of this zone include cultivated land.
3. **Coastal plains and interior basins.** This comprises land of low altitude, mainly flat or gently sloping. Soils are mainly moderately deep or deep. Most parts of this zone are farmed. It also includes the main urban areas.

Summary of Policy

The steeply sloping upper watershed areas

In this zone, the policy is to preserve the land for water production, sustainable agriculture and tourism. Soil conservation will be achieved mainly through maintenance and improvement of the natural forest cover. There may be productive forest plantations on limited areas where land is suitable. Any existing agriculture in this zone will be discouraged (having due regard to personal rights and equity), or restricted as far as possible to valley-floors.

The hill zone

Here, the policy is based on making productive use of the good natural resources of soils and climate, for the benefit of both the population of the zone and the economy of the country as a whole; whilst at the same time, making the maximum effort to conserve these resources for the needs of populations of the future. In short, this is a policy of sustainable use. Land use will include tree crops (perennial crops), annual crops, forestry, and livestock production. Elements in the implementation of the policy include:

- The encouragement of tree crop production wherever landforms, climate and soils are suitable for this.
- Restricting the cultivation of annual crops as far as possible to sites that are less steeply sloping, in valley floors, or otherwise best suited to this use.

- Making a major effort to develop methods of soil conservation that will be both technically efficient and economically and socially acceptable, and which are adapted to the varying soils and other environmental conditions of the area; and to promote the adoption of these methods by all land users. Emphasis will be placed on biologically-based methods of conservation, particularly maintenance of soil cover, but physical conservation structures will also contribute where appropriate.
- In those parts of the zones where mining operations occur, continuation of the present policy of strict enforcement of legally-based requirements for land rehabilitation and restoration to productive use, aided by the relevant research and responsible attitude of the mining companies.

The coastal plains and interior basins

This zone contains much of the most productive agricultural land of the country, and the major force of policy is to preserve these fertile soils for agricultural use as far as possible. At the same time, it is recognized that other uses of land, for urban and industrial purposes and for tourism, make competing demands for this land. Elements in the implementation of the policy include:

- Urban expansion will be strictly controlled, limiting the total area, seeking compact development, and directing development where possible to the less fertile soil areas. To this end, the legal basis for planning controls will be strengthened, and such controls will be enforced. A system of land zoning, based on relative suitability for competing uses, will be developed to guide development in critical areas.
- Development of tourist facilities will similarly be controlled, permitting development where this is in the interests of the country as a whole, whilst at the same time preventing unnecessary loss of good agricultural land.
- Every effort will be made to combat soil salinization; and a watch will be kept on other forms of soil degradation, in order to combat any future problems at an early stage.
- Mining and quarrying activities on this land will be required to conform with regulations limiting areas of activity and requiring land restoration.

Means of Implementation

This policy will be implemented through technical, institutional and legal means, as set out in this document.

10. Commitment by the Government of Jamaica

The following is a suggested statement of commitment to the National Soils Policy.

The Government of Jamaica **recognizing:**

- the importance of soils as a basic natural resource on which the country's agriculture and other kinds of rural land use are dependent;
- the extent and severity of soil degradation, particularly erosion, in the hill lands, and the adverse effects of this on the present and future well-being of the country;
- the danger of loss of productive agricultural land to urban uses;

The Government of Jamaica being **aware** of the recommendations of the FAO World Soil Charter and the UNEP World Soils Policy and of the efforts currently being made to implement the policies set out in these documents at a national level:

- **Reaffirms** its past efforts, including through cooperation with international agencies, to combat land degradation and to support rational land use;
- **Takes note** of the contents of this National Soils Policy for Jamaica; and
- **Declares its commitment** to support the implementation of this National Soils Policy, in particular by:
 - within the framework of its overall development planning, striving to ensure adequate and continuous support to the government institutions responsible for soils activities;
 - attaching importance to soil conservation in national development plans, and making corresponding budgetary allocations;
 - taking steps to ensure that the soils of the country are utilized on a sustainable basis, to meet the needs of the present and future population;
 - supporting measures for sound land-use planning, in accordance with the suitabilities of land for different purposes and with the needs of the people;
 - seeking to maintain a soils research capacity appropriate for the needs of the country, in collaboration with international agencies and external institutions where appropriate;
 - taking steps to monitor soil degradation and the effects of measures taken to control it, in order that its impact on the national economy and well-being of the people may be assessed;
 - examining its legislation with a view to consideration of amendments which would strengthen this in the areas of soil conservation and protection of agricultural lands;

- integrating this Soil Policy with national policies on land use and the environment.

The Government further notes the importance of continuity in its national soils policy, to which this document makes a contribution; and that this policy will require revision from time to time, in the light of changes in circumstances.

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