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Original: English

EB 2000/71/R.38
Agenda Item 10(d)

6 December 2000
English



IFAD
INTERNATIONAL FUND FOR AGRICULTURAL DEVELOPMENT
Executive Board – Seventy-First Session
Rome, 6-7 December 2000

REPORT AND RECOMMENDATION OF THE PRESIDENT

TO THE EXECUTIVE BOARD ON A PROPOSED

IFAD/NGO EXTENDED COOPERATION PROGRAMME (ECP) GRANT

TO

WORLD VISION

FOR THE

BOBONARO WATERSHED PROJECT IN EAST TIMOR

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ABBREVIATIONS AND ACRONYMS

ECP	Extended Cooperation Programme
FFW	Food-for-Work
NGO	Non-Governmental Organization
UNTAET	United Nations Transitional Administration of East Timor
WFP	World Food Programme



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I submit the following Report and Recommendation on a proposed IFAD/NGO Extended Cooperation Programme (ECP) grant to World Vision to support the Bobonaro Watershed Project in the territory of East Timor, in the amount of USD 74 500 for a one-year period.

I. BACKGROUND

1. In the 30 August 1999 referendum, with a turnout of 98%, 78.5% of the registered electorate voted in favor of independence from Indonesia. The announcement of the results on 4 September 1999 led to an explosion of violence and terror, which resulted in the death of thousands of people, including some United Nations staff, displacement of over 75% of the population, destruction of over 70% of the physical infrastructure and nearly all administrative records. Except for places of worship, nothing was spared, not even hospitals and schools.
2. Immediately after, the Security Council of the United Nations authorized the setting up of a multinational military force called INTERFET (International Force for East Timor), subsequently renamed PKF (Peace-Keeping Force), which entered East Timor on 20 September 1999.
3. On 25 October 1999, the Security Council authorized the formation of the United Nations Transitional Administration of East Timor (UNTAET), which is the acting Government. UNTAET will be in charge until general elections, currently scheduled for October 2001, and the establishment of a national Government.
4. The large-scale looting and arson has left behind a traumatized and brutalized population. There is hardly a family that has not been affected. As mentioned above, over 75% of the population was displaced, of which at least 200 000 fled to West Timor. At present 75 000-100 000 people are still living as refugees in these camps. Women, especially, have been particularly disadvantaged, and in some villages woman-headed households are very common.
5. Up to 30% of the farming families have lost all of their assets, including seed stocks and hand implements. The crisis occurred during the dry season, when there were few crops on the ground, except second rice crop in a few places. Burning of the standing rice crop was reported in Bakau and Dili.
6. Many farmers of Indonesian origin, who had been settled on new irrigated schemes in the framework of the "transmigration" programme, have left the province and may never return. Equipment for soil preparation and agro-processing units (e.g., rice mills) has been looted or destroyed; a large number of livestock have been killed, including draught animals; most infrastructures and collectively owned equipment have been stolen or damaged. All stocks of agricultural inputs (e.g., fertilizer, pesticides and tools) have been looted. A large number of fishermen have lost their fishing gear.



7. There is also a drastic shortage of skilled personnel. Indonesians, who have left the country, occupied most technical positions. Several former civil servants have ended up as refugees in West Timor. The Departments of Agriculture, Fisheries and Animal Health have been systematically looted; officers are displaced and it is estimated that up to 80% of the support staff may not return. All training facilities in the province have been damaged. Agricultural support services must be rebuilt from scratch.

8. It is feared that the crisis will result in further, major degradation of an already damaged environment (widespread deforestation and erosion). Increased pressure on the forest cover and resulting damage to the environment can be expected. In fact, the population will have to procure large quantities of wood for construction and fuel. Farmers may increase the area cultivated through the slash-and-burn method in order to increase food production for the forthcoming planting season (at the time of the mission, many fires were observed in the countryside).

9. Food-marketing systems and general economic and commercial life have been seriously disrupted. Normal economic activity in the territory continues to be hampered in many areas due to disruption of internal markets, absence of small traders and merchants, poor roads and decimated commercial and private transport systems. The sudden cessation of access to trading, distribution and supply routes to West Timor and the rest of Indonesia heavily compound the situation.

10. Moreover, the lack of infrastructure and means of conveyance make internal transport highly costly, which means that domestically produced rice cannot compete with imports currently entering the market. Given the type and state of roads and transport, it is estimated that the internal cost of road transportation in East Timor is between 2.5 and 3 times higher than comparable costs in other low-income countries.

11. Markets are slowly re-emerging throughout the country, albeit at below-normal levels. Market surveys conducted in several locations suggest that prices are higher than they were before the crisis, while household purchasing power is now very low. Household interviews indicate that many households are unable to purchase food and other commodities from markets. Income-generating possibilities are few, and formal employment has been greatly reduced by the lack of public-sector jobs. While commercial trading within the territory is slowly increasing, trade with Indonesia no longer exists (particularly across the border with West Timor). This particularly affects the livelihood of people in cities such as Sual, Maliana, Bobonaro and Ermera in the western region.

II. RATIONALE

12. The immediate humanitarian assistance for East Timor, to address emergency needs caused by the September 1999 crisis, has largely been completed. Location-specific needs for late returnees continue to be addressed through multi-institutional efforts involving local Timorese institutions, UNTAET, UN agencies, and local and international NGOs. However, long-term agricultural development programmes addressing sustainable use of land and natural resources by resource-poor farmers have not yet started. In particular, there is great need of a focused approach in dealing with upland ecological zones, where land degradation is on a scale beyond what can be addressed by individual farmers. Targeting of upland areas where rural poverty is concentrated is one of the salient points of IFAD's regional strategy in Asia.

13. It is particularly important now in East Timor to build the confidence of the local population in their capacity to reconstruct their livelihood systems through focusing on natural resource management.

14. A participatory watershed management approach is appropriate to the physical conditions of Bobonaro district. Through adoption of better technology, land-use patterns and other economic



diversification, watershed management ensures better returns to a given unit of land on a sustained basis. Components of watershed development include soil, land, water and crop management, afforestation, pasture and fodder development, livestock management, rural energy management, other farm and non-farm activities and, last but not least, community development. Well-managed watershed development enhances the ecological resource base of a rural economy and creates sustainable livelihood opportunities for the watershed community through increased production of food, fodder and fuel, and increased availability of drinking water.

15. World Vision has gained a very good reputation in East Timor among other donors' agencies. It is already present in the Bobonaro district, with a food-distribution programme targeted to vulnerable families and woman-headed households, and with health support activities through mobile clinics and immunization services. This presence will minimize the operating costs for the project thanks to the pooling of programme resources.

16. The World Food Programme (WFP) has already confirmed its commitment to the financing of this project. The project will have a multiplier effect in the surrounding watershed areas and is likely to attract the attention of other donors. WFP has already expressed interest in considering an expansion of this project, which is perceived as a replication of the successful IFAD/WFP collaboration on the East Java Rainfed Agriculture Project that also focused on soil and water conservation.

17. This project has a high potential for sustainability and replicability because it focuses on greater reliance on local physical and human resources, local production and local markets. The process of environmental regeneration along watershed lines is likely to form the basis for a future rural development model for East Timor.

III. THE PROPOSED PROJECT

18. The project aims to develop microwatersheds in the Bobonaro district so as to create adequate and sustainable livelihood opportunities for the households living in the target area. Village groups and local communities will build a common understanding of development constraints and opportunities, develop a common vision of the development path they want to pursue, and prepare an action plan. Subsequently, they will form village watershed committees that will be responsible for implementing the community action plan.

19. A total of 600 ha of land is targeted, including both area treatment work and linedrainage treatments. Major area treatments will focus on the development of erosion-control structures for agricultural parcels of land and also for denuded land (of non-agricultural use). Labour inputs are high in all these activities. Up to a total of 2000 km of earthworks are projected for the 600 ha of land, from the hilltops to the valley bottoms. Application of different treatments within the watershed will be done so as to ensure better utilization of both capital and human resources. The treatments will include contour development and re-vegetation, with perennial or annual trees, shrubs, climbers or grass as appropriate.

20. The extension-service team of World Vision will be based in the community to oversee the technical aspects of project activities. The team will be composed of a land-resource development person and livestock and crop officers. The team will act as facilitator in the organization and formation of village watershed committees and will organize women's groups. It will also ensure that appropriate techniques are in place for the development and establishment of village agroforestry nurseries, and that community members carry out proper land-treatment works. A detailed working plan will be put into place after a series of meetings, the formation of village watershed committees and soil reconnaissance work.



21. A microfinance facility will be established for women's self-help groups to improve their household income levels. Using the experience gained by NGOs in India such as Myrada and Outreach, self-help groups will also serve as agents of change within a given watershed area. The nature of activities and lending and recovery procedures will be decided upon during the mobilization phase. Income-generation activities may include backyard poultry projects, pig restocking, petty trading, local tailoring, weaving and vegetable growing. The credit scheme will operate through a revolving fund initially funded with savings mobilized by the members of the group. Priority will be given to training of women group members in financial management and bookkeeping, as prerequisites for effective record-keeping. The women's microfinance facility will play a vital role in the marketing of local produce and will assist in the diversification and better utilization of resources within the watershed. A detailed schedule of activities is presented in Appendix IV.

IV. EXPECTED OUTPUTS/EXPECTED BENEFITS

22. The development objective of this project is to improve household food security through increased food production and access. In order to achieve this, the project will include four activities: (i) community awareness and mobilization; (ii) participatory land-resource management activities; (iii) the empowerment of women through income-generation/financial services; and (iv) technology testing, dissemination and extension-service support (see detailed logical framework [logframe] in Appendix I).

23. The principal beneficiaries of this project are 800 low-income rural households, or about 4 000 people, living in the Bobonaro district. These direct beneficiaries will gain from better soil- and water-management practices in a watershed area of 600 ha and from new economic opportunities. Indirect beneficiaries are those people outside the watershed communities that depend on the water and agricultural produce.

V. IMPLEMENTATION ARRANGEMENTS

24. The project will be implemented by World Vision, a well-known international NGO. Detailed information regarding World Vision's organizational structure in East Timor and implementation arrangements is given in Appendix II.

25. The provisional UNTAET district government shall provide overall coordination of project activities.

26. The IFAD grant will be disbursed in two instalments: the first at the beginning of the project upon the signing of the grant agreement. The second instalment will be disbursed upon receipt of the mid-term review.

27. Generally accepted accounting principles as outlined in the World Vision operational manual will be used. The World Vision network has an internal audit team that covers all field offices to ensure strict accountability and adherence to the various grant requirements.

VI. INDICATIVE PROJECT COSTS AND FINANCING

28. The proposed project will have a total cost of USD 258 700. The average cost per participating household will be USD 322. Input supplies account for 64% of the costs, including tillage tools, seedlings, seed for vegetation, and food-for work (FFW). Project costs by expenditure category and financier are presented in Table 1.



29. IFAD, World Vision and WFP will fund the project. IFAD will provide an IFAD/NGO ECP grant of USD 74 500. World Vision will contribute USD 55 500 and WFP will provide USD 128 700 for land development activities. WFP financing includes FFW for about 300 tonnes of rice, required to cover the 100 000 person-days necessary to complete the treatment works during the project period. FFW rations are calculated at a rate of 3 kg of rice per person-day, equivalent to five hours of active work per day. In addition to FFW rations, WFP will provide additional funding for logistic support.

TABLE 1: PROJECT COSTS BY EXPENDITURE CATEGORY AND FINANCIER^a
(USD)

	WFP	World Vision	IFAD	Total %
Salaries/allowance	0	10 380	35 700	18
Extension/training	0	5 150	7 750	5
Travel/transport	0	24 160	0	9
Input supplies	128 700	10 230	30 370	64
Office occupancy	0	1 440		1
Communication	0	4 140		2
Audit fees	0	0	680	0.3
Total	128 700	55 500	74 500	100

^aDiscrepancies in totals are due to rounding.

VII. RECOMMENDATION

30. The President is normally authorized to approve NGO/ECP grants up to USD 75 000. However, as the project will be carried out in a territory that is not currently part of a Member State of the Fund, Executive Board approval is required on an exceptional basis.

31. I recommend that the Executive Board approve the proposed IFAD/NGO ECP grant in terms of the following resolution:

RESOLVED: that the Fund, in order to finance, in part, the Bobonaro Watershed Project in the territory of East Timor for one year, beginning in January 2001, shall make a grant to World Vision not exceeding seventy-four thousand five hundred United States dollars (USD 74 500), under the IFAD/NGO Extended Cooperation Programme (ECP), upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board in this Report and Recommendation of the President.

Fawzi H. Al-Sultan
President

LOG FRAME FOR MONITORING AND EVALUATION

Hierarchy of Objectives	Objectively Verifiable Indicators (OVI)	Means of Verification (MOV)	How will Data be Collected	Frequency of Data Collection	Who will be Responsible	Important Assumptions/ Risks
DEVELOPMENT OBJECTIVE						
To improve household food security						
PURPOSE						
Increased food production and access to food in an environmentally sustainable manner.	<ol style="list-style-type: none"> 1. Active eco-friendly farming practices by the end of September 2001. 2. Decline in soil losses due to soil-water run off. 	<ul style="list-style-type: none"> • Assessment of farming systems within the watershed community 	<ul style="list-style-type: none"> • Using PRA techniques (e.g., proportional piling, ranking) • Qualitative interview 	<ul style="list-style-type: none"> • Once during the annual food security assessment 	<ul style="list-style-type: none"> • Agriculture-sector staff 	<ul style="list-style-type: none"> • Security prevails • Adequate rainfall during the planting season • Community willingness to work together in the natural resource conservation programme
OBJECTIVES	Basic terms of reference for each output					Output to purpose
I. Community awareness and mobilization.	<ol style="list-style-type: none"> 1.1 Community shares common vision on watershed needs. 1.2 Village watershed committees formed and operational by the end of September 2001. 1.3 Active communal work projects in the regeneration of the land resources within the watershed. 	<ul style="list-style-type: none"> • Registration of VWC members • Minutes of VWC meetings 	<ul style="list-style-type: none"> • Audit of records kept by watershed committees • Random interviews of members 	<ul style="list-style-type: none"> • Will be collected once every month 	<ul style="list-style-type: none"> • Agriculture-sector staff 	<ul style="list-style-type: none"> • Moderate rainfall • Adequate food availability to enable completion of the major treatment works to be undertaken. • Security
II. Participatory land-management activities.	<ol style="list-style-type: none"> 2.1 Complete treatment of the entire watershed by the end of September 2001. 2.2 VWC leaders trained in simple commodity and financial accounting by the end of September 2001. 	<ul style="list-style-type: none"> • Training records • Training curricula • Distribution records • Length of treatment works done • Activity records • Observation 	<ul style="list-style-type: none"> • Audit of training registration records/ files • Observation at actual training sessions • Observation of commodity/ accounts records 	<ul style="list-style-type: none"> • Will be collected as part of the actual activities and documented in weekly progress reports 	<ul style="list-style-type: none"> • WV agronomists and extension advisors at demonstration plots. 	<ul style="list-style-type: none"> • Availability of qualified extension workers • Community commitment and participation • Existence of the potential for adoption of new ideas



Hierarchy of Objectives	Objectively Verifiable Indicators (OVI)	Means of Verification (MOV)	How will Data be Collected	Frequency of Data Collection	Who will be Responsible	Important Assumptions/Risks
OBJECTIVES (cont'd)	Basic terms of reference for each output					Output to purpose
III. Promotion of women's income-generation/credit scheme	3.1 Active women's self-help projects by the end of September 2001. 3.2 Women's groups keeping their own business records by the end of September 2001. 3.3 An active women's saving project by end of September 2001.	<ul style="list-style-type: none"> • Observation • Reporting • Accounting records • Market surveys for women's involvement 	<ul style="list-style-type: none"> • Observations and routine record-keeping by the WV extension groups • Qualitative data and quantitative interviews with local partners and beneficiaries 	<ul style="list-style-type: none"> • Daily or routine basis as indicated by various types of data to be enumerated 	<ul style="list-style-type: none"> • WV agronomists and field-trial assistants at the trial farms 	<ul style="list-style-type: none"> • Active community participation • Community is already practicing the basic agricultural concepts and has knowledge of the specific activities. • Communities have ability to pay for certain services.
IV. Technology testing, dissemination and extension service support.	4.1 Local demonstration centre established and working. 4.2 Agroforestry tree seedlings planted by the watershed community. 4.3 Seed varieties selected and tested for adaptability and acceptability. 4.4 Results of the tests on adaptability made public to the beneficiaries and stakeholders.	<ul style="list-style-type: none"> • Demonstration-plot records • Research data on sowing, germination, weeding, diseases, harvesting and demographics on all plant populations • Farms yield comparisons • Reports 	<ul style="list-style-type: none"> • Observations and routine record-keeping at the women's meetings • Raw data will be shared with stakeholders in research universities and farmers for their input and additional analysis of the findings 	<ul style="list-style-type: none"> • Data will be collected before and after the establishment of activities with local groups 	<ul style="list-style-type: none"> • WV agric. agents and community group representatives 	<ul style="list-style-type: none"> • Continued association with the international research institutes, Northern Territory University in Australia and the Department of Horticultural industries • Available technologies are simple, low-cost productive, maintainable, low-risk flexible and environmentally friendly. • Security prevails, and a harmonic relationship exists among farm households.





WORLD VISION'S INSTITUTIONAL CAPACITY AND LINKAGES

1. World Vision is an international partnership of Christians whose mission is to work with the poor and oppressed to promote human transformation and seek justice, regardless of race, ethnicity, gender or religion. World Vision pursues this mission through integrated, holistic commitment to transformational development (community-based and sustainable programme development, focused especially on the needs of children), emergency relief, promotion of justice, strategic initiatives and public awareness in more than 95 countries.
2. World Vision's commitment in East Timor dates as far back as 1995. The ongoing Area Development Programme (ADP) in the Aileu district is addressing community needs through education, health and community organizing programmes. World Vision sponsors the education of approximately 2 000 children; facilitates the development of youth and women groups; mobilizes communities to manage and provide preventive and curative services; and provides training in entrepreneurship and agricultural activities.
3. WV is currently involved in a multisectoral programme in the four districts of East Timor (Aileu, Bobonaro, Ermera and Liquica) that includes food aid, primary and curative health care, shelter provision and agriculture. In the just-concluded fiscal year, WV was able to respond promptly to the needs of resettling families. A total of 153 000 kg of assorted seed was delivered to over 20 000 beneficiaries during the period. WV food aid has delivered a total of over 10 000 tonnes (t) of food aid (from FFW) to the four districts of Aileu, Bobonaro, Ermera and Liquica in partnership with WFP. All the related logistic management and field food programming was handled by WV staff. The WV health sector supported reconstruction of health facilities, and ongoing mobile health-care services in the Aileu and Bobonaro districts cover approximately 50 000 individuals. The regional sector programmes were complemented with a shelter programme in the districts of Aileu, Ermera and Liquica. Over 8 000 kits of roofing material were given out to benefit a population of 40 000 people.
4. World Vision's work in agricultural field trials involves developing alliances with a number of international research institutions such as the International Centre for Research in Agriculture and Forestry (ICRAF), the International Institute of Tropical Agriculture (IITA), the International Potato Centre (CIP) and the International Centre for Tropical Agriculture (CIAT). World Vision will seek further regional collaboration in areas such as agroforestry and watershed development with the Australian State Departments, NGOs and universities within the region.

Administrative Structure

5. World Vision's work in East Timor is currently under the leadership of World Vision's Bangkok-based Asia Pacific Regional Office (APRO). Overall management in East Timor is led by programme director, Mrs Dineen Tupa, who has extensive experience in managing country programmes in the developing world, was the former relief director for APRO, and will be present to provide general leadership for the programme. In addition, a team of 14 expatriates will be working in East Timor. All staff has had ample experience in commodities, finance, logistics, programme design, community health, agriculture and community development from different countries, including Angola, Bangladesh, Indonesia, Kenya, Mozambique, The Philippines, Sierra Leone, Somalia and southern Sudan. The entire programme will engage the commitment of 223 national staff to execute the operational side of the sector programmes. Oversight will be provided by the central office in Dili, while there will be a permanent base office in each operational district, including Aileu, Bobonaro, Ermera and Liquica.



Project Management

6. The agriculture programme will be supported by a total of one expatriate manager, one expatriate project officer and 34 national staff. The manager, extension leader, farmer-training coordinator/gender will constitute a Dili-based core team that provides overall management. The rest of the staff will be positioned in the field to implement the operational side of the programme. The existing extension service network in the Bobonaro district comprises five people with extensive experience in extension-service delivery. Two additional staff will be hired to reside and work in the pilot project area for close supervision and monitoring purposes.

7. World Vision East Timor programme has a qualified finance manager, grant accountant and several bookkeepers who manage multidonor funds from bilateral and private sources. The Bobonaro watershed project activities will constitute about 30% of World Vision's agricultural budget for FY2000-01. The costs for benefits and salaries for the general management covered under the watershed project are about 15% of their total annual operating costs, mainly under logistics, administration and financial management.



AGRICULTURAL PRODUCTION SYSTEMS

1. East Timor's rural economy is largely dominated by subsistence, low-input agriculture employing over 90% of the population.

Land-Use Patterns

2. East Timor's sundry landforms, soil types, temperature ranges and precipitation intensity and duration create a habitat that accommodates a broad range of both tropical and temperate food crops and livestock. Staple food crops include corn, rice, cassava and banana. Other common crops of relative importance are sweet potato, pumpkin, yams, legumes, Irish potatoes, tropical and temperate vegetables and fruit trees. Variations in geographical adaptation do exist, thus creating location-specific crop varieties that optimize production within a given ecological niche. Short-duration crop varieties are favoured in areas with erratic or short rainfall, in areas with a short second season and dry-season irrigated crops. Longer duration varieties are widespread in areas with ample rainfall, habitually occupying a certain time slot within the planting calendar that optimizes farmers' scarce labour resources.

Livestock Production Systems and Trends

3. National livestock production figures for 1996 estimated 136 637 cows, 69 239 buffalos, 186 950 goats, 378 036 pigs and 1 021 114 chickens (54% local and 46% improved chickens) and 32 422 herds of sheep. Out of the total number of improved/imported chickens in the country, about 8% were pullets (for egg production) and the rest broilers. Animal husbandry is primarily of a subsistence nature under a free-range system. Livestock ownership is a form of immediate family wealth reserve (wealth stock) and is easily convertible through sales or slaughter into cash money when the need arises. Occasionally it serves as a direct source of food. Small stocks (such as chicken and young weaning pigs) are preferred during festivals and important home visits. Self-restocking is practised by many farmers and is prevalent in households that have bumper-crop harvest or extra income. Average numbers of stock per person are relatively low, due to the high risk associated with lack of animal health-care services. Pig meat is the most-commonly consumed animal product, with a total of 1 238 178 kg of pork meat consumed annually, followed by cows (1 047 542 kg), chicken (1 021 114 kg), buffalo (339 148 kg) and goat (413 068 kg). East Timor farmers lost most their livestock during the post-referendum conflict in September 1999. A reduction in livestock units meant loss of assets and loss of family livelihood support, denying direct access to related food products and weakening the family coping mechanisms.

Local Farming Systems

4. Farmers practice both traditional and improved farming methods. The traditional farming system utilizes natural soil fertility built during the previous fallow period. Fields are prepared using slash-and-burn techniques, crops are raised for one to three years, depending on the fertility levels, before the field are left again to fallow. Under this method, newly opened fields are first planted with more exacting crops, i.e., corn in the first year, and later replaced by less exacting crops such as cassava, beans and banana and fruit-tree crops. The hillside areas remain the least developed, especially where traditional shifting cultivation is practised. In the past, government policies forced communities to remain settled in some of these areas, creating higher population pressure than the environment could handle, thus leading to massive soil losses due to continuous cultivation on the slope land, without improved management practices.



National Food Security Situation

5. About 147 00 ha of land are under cultivation in East Timor (Table 1, Appendix III). Food crops represent 69% and 31% is utilized for cash-crop farming. Corn, cassava and rice plantation accounts for over 50% of the total land under food crops. Annual produce from paddy rice, corn and cassava fields contributes slightly over 80% of the total domestic food supply, excluding data for banana, yams and pumpkin (Table 2, Appendix III). Small backyard vegetable production is prevalent in most households. Larger vegetable gardens with commercial output are found in the high-altitude regions of Bobonaro, Ermera and Liquica districts, where cool temperatures permit and help maintain reasonable humidity, ideal for vegetable growth. Districts with a higher percentage of land under cash crops (e.g., Ermera district) often rely on cereal food imports from other neighbouring districts. In addition, they grow a wide range of meal crops such as cassava, sweet potato, legumes, pumpkin and yams that become major sources of family food during the lean period (June-November).

6. FAO and WFP project a national cereal supply-demand balance sheet of 175 600 t (mainly corn and rice) for the current production cycle (April 2000-March 2001) for a population of approximately 800 000 people (per capita/per annum requirements = 219.5 kg).¹ Production in the 1999/2000 season is estimated at just over 131 000 t of corn and rice, supplying approximately 75% of the total cereal needs of the country (or sufficient food for nine months). A national cereal deficit of 44 600 t is anticipated. The food-aid pipeline is projected to provide an additional 18 000 t, and other internal sources of cereal substitutes, such as root tubers, banana and pumpkin, are expected to cover a cereal equivalent of 12 500 t. This leaves an overall cereal deficit of about 14 100 t to be covered through commercial imports.

Rainfall Distribution and Intensity

7. The climate and rainfall pattern of East Timor have considerable bearing on the local food-production systems. East Timor has two main seasons, a short wet season (wet monsoon), with high-intensity rainfall from between November to March, followed by a long dry season (dry monsoon) from April to October. The relative humidity of both monsoons increases with an increase in altitude, thus extending the rainfall duration in the mountains. The country experiences two rainfall patterns: the Northern monomodal rainfall pattern, defined by a 4-6-month wet season with a single peak between December and February, and a southern bimodal type, with a 7-9-month wet season and two peaks, one in December-February and the second in May-June. Rainfall distribution for Bobonaro is indicated in Figure 1.

Land-Use Systems

8. Rainfall patterns, altitude, slope and soil types constitute the major land elements used in defining the production potential of land in East Timor. Three distinct land-use systems are identified with regard to production of the national staple food crops.

- (a) *Low-agricultural-potential areas* comprise the northern lowlands. These areas have an unreliable wet season, poor soils and low ground cover in some areas. However, there are pockets of alluvial deposits along riverbanks and estuaries along the coast with good agricultural potential. Corn and rice are grown in irrigated alluvial soils along river valleys. In the upland zones, drought-resistant root crops (cassava, sweet potato, tropical fruit trees), legumes and short-variety corn are preferred.
- (b) *High-agricultural-potential areas* are mainly areas along the southern coast and the immediate lower slopes. These areas are renowned for their long, reliable rainfall season.

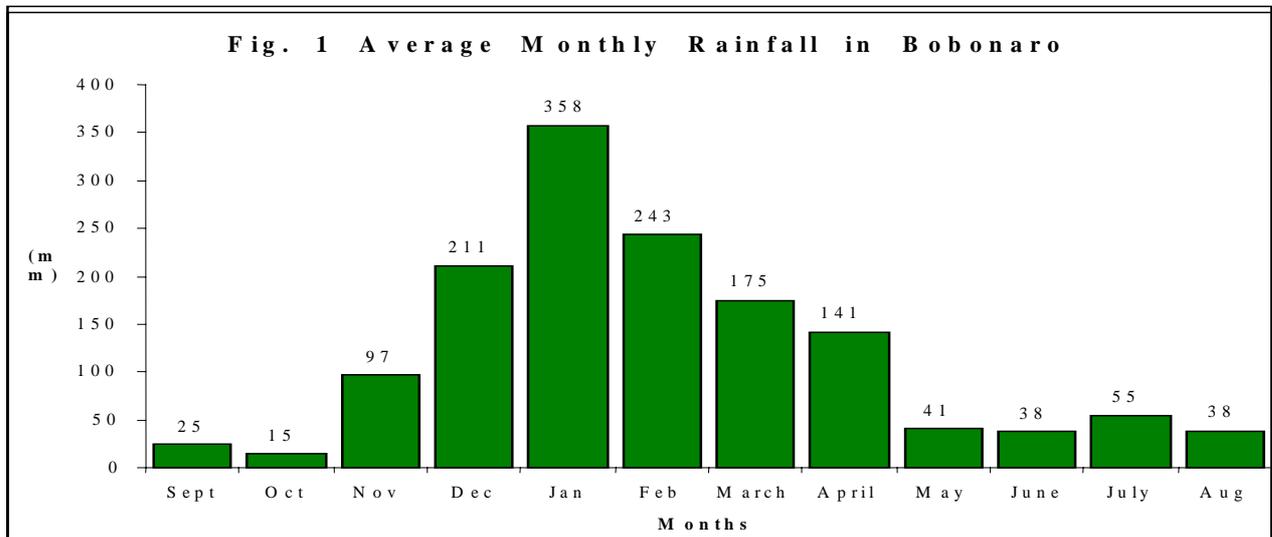
¹ FAO/WFP Special Report, April 2000: consumption needs based on documented production and availability include: 367g/day/family member of maize and 135g/day/family member for rice, giving a total cereal consumption of 502g/day/family member. This level of cereal production is about 10% higher than the minimum recommended level of 450g/day/family member in a daily diet of 2100 Kcal.

They have rich, well-drained soils, with gently undulating to moderate slopes. Pockets of unsuitable soils do exist, while susceptibility of soils to flooding is a common feature in some places.

- (c) *Moderate-agricultural-potential areas* include highland regions along the central part of the country. Large areas of Aileu, Bobonaro and Ermera districts fall within this land-use definition. The potential for food crops and livestock is generally limited, in the absence of specific management practices suited to the soils, slope and localized rainfall regime. Limited rice production is practiced using rain-fed irrigation on steep contoured slopes. Corn, cassava, and sweet potato are cultivated along the steep slopes using slash-and-burn methods with and without major soil-conservation improvements. In general, a high potential exists in areas with suitable soils for tree crops such as coffee, candlenut, and sandalwood. High elevations are traditional gardens for both temperate and Mediterranean crops such as soybean, vegetables and European potato, while cocoa dominates on the lower slopes.

Existing Limitations on Land-Use

9. In general, steep slopes are a major land limitation for annual-crop farming activities, and farming can only be sustained with proper soil-conservation practices. Soil erosion is evident in all the land-use systems, with significant annual soil losses as a result of a combination of factors, including high precipitation, steep slopes and past and present land-use practices. Data on the annual soil loss in East Timor was either destroyed during the crisis or is lacking. Post-conflict agricultural rehabilitation programmes should have a built-in community soil-conservation component to ensure sustainability.



APPENDIX III

TABLE 1: LAND CULTIVATION^a

District	Area under Cultivation in ha			Per Cent Coverage by District		
	Food Crop	Cash Crop	Total	Total Crops	Food Crop	Cash Crop
Kova Lima	10 000	1 600	11 600	7.9%	86.2%	13.8%
Ainaro	5 700	1 400	7 100	4.8%	80.3%	19.7%
Manufahi	7 000	8 400	15 400	10.4%	45.5%	54.5%
Viqueque	9 000	3 400	12 400	8.4%	72.6%	27.4%
Lautem	5 000	5 400	10 400	7.1%	48.1%	51.9%
Baucau	12 900	1 500	14 400	9.8%	89.6%	10.4%
Manatutu	10 400	1 000	11 400	7.7%	91.2%	8.8%
Dili	1 700	-	1 700	1.2%	100.0%	0.0%
Aileu	2 100	100	2 200	1.5%	95.5%	4.5%
Liquica	1 700	5 000	6 700	4.5%	25.4%	74.6%
Ermera	8 600	17 000	25 600	17.4%	33.6%	66.4%
Bobonaro	15 200	900	16 100	10.9%	94.4%	5.6%
Ambeno	12 400	-	12 400	8.4%	100.0%	0.0%
Total	101 700	45 700	147 400	100.0%	69.0%	31.0%

Source: Central Bureau of Statistics, 1996, for East Timor Province.

^a Discrepancies in totals are due to rounding.

TABLE 2: EAST TIMOR CROP PRODUCTION STATISTICS IN METRIC TONNES – FAO APRIL 2000

Crop Type	1990	1991	1992	1993	1994	Mean	Percentage
Rice	54 700	56 200	56 300	64 000	72 400	60 720	24%
Maize	89 300	94 100	94 400	104 400	117 200	99 880	39%
Cassava	32 300	48 300	52 200	69 900	94 100	59 360	23%
Sweet potato	7 300	8 900	10 400	19 100	26 000	14 340	6%
Vegetable	12 200	12 500	13 100	13 000	16 200	13 400	5%
Green pea	2 300	2 600	3 900	4 200	1 200	2 840	1%
Peanuts	2 000	2 300	2 900	3 200	4 500	2 980	1%
Soybean	250	650	1 230	1 580	810	904	0%
Total	200 350	225 550	234 430	279 380	332 410	254 424	100%



ACTIVITY SCHEDULE

	2001											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
I. Community awareness and mobilization campaign												
I-1. Conduct rural appraisals in watershed communities of Bobonaro	X	X										
I-2. Selection of a pilot community for the watershed project.		X										
I-3. Develop and establish community governance structures			X	X								
I-4. Facilitate community decision-making process				X	X	X	X	X	X	X	X	X
II. Participatory land-resource management activities												
II-1-1. Establish a WV liaison office in the community		X										
II-1-2. Facilitate the development of a community plan of action			X	X								
II-2. Provide training for key leaders in commodity management skills				X	X	X	X					
II-3. Procure and distribute tools for communal activities				X	X	X	X	X	X	X	X	X
II-4. Provide food-for-work payments for communal activities				X	X	X	X	X	X	X	X	X
II-5. Monitor progress on communal activities	X	X	X	X	X	X	X	X	X	X	X	X
III. Establish a women's project in income-generation/credit schemes												
III-1. Facilitate formation of women's self-help groups	X	X										
III-2. Provide training for entrepreneurial skills			X									
III-3. Facilitate leadership development			X	X								
III-4. Establish a microfinancing facility for women's groups				X	X	X	X	X	X	X	X	X
IV. Technology testing, dissemination and extension-service support												
IV-1-1. Select a demonstration farm			X									
IV-1-2. Procure demonstration-farm inputs			X									
IV-1-3. Launch a demonstration plot				X	X	X						
IV-1-4. Carry out innovation testing				X	X	X	X	X	X	X	X	X
IV-2. Establish an agroforestry nursery				X								
IV-3. Distribute agroforestry seedlings								X	X	X	X	
IV-4-1. Report	X	X	X	X	X	X	X	X	X	X	X	X
IV-4-2. Coordinate activities (UNTAET and other agencies)	X	X	X	X	X	X	X	X	X	X	X	X