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SPECIAL ECONOMIC AND DISASTER RELIEF ASSISTANCE: SPECIAL PROGRAMMES OF ECONOMIC ASSISTANCE

Assistance to Swaziland

Report of the Secretary-General*

1. In response to a request received from the Government of Swaziland, the Economic and Social Council, in its decision 1984/106 of 10 February 1984, requested the Secretary-General to send an inter-agency mission to Swaziland to assess that country's priority needs in the light of the cyclone damage incurred in January 1984 and its medium-term and long-term implications for the economy.

2. The Secretary-General arranged for a mission led by the Under-Secretary-General for Special Political Questions to visit Swaziland from 30 April to 5 May 1984. The mission's report, which is annexed to this document, describes the economic situation of Swaziland and contains an assessment of damage that resulted from the cyclone. It also provides details of the emergency response to the disaster and of outstanding requirements for assistance.

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* The present report is circulated to the members of the General Assembly in response to a note verbale dated 30 August 1984 from the Permanent Representative of Swaziland addressed to the Secretary-General concerning the inter-agency mission that visited Swaziland from 30 April to 5 May 1984 on the special programme of economic assistance for that country. In the note verbale, he requested that "the report of the mission be issued at the current session of the General Assembly".

ANNEX

Report of the mission to Swaziland

(30 April-5 May 1984)

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I. INTRODUCTION

1. In response to a request received from the Government of Swaziland, the Economic and Social Council, in its decision 1984/106 of 10 February 1984, requested the Secretary-General to send an inter-agency mission to Swaziland to assess that country's priority needs in the light of the cyclone damage incurred in January 1984 and its medium-term and long-term implications for the economy.

Nature of the disaster

2. Cyclone Domoina struck Swaziland on 28-30 January 1984. The eye of the cyclone passed from north to south through the centre of the country. More than 500 millimetres of rain was registered at virtually all recording stations, the highest rainfall for a two-day period ever recorded in the country. Hydrologists estimate flood-return periods (cycle of probable recurrence) at 200-500 years. While some wind damage was recorded, the bulk of the damage was caused by water, mainly by river flooding, although heavy rain was in itself responsible for damage to some buildings and crops. The official number of confirmed deaths as compiled by the Royal Swaziland Police is 53, and 12 persons were officially reported as missing. However, the actual number is probably higher, since reporting from remote areas may be incomplete.

Scope of work of the mission

3. A mission led by the Under-Secretary-General for Special Political Questions visited Swaziland from 30 April to 5 May 1984. The mission was composed of the Director of the Unit for Special Economic Assistance Programmes, a Principal Officer from the Office for Special Political Questions and a transportation consultant. Information compiled by the United Nations Resident Co-ordinator, who has acted as the focal point in co-ordinating donor emergency assistance to Swaziland, greatly assisted in the preparation of this report, as did his participation in all aspects of the mission's work. Recent reports prepared by other United Nations offices and organizations of the United Nations system, including the Office of the United Nations Disaster Relief Co-ordinator (UNDRO), the World Food Programme (WFP), the World Bank and the International Monetary Fund (IMF), provided valuable background information.

4. Several government ministries provided an account of the cyclone and flood damage, which constitutes the basis for the present report. The mission also met with donor representatives present in Swaziland, who provided valuable suggestions on assistance requirements. Mission members also visited selected areas affected by the disaster.

5. Since the most damage by far was incurred in the transportation sector, the mission reviewed in some detail the damage to transportation infrastructure and, in consultation with relevant government officials and technical experts, formulated a programme and identified rehabilitation projects in that sector. The mission also reviewed with the Government other infrastructural reconstruction requirements resulting from the cyclone and flood damage and proposals for rehabilitation and reconstruction.

6. Many of the immediate needs were met by the Government and the international community during the emergency assistance phase following the disaster. Damage to the private sector, although considerable, was considered beyond the scope of the mission and therefore has not been detailed in this report. The mission leader reviewed the conclusions of the mission with the Prime Minister and other government ministers.

II. ECONOMY OF SWAZILAND

A. Economic situation

7. Swaziland is a land-locked developing country of 17,360 square kilometres with a population of about 600,000 and an estimated per capita income of E 950 in 1982 (approximately $US 880 at the 1982 exchange rate of E 1 = $US 0.93).* Bounded by Mozambique on the east and South Africa on the north, west and south, Swaziland has three topographical and climatic regions: the high veld, with a temperate climate, the middle veld, which is suitable to food crops, and the low veld, which has a hot and dry climate and is subject to periods of protracted drought (see map in appendix). The majority of Swazis reside in rural areas and are engaged in subsistence farming and one third of the labour force is employed in the modern sector. Six per cent of the labour force works in the mines of South Africa and contributes to the economy through remittances. The economy is both dualistic and open, with foreign trade representing two thirds of gross domestic product (GDP).

8. The agricultural sector plays a vital role in the Swazi economy in terms of its contribution to GDP, export earnings, manufacturing activities and employment opportunities. Agriculture generates one quarter of GDP, contributes 71 per cent of export earnings and provides partial or full employment for 75 per cent of the labour force. Swaziland has a range of topographic, climatic and soil characteristics that permits the growth of a variety of foodstuffs and commercial crops, as well as forestry and livestock production. The Swazi system of land tenure, comprising Swazi Nation Land and individual tenure farms, reflects the dual structure of the agricultural sector. In the traditional sector, maize, livestock and about one half of the cotton and tobacco crops are produced on Swazi Nation Land. The modern sector, which includes plantation agriculture and processing, produces sugar, wood pulp, sawn timber, citrus fruits and canned pineapple for export.

9. Swazi Nation Land is owned by the Swazi Nation and is administered under the system of tribal chiefs. Individual farmers use this land on the basis of traditional tenure rights (usually that a family has farmed a particular plot for generations). In the 1980/81 agricultural year, Swazi Nation Land constituted about 65 per cent of the crop land in use and 73 per cent of the grazing land.

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* The monetary unit in Swaziland is the lilangeni (E) (plural: emalangeni). As at 1 May 1984 the value of the lilangeni in relation to the United States dollar was E 1 = $US 0.80.

Table 1 shows the major food crops grown on Swazi Nation Land, mainly maize, and table 2, the major crops of individual tenure farms, mainly sugar.

10. Table 3 shows GDP by sector of origin. The manufacturing sector grew by 7.4 per cent per annum during the period of the Third National Development Plan (1978-1983), increasing its share of GDP from 20 per cent to 23 per cent. Agricultural and forest-related processing industries accounted for three quarters of the manufacturing sector. Besides agriculture and manufacturing, the major sectors contributing to GDP are government services (18 per cent), trade (7 per cent), transport and communications (7 per cent), construction (7 per cent) and mining (3 per cent).

11. Swaziland maintained an annual growth rate of GDP of approximately 5 per cent during the late 1970s and early 1980s and relatively high levels of investment (30 per cent of GDP). Drought in 1982 and 1983 resulted in a decline in agricultural output and necessitated the use of food aid to supplement commercial imports in order to feed the population of approximately 600,000 inhabitants. Recession in the economy of its main trading partner, South Africa, during the past two years has had adverse effects on the growth of the Swazi economy in 1983. As a result of these two factors, real GDP declined in 1982 and 1983.

12. The industrial subsector, for the most part foreign owned, grew significantly in the 1970s but is now hindered by the competitive industrial incentive programmes for the "homelands" of South Africa. Tourism and mining also contribute to export revenue and tax receipts. Although the traditional sector does not contribute to government revenue or export receipts, in most subsistence farm families, more than one person works at least part of the year for wages in the modern sector. Unemployment and underemployment pose increasingly serious problems. Swaziland's formal sector has been able to provide jobs for only 2,400 out of 7,000 primary-school leavers annually. Furthermore, the number of Swazi employed as miners in South Africa has declined from 21,000 in 1976 to 10,000 in 1983 owing to the recession in the mining industry and the policy of giving preference in hiring to inhabitants of South African "homelands".

13. The principal minerals exploited in Swaziland are asbestos and coal. The mining industry in Swaziland has been declining in importance owing to the closure of the iron ore mine in 1977 and decreasing production of coal and asbestos. However, there has been substantial growth in the manufacturing sector, which now rivals the agricultural sector in importance to the economy.

14. Swaziland possesses both coal and hydroelectric sources of energy, and some industrial concerns use sugar and forest by-products to generate energy. However, most of the country's energy needs are met by imported petroleum. Severe drought conditions in 1983 reduced hydroelectric output to its lowest level ever, necessitating the importation of hydroelectric power. A new hydroelectric generation project completed in March 1984 has raised domestic generation capacity by two thirds, which will meet domestic power requirements in the near future.

Table 1. Food crop statistics for Swazi Nation Land, 1978/79-1982/83 a/

	1978/79	1979/80	1980/81	1981/82	1982/83
Output			Thousands of metric tons		
Maize	97.5	96.7	93.7	61.8	51.3
Sorghum	1.6	1.6	1.1	1.1	1.1
Beans	1.1	0.3	0.9	0.7	0.7
Ground-nuts	1.5	1.3	0.6	0.5	0.5
Jugo beans	1.4	1.4	1.6	1.4	1.4
Area under cultivation			Thousands of hectares		
Maize	71.1	71.1	55.7	58.9	57.0
Sorghum	2.3	2.3	1.6	2.2	2.1
Beans	1.1	1.1	1.8	2.0	1.8
Ground-nuts	2.7	2.7	1.5	1.7	1.5
Jugo beans	2.6	2.6	1.8	1.7	1.3
Yield			Metric tons per hectare		
Maize	1.4	1.4	1.7	1.1	0.9
Sorghum	0.7	0.7	0.7	0.7	0.5
Beans	1.0	0.3	0.5	0.4	0.4
Ground-nuts	0.6	0.5	0.4	0.3	0.3
Jugo beans	0.5	0.5	0.9	0.8	1.1

Source: Data provided by the Government of Swaziland.

a/ Crop year beginning 1 September.

Table 2. Major crops of individual tenure farms, 1978/79-1982/83 a/

	1978/79	1979/80	1980/81	1981/82	1982/83
Production			Thousands of metric tons		
Sugar cane	2 242.4	2 195.9	2 782.3	3 249.7	3 491.7
Cotton	6.9	9.2	10.9	5.9	3.8
Pineapples	29.9	27.6	29.3	30.0	34.7
Rice	5.0	0.3	0.9	0.9	0.3
Maize	10.0	8.8	9.0	9.0	9.0
Citrus fruits	62.4	57.4	66.6	66.6	64.7
Total	2 356.6	2 299.3	2 898.1	3 363.2	3 609.5
Total value			Thousands of emalangeni		
Sugar cane	31 159.4	34 383.9	55 050.1	80 450.5	82 941.8
Cotton	4 049.0	4 007.4	4 309.0	3 454.5	4 563.5
Pineapples	996.6	1 263.0	1 263.0	1 437.0	2 216.2
Rice	815.0	76.9	230.7	230.7	94.1
Maize	315.0	633.6	648.0	648.0	648.0
Citrus fruits	8 703.2	9 157.6	10 376.2	10 376.2	15 129.0
Total	64 038.2	49 522.4	71 877.0	96 596.9	105 592.6

Source: Data provided by the Government of Swaziland.

a/ Precise crop years vary.

Table 3. Gross domestic product by sector of origin at constant 1980 prices, 1978-1982

(Millions of emalangeni)

	1978	1979	1980	1981	1982
Agriculture	81.7	78.6	88.2	99.8	94.1
Crop production on Swazi Nation Land	15.3	11.1	15.0	15.5	8.6
Crop production on individual tenure land	44.0	43.1	52.5	61.0	63.8
Other agriculture	22.4	24.4	20.7	22.3	21.7
Forestry	5.2	4.8	5.3	5.7	5.9
Mining	15.4	14.5	14.1	14.6	12.2
Manufacturing	69.8	71.6	79.6	88.4	92.6
Electricity and water	3.3	3.6	4.4	4.7	4.5
Construction	27.9	25.1	16.2	18.7	13.7
Wholesale and retail trade	25.4	26.1	27.0	27.7	26.5
Hotels and restaurants	7.4	8.2	8.6	7.3	8.2
Transport	22.3	22.7	17.3	17.9	17.8
Communications	2.1	2.0	3.2	3.5	3.6
Banks and other financial institutions	11.5	12.5	13.6	15.4	15.1
Real estate and other business services	9.9	10.1	10.0	10.7	10.7
Government services	56.2	57.9	61.1	66.1	71.5
Other community, social and personal services	11.7	12.1	12.4	13.1	13.7
Owner-occupied dwellings	14.3	15.0	15.6	15.8	16.0
Less imputed bank service charge	-10.6	-10.6	-10.9	-12.3	-12.1
GDP at factor cost	353.5	354.2	365.9	396.1	394.0

Table 3 (continued)

	1978	1979	1980	1981	1982
Memorandum items					
Real growth rate (percentage)	10.9	0.2	3.3	8.2	-0.5
GDP at factor cost in current prices	260.9	299.3	365.9	444.5	465.2
Implicit GDP deflator (1980=100)	73.8	84.5	100.0	112.2	118.1

Source: Data provided by the Government of Swaziland.

Note: Totals may not add precisely because of rounding.

15. Structurally, Swaziland's gross domestic expenditure exceeds gross domestic output (table 4). Since 1978, the government share of consumption has increased and that of the private sector has decreased despite a drop in public fixed capital investment since 1980. Although the resource gap has declined in relative terms, it is substantial - approximately 40 per cent of GDP - requiring high levels of capital inflows.

Table 4. Gross domestic product by expenditure, 1978-1982

(Percentage of GDP at market prices)

	1978	1979	1980	1981	1982 a/
Consumption	110.3	105.5	105.1	103.4	106.9
Government	21.8	20.1	22.3	24.1	26.2
Private	88.5	85.4	82.8	79.3	80.7
Gross fixed capital formation	37.3	40.8	31.8	28.4	29.8
Change in stocks	-0.9	1.6	5.1	2.8	3.6

Table 4 (continued)

	1978	1979	1980	1981	1982 a/
Resource gap	-46.7	-47.9	-42.0	-34.6	-40.3
Exports of goods and non-factor services	49.4	64.3	69.0	68.9	70.4
Imports of goods and non-factor services	-96.1	-112.2	-111.0	-103.5	-110.7

Source: Data provided by the Government of Swaziland and staff estimates.

a/ Preliminary figures.

16. Throughout the 1970s government revenues exceeded expenditures, resulting in a substantial government surplus. Since 1981, government revenues have not kept pace with expenditures (table 5) and for three consecutive years the Government has had to finance the deficit by utilizing reserves and borrowing. Fiscal policy is the major macro-economic policy tool in Swaziland, since, as a participant in the Rand Monetary Area agreement, monetary policy is constrained by the one-to-one backing of the lilangeni by the South African rand, which causes the fiscal balance to be transmitted directly to official foreign exchange holdings. On the revenue side, the South African Customs Union (SACU), an arrangement among Botswana, Lesotho, South Africa and Swaziland to set uniform tariffs and excises, historically contributes approximately 60 per cent of government revenue. On the expenditure side, the rapid growth of expenditure in 1981-1982 has been halted, although increases in expenditure have exceeded increases in revenue despite the introduction of additional tax measures by the Government.

Table 5. Central government operations, 1979/80-1984/85

(Millions of emalangeni)

	1979/80	1980/81	1981/82	1982/83	1983/84 Budget	1983/84 Preliminary estimate	1984/85 Preliminary budget
Revenue and grants	133.4	163.3	134.2 a/	182.1 a/	189.9	195.1	214.2
Tax revenue	119.0	139.9	119.6	163.3	164.5	175.4	192.8
Non-tax revenue	7.2	14.0	10.2	13.4	16.6	14.6	15.0
Grants	7.2	9.4	4.4	5.4	8.8	5.1	6.4
Expenditure and net lending	131.2	142.2	182.2	199.4	198.2	211.0	216.7
Current expenditure	65.3	84.5	109.1	124.0	117.6	135.4	144.9
Capital expenditure	44.7	45.3	61.9	57.7	67.5	59.5	63.4
Net lending	21.2	12.4	11.2	17.7	13.1	16.1	8.4
Overall surplus or deficit (-)	2.2	21.1	-48.0	-17.3	-8.3	-15.9	-2.5
Financing	-2.2	-21.1	48.0	17.3	8.3	15.9	2.5
Foreign	9.1	6.2	6.3	0.8	5.0	-0.5	-0.5
Gross borrowing	12.1	11.0	12.3	10.5	14.7	9.2	10.2
Amortization	-3.0	-4.8	-6.0	-9.7	-9.7	-9.7	-10.7
Domestic borrowing	-11.3	-27.3	41.7	16.5	3.3	16.4	3.0
Monetary authorities	-3.0	-21.7	38.2	6.2	--	5.0	1.0
Banks	-13.2	-7.8	1.2	10.3	1.0	8.0	1.0
Other	4.8	2.2	2.3	--	2.3	3.4	1.0

Source: Data provided by the Government of Swaziland and staff members.

a/ Some E 30 million received from the South African Customs Union in 1982/83 was generated in 1981/82.

17. In 1982, earnings from Swazi sugar exports fully reflected the drop in world sugar prices and the imposition of import quotas. As a result, total domestic exports rose by only 4 per cent in 1982 and are unlikely to have increased in 1983 (table 6). Drought in 1982 and 1983 reduced maize production by more than 50 per cent of normal levels and made necessary large-scale commercial importation of food. During this period Swaziland's balance of trade deteriorated. During both 1982 and 1983 capital inflows increased substantially as a result of public sector borrowing and grants-in-aid, which more than offset the increased trade deficit. At the end of 1983 foreign reserves represented about two months' imports, external debt stood at $US 175 million or 30 per cent of GDP, and debt service payments of $US 11.2 million represented 3 per cent of export earnings.

Table 6. Summary balance of payments, 1978-1983

(Millions of emalangeni)

	1978	1979	1980	1981	1982	1983 a/
Exports, f.o.b.	172.8	203.4	286.9	340.3	349.4	356.0
Imports, f.o.b.	-230.2	-322.1	-414.3	-461.8	-491.2	-500.3
Imports, c.i.f.	-270.8	-366.0	468.5	519.7	562.8	-577.0
Adjustments for South African Customs Union	36.0	37.8	46.0	48.1	61.3	66.0
Other adjustments	4.6	6.1	8.2	9.8	10.3	10.7
Trade balance	-57.4	-118.7	-127.4	-121.5	-141.8	-144.3
Services and income: credit	46.0	56.1	54.9	70.0	90.7	95.0
Services and income: debit	-68.4	-70.9	-71.9	-79.5	-86.2	-91.0
Balance on goods, services and income	-79.8	-133.5	-144.4	-131.0	-137.3	-140.3
Official unrequited transfers (net)	13.5	15.4	27.1	22.7	28.2	34.0
Private unrequited transfers (net)	-1.0	-1.4	-1.9	0.5	0.4	--
Non-duty South African Customs Union receipts	16.0	29.8	37.7	20.6	42.5	54.0

Table 6 (continued)

	1978	1979	1980	1981	1982	1983 a/
Current account balance	-51.3	-89.7	-81.5	-87.2	-66.2	-52.3
Long-term capital received (net)	59.7	78.4	40.9	41.9	48.5	45.2
Public sector	40.8	31.7	18.5	12.0	22.1	31.4
Drawings on loans received	42.3	34.8	22.5	18.7	33.1	45.0
Payments on loans received	-1.5	-3.1	-4.0	-6.7	-11.0	-13.6
Private sector	18.9	46.7	22.4	29.9	26.4	13.8
Basic balance	8.4	-11.3	-40.6	-49.3	-17.7	-7.1
Deposit money banks	5.0	3.1	4.5	-2.5	-1.0	1.7
Other short-term capital (including errors and omissions)	0.7	2.9	60.5	20.6	19.0	21.8
Overall balance	14.1	-5.3	24.4	-27.2	0.3	16.4
Reserves	-14.1	5.3	-24.4	27.2	-0.3	-16.4
Central bank foreign assets	-15.3	6.7	-10.2	17.8	-9.5	-37.5
Central bank foreign liabilities	2.3	-0.3	-1.7	-0.5	0.2	11.6
To IMF	--	--	--	--	--	11.6
Other	2.3	-0.3	-1.7	0.5	0.2	--
Government balances abroad	-1.1	-1.1	-12.5	8.9	9.0	9.5

Source: Central Bank of Swaziland.

a/ Estimated figures.

B. Prospects for the economy

1. Overall growth

18. Although the cyclone caused widespread destruction, it will probably have a positive effect on this year's maize crop. The rains that accompanied and followed the cyclone broke the two-year drought, and this year's crop could approach normal levels. Significant growth in other sectors of the economy is unlikely to occur owing to the depressed state of international markets, and unemployment is projected to increase. With the economy projected to grow at an annual rate of only 2 per cent in real terms in 1984 and 1985 and population projected to grow at 3.5 per cent per annum, employment opportunities are likely to fall short of additions to the labour force.

2. Public finances

19. Increased tax revenue and an expenditure policy of restraint reduced the projected government 1983/84 deficit to 3 per cent of GDP. However, the additional burden of emergency expenditures imposed by the cyclone, together with the decline in government revenue due to the reduction in corporate profits caused by cyclone damage, will result in a larger budgetary deficit that will have to be financed by external borrowing. Much of the damage required the immediate expenditure of substantial sums for such purposes as railways ($US 10 million), hospitals ($US 1 million), telecommunications, electricity ($US 1 million), etc. Because of the urgency of crucial repairs, financial assistance from the international community could not be sought before this work was implemented. Although such anticipated expenditures have yet to be accurately totalled, an increase in the government deficit of more than an additional E 10 million is expected in the current fiscal year.

3. Agriculture

20. Agricultural output has the potential to expand further in both the traditional and modern sectors, reducing food import requirements and expanding exports. Although maize producers' prices are maintained at a level slightly higher than import parity prices, in the traditional sector the return per work day for growing hybrid maize is estimated to be 20 per cent less than the minimum urban daily wage. Thus, the opportunity for wage employment creates "absentee farms". In the modern sector, Swaziland is considered a low-cost producer of sugar and as such should survive the current slump in sugar prices. However, the sugar mills are currently operating at a loss, and it is unlikely that sugar will contribute to government resources in the short term, since sugar prices are projected to remain depressed. In the medium term, forest products offer substantial growth prospects, since natural conditions in Swaziland are excellent for plantation forests. Citrus fruits also offer prospects for export revenue growth.

4. Manufacturing and mining

21. In manufacturing, it is expected that close to 2,000 jobs will be lost in 1984 owing to the competition from highly subsidized private enterprises that relocate to the "homelands" in South Africa. Medium-term prospects for asbestos and coal mining are positive if international markets improve. A third international rail route is under construction to exploit high-grade coal reserves in the northern part of the country, which would be exported through a second coal-handling facility at the port of Reiharels Bay in South Africa.

5. Balance of payments

22. In Swaziland, given the monetary arrangements with South Africa, a reduction in government deposits has the same effect as a reduction in official international reserves. In a small open economy such as Swaziland's, the additional government expenditures to repair the cyclone damage necessitate, for the most part, additional imports. For example, the E 10 million in foreign contracts to repair the railway lines is largely for the direct importation of goods and services.

23. Swaziland's current-account deficit historically has been 20 per cent of GDP and has been financed by public sector borrowing, private sector foreign investment and short-term capital flows that are volatile because of their sensitivity to interest rate differentials between Swaziland and South Africa. International reserves increased in 1983 primarily because of interest rate differentials. The current-account deficit in 1984 is expected to increase, since it appears unlikely that there will be major improvements in prices for commodity exports in 1984 and since the price for maize imports is likely to rise owing to the regional drought.

C. Fourth National Development Plan, 1983-1988

24. The Third National Development Plan (1978-1983) had an economic growth rate objective of 7 per cent per annum. The actual annual growth rate of 5 per cent during this period was broadly based, but Swaziland's dependence on international markets will restrict the goals that will be attainable during the Fourth Plan period. The Fourth Plan is currently under preparation, and although it has yet to be adopted by the Government, the prospects are not good for achieving a real economic growth rate greater than the projected 3.5 per cent rate of population increase.

25. It is estimated that a minimum level of capital expenditure during the plan period of at least E 100 million would be necessary to attain even minimum targets for overall economic growth. This level implies a substantial increase in government borrowing and in debt service burdens, since it is unlikely that tax revenue and recurrent-expenditure restraint can produce a recurrent-budget surplus of this magnitude.

III. ASSESSMENT OF THE DAMAGE

A. Estimated cost of the damage

26. As can be seen in table 7, the estimate of damage compiled from information provided by the Government and private sector sources exceeds E 80 million, of which roads and bridges account for more than half. The total includes E 10 million of damage to the private sector, comprising infrastructural damage to agricultural estates, crop losses and additional transportation costs, but this amount does not include damage to private homes, especially those of traditional construction. Crop damage is estimated at 5-10 per cent of the maize crop, 40-50 per cent of the cotton and tobacco crops, plus yet to be determined amounts for sugar and citrus fruits. The Government estimates that damage to agriculture supplies, such as seeds, pesticides and fertilizers, exceeds E 1 million.

Table 7. Estimated total damage and loss of revenue to the economy of Swaziland from the cyclone

		Millions of emalangeni
1.	Relief and emergency repair	3.0
2.	Commercial farm damage and loss of revenue	10.0
3.	Damage to private housing	0.7
4.	Railway construction and loss of revenue	13.5
5.	Road and bridge reconstruction	40.5
6.	Damage to agricultural crops other than damage to commercial farms	2.5
7.	Damage to agricultural infrastructure	7.0
8.	Water supply systems	0.9
9.	Public facilities including water supply	1.0
10.	Health clinics	0.1
11.	Electricity, including loss of revenue	2.0
12.	Schools	0.5
	Total	81.7

27. The total losses to the Swazi economy represent an amount equivalent to 45 per cent of total annual government expenditure or 12 per cent of the country's gross domestic product. This is a major setback to Swaziland after many years of substantial developmental progress and represents a burden that in proportional terms would jeopardize the growth of even the most developed country.

B. Housing

28. The number of people left homeless by the cyclone is not accurately known but is estimated at 10,000. The major damage was inflicted upon traditional housing in both urban and rural areas. The Ministry of Rural Development estimates that an E 700,000 in building materials is required to replace or repair housing, but at the time of the preparation of this report, a detailed survey of private housing damage had not been undertaken.

C. Railways

29. As a land-locked country, Swaziland is dependent upon its railways for the bulk of its international trade. Swaziland's railway infrastructure was badly damaged by the cyclone, interrupting the flow of main exports and necessitating more costly road transport of exports and imports.

30. Links with Swaziland's export ports, in both Mozambique and South Africa, were severed, within as well as outside the borders of Swaziland. Three key bridges on the southern link were washed away and are in need of replacement, and substantial sections of the railway line to Mozambique were washed out, embankments and track destroyed and drainage facilities eroded. The rail connection on the Mozambique side also incurred considerable damage. Partial repairs to the southern line and the line to Mozambique were completed by May 1984, when traffic resumed from Nsoko and Mlawula as temporary railheads to their respective ports. In addition to the physical damage to the Swaziland Railway estimated at E 10 million, the loss of revenue was estimated at E 3 million-E 4 million.

D. Roads and bridges

31. The road sector suffered the most damage, rendering most of the country inaccessible. A large proportion of the bridges, culverts and other drainage installations suffered substantial damage from erosion, scouring or complete wash-outs, and some of the country's largest and key bridges were completely swept away. Substantial surface damage, erosion of embankments, major rock- and mud-slides made major road sections impassable, including an 83-kilometre section of a newly constructed highway. It is estimated that there construction of bridges and main roads and the repair of nearly 3,000 kilometres of gravel roads will cost approximately E 40 million.

E. Agriculture

32. Prior to the cyclone, 1983/84 maize production was forecast to be about 100,000 metric tons, a good crop after the disastrous drought years of 1981/82 and 1982/83. The extent of the damage caused by the cyclone will not be fully known until after the harvest but is estimated at 5-10 per cent or E 1 million-E 2 million. Some farmers were completely wiped out by flooding, and some farmland is no longer arable owing to erosion or sand overburden.

33. The cotton crop for 1984 appears to be damaged, but estimates of acreage and crops are not yet available. There are as yet no estimates of the number of cattle lost during the cyclone. The foot-and-mouth disease protection fence on the Mozambique border, which is critical to the well-being of the livestock industry in Swaziland, will require replacement in many areas.

34. The Irrigation Section of the Ministry of Agriculture and Co-operatives (MOAC) has been assessing damage to small-scale irrigation systems in Swaziland. There are an estimated 200 small farmers in Swaziland engaged in irrigated farming. It has been estimated that 75 of these farmers lost their pumps, suction and delivery systems, pipes and pump houses and suffered other damage as well. The Irrigation Section has organized a survey to determine the extent of the damage to each farm. The Crops Section of the MOAC has been mobilized to assist the Irrigation Section in carrying out a more comprehensive assessment of the damage. It appears from field reports that about 37 per cent of the irrigators will need assistance to save their 1983/84 crop remaining in the field and to permit them to produce their winter crop. It is estimated that the average cost to put groups and farmers immediately back into operation will run to about E 3,000 per scheme. Thus, the total cost to repair 75 systems will be about E 225,000.

35. In addition, the Irrigation Section has assessed damage to other irrigation systems and estimates that the total cost of the damage to the various dams and scheme will exceed E 2 million. This figure includes an estimated E 1 million for the reconstruction of Nyetane Dam, E 300,000 for the Sifunga Dam and E 250,000 for Mbabayi Dam. Repair and rehabilitation of the other schemes, including the Kalanga and Zakhje irrigation schemes, will amount to about E 1,550,000. MOAC has also estimated a cost of E 72,000 for the repair of the water systems at the Malkerns and Big Bend and Lowveld Research Stations.

F. Water supply

36. A number of rural water systems were put out of operation by the cyclone. Damage to those systems maintained by the Rural Water Supply Board is estimated at E 800,000, and E 130,000 is required to repair urban water-pumping stations. In addition, a water system outside Nhlangano which was originally partly financed by the United Nations Environment Programme was washed away.

G. Health clinics

37. Structural damage to health clinics was minimal. The Ministry of Health has surveyed the damage and found structural damage to the following clinics: Mangweni, Mangcongco, Mankayane, Hluti, Bulandzeni, Horo and Lesters. The damage was mostly limited to rain-damaged roofs and water supply systems. The Ministry estimates that it will cost E 5,000 to repair the structural damage. In addition, a nurses' house in Horo will cost a further E 1,000 to repair.

38. The major damage to health clinics was the damage to water supply systems servicing the clinics. The Ministry of Health found seven clinics (Gebeni, St. Phillips, JCI, Siceni, Ntfonjeni, Mangweni and Sigcineni) whose water systems were in need of major repair. The total cost is estimated to be around E 110,000. Moreover, some generators were badly damaged. The Ministry is in need of a stand-by generator to service some clinics until electrical power is restored. The total cost of the above activities will be about E 115,000. In addition, the Ministry reported that clinics under the responsibility of Raleigh Fitkin Memorial Hospital sustained damage that will cost E 21,360 to repair.

H. Education

39. The Ministry of Education has carried out a survey of all Ministry of Education buildings in the country to determine the damage caused by the cyclone. In summary, the Ministry estimates the damage to permanent structures at E 102,500 and that a further E 220,000 will be required to permanently replace damaged temporary mud and stick structures, for a total of E 322,500. With respect to permanent structures, Lubombo District was hardest hit, with damage of E 38,100, followed by Manzini District with E 25,100, Shiselweni District with E 24,000 and Hhohho District with E 15,300. So far, no aid has been earmarked for the education sector.

I. Power

40. Power throughout nearly all of the country was knocked out by the cyclone. Although outages in some of the urban areas lasted no more than a few hours, restoration of full power in other areas took just over two weeks. At present, power has been restored to all areas of the country.

41. The Swaziland Electricity Board reported major damage to the dam at Luphohlo-Ezulwini, where there was a major rock-slide in the spillway. The damage will cost E 1.2 million to repair (of which E 500,000 is insured). The World Bank has provided a loan of $US 600,000 to fill the financing gap to repair the damage. Other damage to generation, transmission and distribution equipment is estimated at E 530,000.

42. The cyclone caused an estimated E 750,000 of other damage to power lines and substations (of which about E 200,000 may be insured). Among others, the substation at Simunye was washed away (E 120,000) and the substation at Nsoko was

flooded (E 30,000), although both were insured. More than 40 kilometres of 11-kilovolt distribution line was lost and had to be replaced (E 110,000). The power lines were not insured.

J. Telecommunications

43. Much of the internal telephone system was damaged by the cyclone. However, service was restored to most areas within a matter of days. Total damage to plant and equipment is estimated at E 100,000, most of which is insured, and loss of revenue is estimated at E 13,000. Financing of the repair costs can be accommodated within the resources of the Ministry of Posts and Telecommunications.

K. Public buildings

44. Considerable damage was inflicted on army barracks, prisons and other public buildings. It is estimated that the cost of refurbishing the buildings, including their water supply systems, will approach E 1 million.

IV. EMERGENCY RESPONSE TO THE DISASTER

A. Government action

45. The massive flooding caused by the record rainfall resulted in the breakdown of the road and rail network and severing of power lines and telephone lines. For more than a week after the flooding subsided, much of the country was inaccessible, forcing relief work to be carried out by air. By May 1984 road communications had been restored throughout the nation by means of emergency or temporary repairs.

46. Initial relief efforts concentrated on the provision of emergency housing and food supplies, which was later followed up by the rehabilitation or reconstruction of housing destroyed during the cyclone. The Government, working closely with donors, arranged for stocks of necessary medicines to be imported and for clinics to be urgently resupplied. As a result of this quick action, the Government was able to minimize the incidence of disease following the cyclone.

47. Emergency works mounted by the Government with bilateral aid and substantial private sector participation have made it possible to reopen most of the severed links, albeit with diversions, low-level river crossings and the like, providing temporary relief and access until permanent repairs can be made. The Ministry of Works, with bilateral technical assistance, has drawn up plans for priority rehabilitation. As an emergency measure, four Bailey bridges and construction supplies have been provided by a bilateral donor at a cost of approximately E 530,000.

48. A cabinet committee on relief was established and relief operations were undertaken, mainly under the auspices of locally based international and local non-governmental organizations. The Government also set up a local emergency relief fund.

B. International response

49. Immediately following the cyclone the Government appealed for assistance directly to donors and through the offices of the Secretary-General, to the international community, including the organizations of the United Nations system. Relief co-ordination meetings of organizations of the United Nations system, donors and non-governmental organizations were organized by the United Nations Resident Co-ordinator. On the basis of information provided by the United Nations Resident Co-ordinator and at the request of the Government, the Office of the United Nations Disaster Relief Co-ordinator launched an emergency appeal to the international community on 2 February 1984.

50. Contributions to the Government's fund have surpassed $US 200,000, while donor assistance through non-governmental organizations exceeded $US 700,000 (table 8). Contributions of medical supplies and other relief assistance in kind amounted to more than $300,000. Several non-governmental organizations responded by providing building materials for the reconstruction of traditional houses.

51. In the post-relief stage various donors undertook to fund emergency repairs to bridges, foot-bridges, clinics and rural and urban water supplies at a cost of approximately $US 1.3 million. By the end of the initial emergency period more than $US 2.5 million of assistance had been made available.

Table 8. Estimated contributions and pledges for immediate relief and reconstruction (including contributions in kind)

States Members of the United Nations	United States dollars	
Australia	45 000	
Belgium	54 800	
Canada	720 000	
Denmark	95 000	
Germany, Federal Republic of	36 000	
Italy	120 000	
Netherlands	62 000	
Norway	60 000	
United Kingdom of Great Britain and Northern Ireland	560 000	
United States of America	422 000	1 874 000
United Nations organizations		
Office of the United Nations Disaster Relief Co-ordinator	20 000	
United Nations Children's Fund	40 000	
United Nations Development Programme	30 000	90 000

Table 8 (continued)

	United States dollars	
Other international organizations		
European Economic Community	80 000	80 000
Government Relief Fund	200 000	200 000
Non-governmental organizations, service clubs, private organizations	273 000	273 000
Total		2 517 000

V. ASSISTANCE REQUIREMENTS

52. As outlined in the previous section, the Government of Swaziland and the international community responded in an effective and timely manner to the immediate emergency requirements created by the cyclone. Swaziland now faces the far more difficult task of reconstruction and rehabilitation. There is a clear need for international assistance, in particular concessional assistance, if the Government is to succeed in this effort as well as to achieve a rate of overall economic development sufficient to meet the needs of the people of Swaziland.

53. The following outline of assistance requirements was drawn up in co-operation with the authorities of Swaziland and fully reflects their priorities. Like many developing countries, Swaziland suffers from a shortage of trained personnel, which has hampered the assessment of damage as well as the formulation of reconstruction projects. Technical assistance should thus be an integral part of the implementation of many of the projects included in the special economic assistance programme.

A. Transportation

54. By virtue of its geography and the structure and composition of its economy, Swaziland is heavily dependent on its surface transport network of relatively well-developed road and railway infrastructure. Virtually all of the country's significant export-oriented resources and primary products rely either on rail or on a combination of rail and road networks to reach the export ports beyond the borders of Swaziland, the gateways of this land-locked country. The flow of imports, vital to the functioning of the economy, also depends on the transport infrastructure, both rail (petroleum and fuel) and road (largely foodstuffs and manufactured goods). Hence the transport sector is of paramount importance in Swaziland, more so than in many other countries.

1. Railways

55. The Swaziland railway, the backbone of which was completed in 1964, was conceived and built as a resource line for transporting iron ore from the north-western part of the country to the Mozambique border, where it linked up with the Mozambique Railway and its port, now known as Maputo. Soon after its opening, however, the railway attracted substantial traffic from other modes of transport in Swaziland and owing to its competitive advantage, has been instrumental in inducing sizeable expansion and development in both the production and processing segments of the agricultural and forestry sectors. Thus, from a single-purpose, single-commodity line, the railway has gradually assumed the role of a broadly based export carrier, with the country's key industries - sugar, molasses, wood pulp, coal, citrus fruits, canned fruit and cotton - largely, and in some cases exclusively, relying on its services.

56. The railway's role in import traffic has also substantially increased, assuming particular importance for petroleum and fertilizer products. Thus, despite the loss of substantial tonnage after the iron ore resource became depleted in the late 1970s, the railway's role has not decreased. Its importance to the national economy has in fact dictated further expansion, and a 100-kilometre link to the south was completed in late 1978. This link has provided Swaziland with alternative outlets to the sea and the export ports of Richards Bay and Durban, opening up new markets and areas to development activity. The role of the railway and its contribution to the country's economy will be substantially increased with the opening of the northern link now under construction.

Present state of the railway's infrastructure

57. The Swaziland railway's infrastructure was badly damaged by the cyclone and the ensuing floods. At the time of the mission's arrival (30 April 1984, three months after the cyclone), none of the rail lines were open to traffic, although restoration work had started immediately after the disaster.

58. The line linking up with Maputo incurred major damage: sections of the track and embankment were washed out and culverts, drainage installations and bridge abutments eroded. The southern link was completely wiped out as a result of the destruction of the three key bridges over the rivers of the region. Similar major structural damage was incurred outside the borders of Swaziland in both Mozambique and South Africa, affecting the extensions of the Swaziland lines.

59. By immediately mobilizing its resources and contracting out major structural works, the Swaziland railway managed to re-establish partial service on 1 May 1984. With temporary bridge repairs in a sufficiently advanced state in Mozambique, the link to Maputo was opened from Mlawula in the east of Swaziland, which temporarily serves as a railhead for Mozambique-bound traffic. The line to the west (Matsapa) was opened in successive stages.

60. The southern link serving the ports of Richards Bay and Durban also became operational from Nsoko, which now acts as a railhead and has begun to receive some export traffic trans-shipped by road. The temporary replacement of the three major

bridges destroyed is expected to be completed by 1 July 1984, at which time the Swaziland railway is expected to become fully operational, some five months after the cyclone struck. Revenue losses which will have been incurred by the railway are estimated at over E 3 million. Additional costs to the shippers in terms of higher transport costs incurred in attempting alternative modes and routing of transport during the disruption cannot be ascertained but are likely to be in the range of E 3 million-E 5 million.

Table 9. Estimated cost of railway rehabilitation

		Millions of emalangeni	
	I. WORK ON CONTRACT		
A.	Southern link		
A-1	Usutu River Bridge		
	Temporary bridge	2.0	
	Permanent structure, including feasibility study	3.4	
A-2	Umhlatuzane River Bridge	1.2	
A-3	Ngwavuma River Bridge (Nsoko)	0.9	7.5
B.	Maputo (Mozambique) link		
B-1	Wash-outs		
B-2	Wash-outs		
	Embankment and track reconstruction, replacement of abutments washed away, etc.	1.5	1.5
	II. WORK UNDERTAKEN BY THE RAILWAY		
	Track and embankment restoration, drainage and culvert rehabilitation, etc.	1.5	1.5
	Total		10.5

2. Roads (E 39.5 million)

61. Swaziland possesses a remarkably comprehensive road network. Although the existing network requires improvement and expansion, it does not appear to be a major bottle-neck to economic development. Two thirds of the country is within

8 kilometres of an all-weather road, and access to Swazi Nation Land areas has been considerably improved since the commencement of a feeder-road programme in 1970.

62. Virtually all productive sectors of the economy rely on the established road network. The important sugar industry and other agricultural processing industries, as well as the forestry sector, depend on heavily loaded trucks for collection and delivery from the field to the processing plants. Finished products are trucked to the nearest railhead complementing the rail haul. Higher-valued manufactured goods largely use the road network for delivery or export. A substantial proportion of imports, which include foodstuffs, perishables and other manufactured imports, travel by road, some from Durban, all from the west.

63. Domestically, widely spread-out local communities require access to basic supplies (including food), the distribution of which depends on the road network. The tourist industry would be completely stifled without the road network.

64. Roads are classified into two major categories indicating their relative importance to the national economy: main roads and district roads (table 10).

Table 10. Proclaimed roads by category and surface, 1981

	Main roads		District roads		Total	
Surface	km	%	km	%	km	%
Sealed	476	34.3	44	3.3	520	19.1
Gravel	906	65.4	656	49.2	1 562	57.4
Earth	4	0.3	633	47.5	637	23.4
Total	1 386	100.0	1 333	100.0	2 719	100.0

65. The roads shown in table 10 include 101 kilometres of company roads to which the public has access. Those running through the Usutu Forest and to the Peak Timber Saw Mill are main roads, while the sugar cane roads are district roads. While over a third of the main roads were paved in 1981, more than 3 per cent of the district roads had black-top surface (these were all privately maintained roads).

66. In 1971, the only paved roads were from Ngwenya to Mpaka, Mhalanya to Mhlambanyatsi, and part of the way from Bhunya to Sandlane. Since then, 414 km of roads were surfaced, which was largely completed during the last five years. With this surfacing programme, all the major nodes of activity were joined to the Mbabane-Manzini corridor except the northern sugar area. None of the nodes is joined by sealed road to any other node aside from the corridor.

67. The remaining main roads, which are graveled, can be grouped as follows:

(a) South-east roads (south of Siphofaneni and east of Nhlangano and Hlatikulu, including the unpaved section of MR8 from the Ngwavuma River to Lavumisa);

(b) South-west roads (Malkerns-Mankayane-Sicunusa-Gege-Mahamba);

(c) North-west roads (Piggs Peak west to Bulembu and east to Balegane, and from Ngonini to Balegane);

(d) Central roads (Luve-Mliba-Balegane-Tshaneni);

(e) Lubombo roads (Lusoti to Mpaka to Big Bend, Siteki to Mhlumeni);

(f) The Mbabane-Mhlambanyatsi road.

Present state of the road infrastructure

68. The damage inflicted by the cyclone on Swaziland's road network was much greater than that suffered by any other infrastructural sector. In the immediate wake of the storm, most of the country was inaccessible because of damage that had rendered the majority of roads impassable. The damage was particularly heavily concentrated in the low veld. Of the 120 bridges, 30 box culverts, 400 larger Armco-type culverts and other drainage installations, about half were damaged in varying degrees, ranging from partial erosion and underscoring to complete destruction. Floods affected some of the country's key bridges, including the bridge at Big Bend and some other major bridges, which were completely swept away.

69. In addition to structural damage, substantial surface damage and erosion of embankments affected key sections of the road network and, together with major rock- and mud-slides, rendered sections of the road system impassable. The most substantial damage caused the complete closure of a newly constructed 82-kilometre section between Mkhodvo River and Mahamba, which had been completed only at the end of 1983.

70. Through emergency works mounted by the Government, with bilateral aid and substantial private sector participation, most of the roads and bridges have been reopened by means of temporary diversions, low-level river crossings and the like (low-level river crossings are facilitated by the prevailing dry season which will last only until the end of October). It is expected, however, that even with substantial external financial and technical assistance, it will take three years for the country to fully rehabilitate its transportation infrastructure and restore it to its pre-cyclone condition.

71. The reconstruction cost of E 40 million represents roughly 10 per cent of the replacement cost of the entire road network, the capitalized value of which can be approximated at E 400 million. Table 11 summarizes the cost of this rehabilitation programme (which is in addition to the cost of the emergency relief and temporary work so far undertaken). The importance of the technical assistance component is to be emphasized, since the various government departments do not have the required staff, technical and administrative skills or resources to undertake such a programme. Accordingly, that component is a pre-condition for the effective use of any assistance and as such should be viewed as a priority.

Table 11. Road and bridge rehabilitation components*

		Millions of emalangeni	
	I. WORK TO BE CONTRACTED OUT		
A.	Major bridge reconstruction programme		
A-1	Big Bend Bridge	5.0	
A-2	Nsoko Bridge	1.9	
A-3	12 major bridges	3.0	9.9
B.	Paved road rehabilitation programme		
B-1	Grand Valley (Mkhodvo River to Mahamba)	4.1	
B-2	Other major damage to the road network	4.0	8.1
	II. WORK TO BE PARTIALLY UNDERTAKEN BY THE ROAD DEPARTMENT		
C.	Gravel road rehabilitation programme		
	4 districts, (3-year programme, at 100 km per district per year, at E 10,000 per km)	12.0	12.0
	III. WORK TO BE UNDERTAKEN BY THE ROAD DEPARTMENT		
D.	Miscellaneous other damage repairs		
	Various foot-bridges, etc.	0.5	0.5
	IV. REQUIREMENTS OF THE ROAD DEPARTMENT		
E.	Equipment acquisition		
	Various road maintenance equipment to be listed and supported by equipment review and requirements study	3.0	3.0

* For more detailed project descriptions, see the annex.

Table 11 (continued)

		Millions of emalangeni	
	V. HUMAN RESOURCES REQUIREMENTS		
F.	Institutional support and technical assistance for equipment maintenance		
	F-1 Strengthening of Central Transport Administration Administrative, organizational, management and shop floor level assistance (3-year programme)	1.0	
	F-2 Training at Central Transport Administration (3-year programme)	1.0	2.0
G.	Technical assistance for the road department		
	Engineering Department to assist in planning, design and construction supervision (5 posts, 3 years each)	3.0	3.0
H.	Consulting services (to assist the Road Department)		
	Feasibility studies Programme preparation Design Supervision Construction management	1.0	1.0
	Total requirements		39.5

72. Elements of the programme can be considered as distinct components. Components A and B include major items of work that will have to be contracted out. The Road Department could undertake work on components C and D if the equipment and supporting technical assistance requirements listed in E, F, G and H are forthcoming.

73. While the project cost estimates are subject to refinement and confirmation by a more detailed inventory and technical evaluation of the damage currently being undertaken with engineering assistance provided by bilateral donors, they are based on a synthesis of the information and expert review so far available to Swaziland from various professional personnel, outside consultants and contractors. The annex provides brief road and bridge project descriptions.

B. Agriculture (E 11.2 million)

74. At the time the mission visited Swaziland, a detailed programme of the assistance required to rehabilitate the agricultural sector had not been completed. The Food and Agriculture Organization of the United Nations has made available $US 250,000 to Swaziland for technical assistance, and the mission recommended to the Government of Swaziland that it should consult with FAO on the use of those funds. Damage to the estate farm sector was being repaired on a commercial basis, and therefore the estate farm sector is not included in the Government's reconstruction programme.

75. The Government was able to provide the mission with a list of five priority areas in which donor assistance was being sought.

1. Foot-and-mouth disease fence (E 175,000)

76. Portions of the livestock foot-and-mouth disease cordon fence on the Mozambique border were washed away, and, as a result, livestock can move randomly across the border. As a matter of urgency, the fence must be reconstructed to prevent an outbreak of foot-and-mouth disease in Swaziland. The rehabilitation of access roads to the fence region is necessary in order to undertake fence repairs. Livestock exports are a substantial generator of employment and the largest cash product of traditional farmers. An outbreak of foot-and-mouth disease would close off export markets.

2. Agricultural feeder roads (E 4 million-E 5 million)

77. The Ministry of Agriculture maintains a feeder-road construction and maintenance unit that is responsible for agricultural feeder roads. Flooding damaged the majority of these roads, and there is a need to resurface them to facilitate agricultural logistics. The estimated cost of the programme is E 4 million.

3. Dams and irrigation systems (E 4 million-E 5 million)

78. Major damage to dams and irrigation equipment was experienced throughout the country. Some dams were completely washed away, while others were partially damaged or silted. Irrigation equipment was washed away, powerhouses were destroyed and canals were filled in. Cost estimates for the repair of the dams and irrigation systems have yet to be accurately detailed but could approach E 4 million-E 5 million. Assistance for undertaking these repairs is especially important to maintain the national livestock herd during the dry (winter) season. Technical assistance will be required in the design of the dam reconstruction programme.

4. Rehabilitation of dip-tanks (E 1 million)

79. Livestock production is a substantial export revenue industry in Swaziland. Cattle are dipped weekly at approximately 600 dip-tank locations for tick and disease control. Approximately one half of the tanks were silted, damaged or diluted by the floods. Repair costs are estimated at E 1 million.

5. Provision of agricultural inputs (E 1 million)

80. Flood damage may reduce some crop yields on Swazi Nation Land, on which half the population's food is produced. An estimated 42,000 families with farm holdings of less than 3 hectares grow mainly maize, cotton, rice, vegetables and tobacco. Some farms were washed away during the floods, particularly those along river banks, while others sustained substantial crop losses. A review is needed to establish requirements for agricultural inputs such as fertilizers, insecticides and seeds in order to restore agricultural production. Foreign assistance in the provision of inputs would allow the Government to assist the affected farmers. Co-operatives incurred an estimated E 25,000 of damage to such items as fertilizers, chemicals, seeds and consumer goods that were stored in co-operative sheds.

C. Power (E 1.2 million)

81. The total uninsured cost of repairs to Swaziland Electricity Board installations is estimated at E 1.2 million, of which E 600,000 was incurred by the Luphohlo-Ezulwini hydroelectric scheme. The remaining E 600,000 consists of damage to generators, transmission lines and transformers in approximately 18 locations. Approximately 60 per cent of the cost will be for construction and 40 per cent for additional materials and equipment.

D. Water supply (E 1.1 million)

82. The Rural Water Supply Board is responsible for the design, construction and maintenance of the rural water supply system throughout the country. Cyclone Domoina inflicted damage on 20 systems, 5 of which were still under construction. The estimated cost to repair the 20 systems, which supply 27 per cent of the entire population served by the Board, is E 178,000. The funding is required to provide materials, transportation and local labour; the repairs will be undertaken by the Board's construction units.

83. The Water and Sewage Board is responsible for water and sewage services in 17 urban areas. Four systems were substantially damaged and will cost approximately E 130,000 to repair. The Lusoti Dam will cost E 400,000 to repair.

84. The Water Resources Branch is responsible for 42 gauging stations in Swaziland, 33 of which were destroyed. The Branch is now unable to monitor and manage the flow of water in the nation's rivers and prepare for international negotiations regarding river apportionment. It is estimated that E 400,000 will be required to replace weirs, instrument towers, strip-chart recorders and telemetry stations. This project would be implemented by a contractor under the supervision of the hydrology and engineering staff.

E. Public facilities (E 1.7 million)

85. Health clinics. Many of the country's 175 health establishments incurred damage to their water supply system. It is estimated that E 100,000 will be required to repair the water systems and E 150,000 to repair structural damage.

86. Schools. Over E 100,000 of damage to schools has been identified by the Clerk of Works, but inspections are not complete. Approximately 800 teachers' houses require repairs at a cost of approximately E 120,000. Total damage to the educational infrastructure could approach E 400,000.

87. Other public facilities. Damage to public structures, including water and power services, has been estimated by the Government to approach E 1 million.

VI. SUMMARY OF THE PROPOSED SPECIAL ECONOMIC ASSISTANCE PROGRAMME

88. The cost of the recommended assistance programme is $US 44 million. The programme does not include rehabilitation of the railway sector, since repairs had to be undertaken immediately. However, donors may wish to consider giving assistance to Swaziland in various forms to compensate for the financial burden imposed on the Government by railway reconstruction.

Table 12. Summary of the proposed special economic assistance programme

		Millions of emalangeni		Millions of United States dollars a/	
A.	Roads and bridges b/				
1.	Big Bend Bridge	5.0		4.0	
2.	Nsoko Bridge	1.9		1.5	
3.	Twelve major bridges	3.0		2.4	
4.	Grand Valley Road	4.1		3.3	
5.	Major road repairs	4.0		3.2	
6.	Gravel road rehabilitation	12.0		9.6	
7.	Foot-bridges	0.5		0.4	
8.	Equipment	3.0		2.4	
9.	Technical assistance	6.0	39.5	4.8	31.6
B.	Agriculture				
10.	Foot-and-mouth disease fence	0.2		0.2	
11.	Agricultural feeder roads	4.0		3.2	
12.	Dams and irrigation systems	5.0		4.0	
13.	Dip tanks	1.0		0.8	
14.	Agricultural inputs	1.0	11.2	0.8	9.0
C.	Power				
15.	Luphohlo-Ezulwini	0.6		0.5	
16.	Transmission repair	0.6	1.2	0.5	1.0
D.	Water supply				
17.	Rural water supply	0.2		0.2	
18.	Pumping stations	0.1		0.1	
19.	Lusoti Dam	0.4		0.3	
20.	River gauging stations	0.4	1.1	0.3	0.9
E.	Public facilities				
21.	Health clinics	0.3		0.2	
22.	Schools	0.4		0.3	
23.	Public buildings	1.0	1.7	0.8	1.3
	Total		54.7		43.8

a/ Using an exchange rate of E 1 = $US 0.80 as at 1 May 1984.

b/ See the annex for more detailed project descriptions.

Annex

ROADS AND BRIDGES PROJECT DESCRIPTIONS

A. MAJOR BRIDGE RECONSTRUCTION PROGRAMME

A-1 Big Bend Bridge project (new bridge)

A 265-metre, 13-span bridge built in 1959 was completely destroyed, leaving only two abutments, which were seriously damaged. This bridge is of the highest priority because of its economic importance and the inadequacy of the temporary solution of utilizing a low-level crossing which is subject to flooding and traffic disruption.

Components		Duration		Cost
(i)	Feasibility study: technical and economic study to review desirability of road/rail bridge to serve Big Bend Sugar Mill with a rail spur	2 months	E	100 000
(ii)	Detailed technical study and engineering plans	1 month		200 000
(iii)	Construction, by contract	24 months		4 500 000
(iv)	Construction management and supervision	26 months		200 000
	Project duration and cost	33 months	E	5 000 000

A-2 Nsoko Bridge

A 122-metre, 5-span structure lost one pier and a section of deck, while another pier has moved and is dislocated laterally by 2.5 metres and vertically by 1.5 metres. The lost and moved piers were piled, while the others had rock foundations. Bridge bearings are dislocated. It appears that little or no cost savings would result in using remaining and seemingly unaffected parts of the bridge.

Components		Duration		Cost
(i)	Detailed technical study and engineering plans	6 months	E	50 000
(ii)	Construction by contract	18 months		1 700 000
(iii)	Construction management and supervision	20 months		150 000
	Project duration and cost	26 months	E	2 000 000

A-3 Bridge repair and rehabilitation programme

To review, in detail, the repair and reconstruction requirements for 12 bridges of major importance in the existing road network that suffered various structural and other damage during the floods and to undertake their complete rehabilitation.

Components	Duration	Cost
(i) Detailed technical review of the damage and preparation of engineering plans and estimates for repair and reconstruction	6 months	E 250 000
(ii) Repair and reconstruction, mostly by contract	18 months	2 600 000
(iii) Contract and works supervision and management	20 months	150 000
Project duration and cost	26 months	E 3 000 000

B. HARD SURFACE ROAD REHABILITATION PROGRAMME

B-1 Grand Valley Road reconstruction programme (Mkhodvo River to Mahamba)

A recently completed surfaced road of significant importance, consisting of an 82-km section costing E 19 million, was extensively damaged and rendered impassable by the cyclone. Mud- and rock-slides, major landslips and serious undermining and wash-outs make temporary repair impossible. Immediate repair and reconstruction work is imperative if the damage incurred is to be contained.

Components	Duration	Cost
(i) Detailed engineering and technical assessment of damage, design of reconstruction methods, etc.	3 months	E 100 000
(ii) Reconstruction and rehabilitation by contract, preferably by original contractor who is still partially present on site	8 months	3 700 000
(iii) Construction supervision and management	9 months	300 000
Project duration and cost	12 months	E 4 100 000

B-2 Repair and rehabilitation of surfaced roads

Damage of various type and intensity was incurred by the surfaced road network (largely built and completed in the last 10 years), and quick repair and

reconstruction are required to contain the damage. The most common types of damage include erosion of shoulders, underscouring of paved drainage resulting in destruction and blocked installations and erosion of slopes and works protecting bridges, culverts and drainage facilities, resulting in collapse of some culverts, landslides and landslips at various locations, particularly on high fill and deep cut sections, etc.

Components	Duration	Cost
(i) Detailed engineering survey and inventory of damage	3 months	E 100 000
(ii) Repair and reconstruction of about 500 km of surfaced roads, with varying damage estimated at E 6,000-E 10,000 per km, largely by contract	30 months	3 700 000
(iii) Detailed engineering design, contract and works supervision	32 months	200 000
Project duration and cost	36 months	E 4 000 000

C. GRAVEL ROAD REHABILITATION PROGRAMME

Seventy-eight per cent of the country's 2,700 km road network is gravel-surfaced and earth road, including 800 km of important main roads and 1,300 km of district roads. Despite the hard surfacing undertaken in the last 10 years, good gravel roads remain the backbone of the network.

The cyclone-caused damage is extensive and includes damaged bridges (dealt with in programme A), damaged and eroded road surfaces, washed-away drainage structures and installations, eroded side slopes, etc.

The rehabilitation of the gravel-road network is intended to be undertaken in four districts, forming four projects as follows:

C-1	Mbabane District	470 km
C-2	Siteki District	500 km
C-3	Nhlangano District	570 km
C-4	Lubuli District	520 km
	Total	2 060 km

If the Road Department benefits from technical assistance and a refurbished fleet as specified in other projects, it could undertake 25-50 per cent of the programme itself, leaving some 50-75 per cent to be contracted out.

The work, estimated at E 10,000 per km, is likely to be carried out as follows:

Components	Duration	Cost
(i) Detailed technical review of requirements, programme and project design by Road Department	6 months	-
(ii) Rehabilitation work on 80-100 km per district per year for 3 consecutive years, 8 months each, about E 1.0 million per year		E 3 000 000
(iii) Construction and works supervision and management by Road Department	3 years	-
Project C-1	3 years	E 3 000 000
Project C-2	3 years	3 000 000
Project C-3	3 years	3 000 000
Project C-4	3 years	3 000 000
Project duration and cost	3 years	E 12 000 000

D. MISCELLANEOUS OTHER DAMAGE REPAIRS

Repair or replacement of foot-bridges and other damaged installations

Components	Duration	Cost
(i) Survey and inventory of damage, technical study and design of replacement by Road Department	6 months	-
(ii) Repair and replacement by Road Department; material and offshore costs including those for 17 foot-bridges known to be damaged		E 150 000
Other damage not yet surveyed		250 000
(iii) Construction supervision and management by Road Department	2 years	-
(iv) Contingencies and allowance for miscellaneous items		100 000
Project duration and cost	30 months	E 500 000

E. EQUIPMENT ACQUISITION FOR THE ROAD DEPARTMENT

In order for the Road Department to undertake even part of the work listed and respond to the increased work-load imposed by the cyclone-caused damage, a major review and refurbishing of its fleet of work equipment will be required. This will entail both the acquisition of new equipment (hardware) within the context of this project and substantial strengthening of supporting institutions affecting its maintenance (availability) and administration (utilization), subject to the technical assistance requirements listed in programme F.

Components	Duration	Cost
(i) Review and inventory of the existing fleet of work equipment, study of availabilities, performance characteristics and utilization and assessment of its condition and remaining economic life Review of work programme developed for the Department, its work-load implications and equipment requirements Draw up list and specify composition of fleet to be acquired and required spare parts Prepare specifications and delivery schedules Handle tendering and contract award procedures Ensure adequate delivery and commissioning of equipment and supply of spare parts	3 months	E 200 000
(ii) Supply equipment and spare parts as listed and specified	1 year	2 800 000
Project duration and cost	15 months	E 3 000 000

F. TECHNICAL ASSISTANCE PROGRAMME FOR EQUIPMENT MAINTENANCE

F-1 Strengthening of Central Transport Administration: institutional support for equipment maintenance and organizational, administrative and shop floor level assistance

	Duration
1 Mechanical Engineer:	
Management Adviser Operational Specialist Systems Design	3 man-years
1 Technical Maintenance Specialist	
Shop floor supervision Maintenance System Specialist Stores and Spares Supply Specialists	3 man-years
Allowance for short-term technical assistance to cover other requirements	1 man-year
Total	7 man-years

Components	Duration	Cost
7 man-years of assistance (with inflationary allowance) at E 120 000 per man-year		840 000
Hardware support: tools, equipment, computer, etc.		60 000
Contingencies		100 000
Project duration and cost	3 years	E 1 000 000

F-2 Strengthening of the Central Transport Administration: training programme

Components	Duration	Cost
(i) Review manpower requirements, assess existing strength and qualifications Identify training needs in various areas and disciplines Develop appropriate training programme with course syllabus and specifications	3 months	E 60 000

		Duration	Cost
(ii)	Field and undertake a three-year training programme based on specified disciplinary input		
	Expected requirements:		
	2 training specialists for 3 years		
	1 training specialist for 1 year		
	7 man-years at E 120,000 per man-year		E 840 000
(iii)	Hardware support: training material and equipment		E 60 000
(iv)	Contingencies		E 40 000
	Project duration and cost	40 months	E 1 000 000

G. TECHNICAL ASSISTANCE PROGRAMME FOR THE ROAD DEPARTMENT

The Ministry of Works, Power and Communications and its Road Department do not have the staff necessary to undertake the increased work-load imposed by the reconstruction and rehabilitation programme, since vacancies abound even in its usually required staff. A substantial technical assistance programme, supported by significant recourse to consulting services, is an essential prerequisite to the successful implementation of the required rehabilitation of infrastructure.

Technical assistance project for the Road Department

Subject to a more detailed review of the professional work-load imposed by the work programme, the following requirements are envisioned:

	Duration	Cost
1 Senior Roads Engineer	3 man-years	
1 Senior Bridge Engineer	3 man-years	
1 Design Engineer	3 man-years	
2 Construction Engineers	6 man-years	
4 Road Construction Engineers for 30 months or Senior Engineering Technicians to head the four district rehabilitation programmes	10 man-years	
Project duration and cost	3 years	E 3 000 000

	Duration	Cost

H. CONSULTING SERVICES

To assist the Road Department and its Technical Assistance Team in selected projects, as and when required and commissioned:

Feasibility studies

Programme preparation

Project preparation

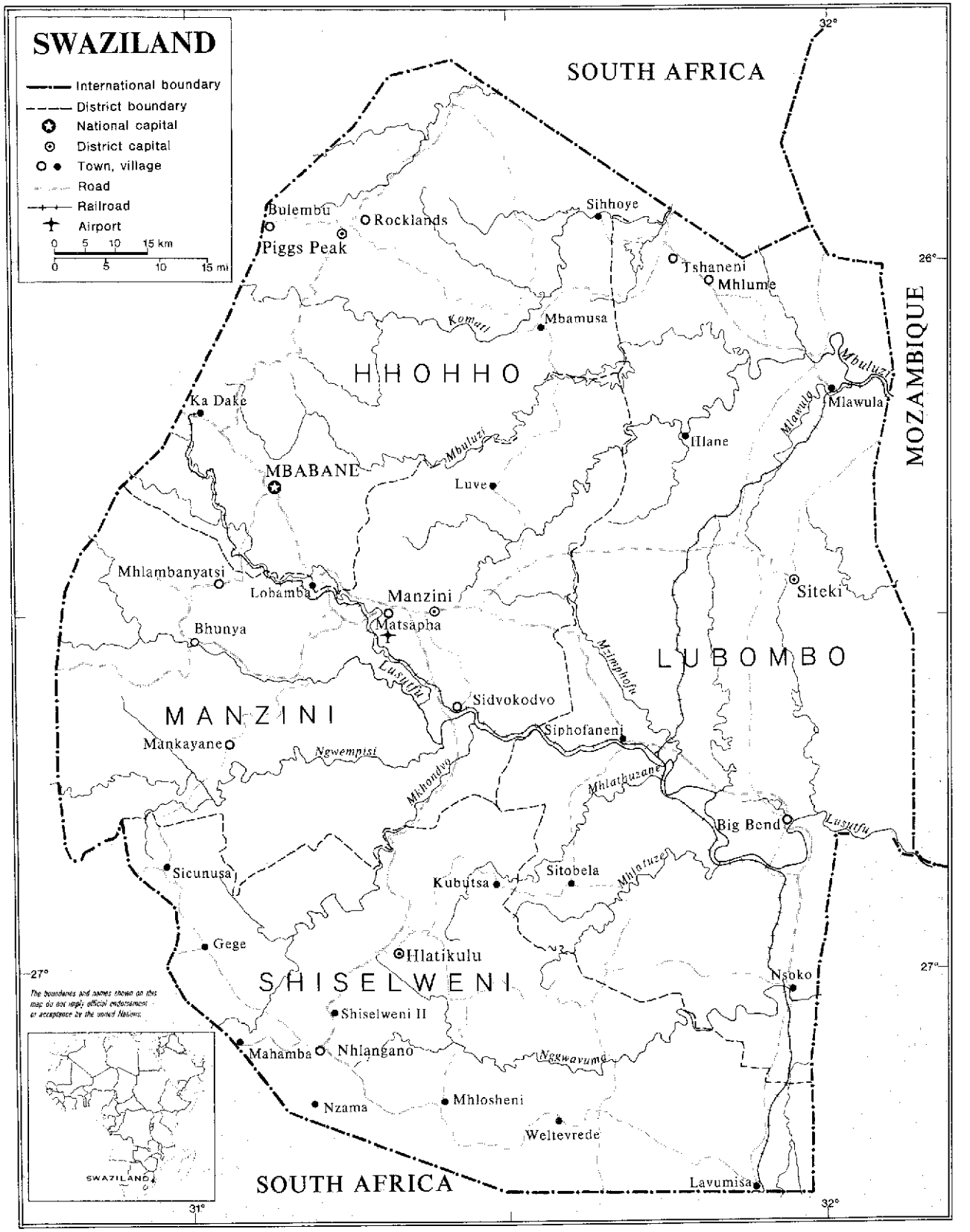
Project design and scheduling

Project and works supervision

Construction and works management, etc.

Project duration and cost	3 years	E 1 000 000

APPENDIX



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