Agricultural and rural development in the people's Democratic Republic of the Yemon

Salwa Mobarak Amber

AGRICULTURAL AND RURAL DEVELOPMENT IN THE PEOPLE'S DEMOCRATIC REPUBLIC OF THE YEMEN

By

MRS. SALWA MOBARAK AMBER

Thesis Submitted for the Degree of Master of Arts
in the University of Durham England.
Department of Geography

SEPTEMBER 1982

ABSTRACT

Rural development has become a vital issue to most less developed countries and international organisations during the recent past. The United Nations has declared the 1970's and 1980's to be "development" decades. Agricultural development constitutes the main backbone for rural development and together with other supportive social policies, rural development can pave the way to national development.

In this thesis, the rural development problem is stated and its objectives are analysed, particularly with respect to a centrally-planned economy, in the introduction. The Study examines critically PDRY's experience in its agricultural and rural development, based on a 'balanced growth' strategy, during the past decade. It looks into the pros and cons of various agricultural policies on agricultural production and rural development. The Study examines all agricultural institutions in the country and envisages the role played by the planning machinery and its consistency with political and administration structures in the country. It also makes an assessment of the horizontal investment on the agricultural sector and assesses its impact on the agricultural production.

In a separate section the Study evaluates all agricultural policies and their repercussion on agricultural and rural development. It examines all changes in current policies and their relevance to both the producer and the consumer.

Rural integrated programmes are also considered by the Study to show a new consolidated approach to rural development. Three major projects are examined in this section to evaluate this approach and assess its relevance to the issue.

In the conclusion the whole experience of PDRY's agriculture and rural development is evaluated in terms of successes and failures and a proposed strategy, vertically integrated, is set for future agricultural and rural development with specific ideas on each aspect.

ACKNOWLEDGEMENT

I present this Thesis to my mother, family and Country.

I should like to record here my deep respect and gratitude to my Supervisor, Mr. Jim Lewis whose valuable advice and guidance enabled the completion of this thesis.

I would also like to forward my respect and appreciation to Dr. Janet Townsend for her valuable guidance and help in the final preparation of this thesis.

My deep respect and appreciation are also forwarded to The Minister of Planning, the Minister of Agriculture and Agrarian Reform and the Deputy Minister of Agriculture for Irrigation Mr. M.A.Ba'amer for all the facilities and encouragement they provided to the fulfilment of the thesis.

My husband deserves deep gratitude for his patience and contribution in providing me with valuable materials from the Central Statistical organisation.

Finally, my thanks and appreciation go to all my colleagues in the Ministry of Agriculture, Ministry of Planning, UNDP/FAO Project in Alkod, the Geography Department at Durham University, and others who provided materials and facilities that led to the completion of this thesis.

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ABBREVIATIONS

ADF	:	Agricultural Development Fund
CDC	:	Community Development Centre
DIME	:	Department of Irrigation and Mechnical Engineering
FAO	:	Food & Agriculture Organisation
GDR	:	German Democratic Republic
HYV	:	High Yield Varieties
IFAD	:	International Fund for Agricultural Development
ILO	:	International Labour Organisation
LDC	:	Less Developed Countries
MAAR	:	Ministry of Agriculture & Agrarian Reform
MMC	:	Meat Marketing Corporation
NBY	:	National Bank of Yemen
NCFT	:	National Company of Foreign Trade
NCHT	:	" " " Home "
NWC	:	" Water Corporation
PCDP	:	Public Corporation for Development of Poultry
PCMVF	:	Public Corporation for Marketing Vegetables & Fruits
PDRY	:	Peoples' Democratic Republic of Yemen
P.P.C	:	Production Plan Committee
UNDP	:	United Nations Development Programme
UNESCO	:	United Nations Education, Scientific & Cultural Organization
YWF	:	Yemeni Women's Federation
SYD	:	South Yemen Dinars

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CHAPTER 1

INTRODUCTION

At independence in 1967, the rural population of the Peoples Democratic Republic of Yemen (PDRY) constituted 80% of the total population of the country. The then per capita income was only US$ 110 with a very low productivity in the traditional agricultural sector. Thus, PDRY was classified - by all international organisations - as one of the least developed of developing countries,[1] one having to adopt rural development policies with meagre resources. A typical less developed country (LDC) can generally be characterised by malnutrition, illiteracy and poverty owing to overwhelming rural problems such as under-unemployment, low productivity, lack of social services, poor transportation, lack of capital and machinery and, above all, social oppression and exploitation. In terms of internal incomes, highly skewed patterns of income distribution are often found with the top 20% of the population often receiving five to ten times as much income as the bottom 40%. In terms of productivity more than $\frac{2}{3}$ of the world's population in LCDs is producing only 15% of world output. Particularly important on the income side, the third world, with almost 70% of the world's population, subsists on less than 20% of the world's income.[2]

Economic and social forces, both internal and external, are responsible for the poverty, inequality and low productivity that characterise most LDCs. Throughout the 1950's and 1960's almost all national and international efforts tended to solve "development" problems by industrialisation. Some countries achieved desirable growth rates because of their rich resource endowment but had aggravated rural problems. The growth rates achieved were accompanied by many economic and social evils such as greater income inequality, high illiteracy and death rates, and

poor productivity.

The rural development issue, therefore, has become the focus of interest of all LDCs and international organisations. The 1970's and 1980's have been declared the development decades whereby all efforts were to be focussed on rural development of the third world.(3)

Various rural development strategies and policies have been adopted by many LDCs but very few of them have been thought to be successful. In centrally planned economies, the rural development issues have been - relatively speaking - taken most seriously and even so some success achieved in the issue at the expense of other factors in the economy. It is the preference of national priorities that determine ultimately the success of rural development objectives and programmes.

The objectives of rural development have been best illustrated by Surtaj Aziz as follows

> "To organise, develop and utilise the available resources of land, water and manpower in such a manner that the entire rural population dependent on these resources has an equal (or at least an equitable) opportunity to meet, as a minimum their basic needs of food, clothing and shelter with reasonable facilities for education and health and can live together in a positive and healthy social environment".(4)

With respect to these objectives in rural development and to PDRY's central-planned economy, this thesis will utilise in particular, the Chinese model on rural development which will be analysed in brief below.

According to Aziz's analysis, the most important element of the Chinese model is an equitable distribution of land and other rural resources. If these resources are unevenly distributed, very few objectives can be achieved. Unemployment and the underutilised labour which are potentially available in rural areas must be fully utilised to get more benefits from irrigation schemes. Drastic land reforms in favour of the poorest segment of the rural population are thus the first essential prerequisite of

agricultural and rural development.

The second important element is the organisation of the rural population for collective or cooperative activities appropriate to the stage of development and to the level of technology that has been reached. This would include ability to mobilise unemployed and under-employed labour in various rural activities : improving land, water-control project, building roads and even other craft activities. It would require gradual evolution of an institutional framework with respect to the gradual improvements in agricultural technology and practices. Land reform may reduce inequality but by themselves can seldom lead to a sustained increase in agricultural production without some degree of collectivisation. A small farmer with a small plot cannot own a tube-well or machinery, and without collectivisation, he is handicapped with production and technological limitations. Collectivisation, therefore, has the advantages of labour mobilisation, pooling of savings, and investable resources, uniform sharing of knowledge and technology, great specialisation and above-all a distinct improvement in social relationships. Out of all collectivisation forms, the most productive one is the one which its units are communally owned by all their members who develop their own arrangements for decision-making on such matters as cropping patterns, organisation of work and distribution of benefits within the broad policy guidelines coming from above. What counts in collectivisation is, in fact, efficiency of labour and optimum scale to the particular activity, and this will not come about without full participation of each rural member in the rural economy.

The third element, stated by Aziz, is the diversification of the rural economy into all rural activities : fisheries, animal husbandry, industrial activities and other rural crafts. In a country with an abundant labour and land scarcity these are bound to be unutilised resources if the whole population is tied to cultivation. It is, therefore,

very necessary to divert surplus labour to more fruitful activities. The diversification process, however, must be gradual but well-maintained to increase real rural income.

The fourth important element in the model is the gradual, but active promotion of a policy of social development. The expansion of social services such as education and health facilities is critically important in human resources development and so is the nature of social relationship. Oppression and exploitation by the land-owner, the local official or the middle-man are essential ingredients of poverty in many countries and these must be eliminated through land reforms, administrative reforms or other institutional devices which not only impose ceilings on larger holdings, but also change the social and political relationships in the rural areas. A positive social structure is needed to give dignity, self-respect and a sense of participation in a healthy and dynamic social environment.

Finally, the rural development framework must be linked to the rest of the economy in its political and administrative structure in order to resolve any conflicts or differences inevitably arising from different interest groups within the community. The ultimate success of such strategy will depend on the degree of integration of the political and administrative system of a rural area within the central political and administrative structure of the society.

Undoubtedly, this model will be successful only in an LDC which has a sound material base in its rural areas such as China or India, or even some African countries which have material and manpower in their rural areas. But in small countries such as PDRY which has a labour shortage as well as a poor material base at present, the model will have some difficulties but in time will definitely achieve some success leading to better social relationship and rural integration within the central system of the society; but its meagre resources has created some gaps in its effort to achieve its material goals.

The thesis is based on the author's experience in the agricultural sector in PDRY for the past ten years (1973-1982) where she worked as a Planning director for the agricultural sector in both the "Ministry of Planning' and the "Ministry of Agriculture and Agrarian Reform" for four years in each Ministry respectively. She was also a head of the agricultural projects evaluation unit in the Ministry of Agriculture. Regular field work has been accomplished by the author throughout the country and to all agricultural areas (at least 3 visits to each main wadi a year). The author participated in the activities leading to most of the references quoted locally or internationally and used in this thesis. Finally, two academic visits were made purely for this thesis during the summer of 1981 and in April 1982 in order to obtain more recent and up-to-date data.

Within this context PDRY's agricultural and rural development during the past decade will be examined critically and new proposals put forward for the authorities concerned to consider them for future development.

The theme of the thesis will discuss the relevant issues in the following order:-

Chapter 1.1 : will include historical background, the climate and the physical structure of the country (in Part One).

Chapter 1.2 : will discuss the traditional agriculture in South Yemen (Part Two).

Chapter 2 : will discuss the effort for and machinery of agricultural transformation and rural integration in seven sections : a preliminary section on the administration of agriculture and rural structure, and six sections on the agricultural institutions, i.e.

Chapter 2.1 : The administration of agricultural and rural structure.

2.2 : Irrigation

2.3 : Cooperatives

2.4 : State Farms

2.5 : Research & extension

2.6 : Agricultural Corporations

2.7 : Agricultural Educational Institutions

Chapter 3 : will discuss investment policies and their effect on the performance of agricultural and rural projects.

Chapter 4 : will discuss all agricultural policies : pricing, subsidies and taxation, and will analyse their influence on the agricultural production and labour.

Chapter 5 : will look into the rural development aspects through three selected major projects for rural integration

Chapter 6 : I : The Conclusion and (II) The Recommendations

1.1 Historical background

The People's Democratic Republic of Yemen (PDRY) is one of the newly established states in this world. It was established at the end of 1967 from the British Colony (Aden) and sixteen other dispersed Sultanates and Sheikhdoms which used to be called the British Protectorates in South Arabia. The National Liberation Front got independence for the country after a four-year struggle (1963-1967). The Front was composed of different freedom fighters which could be classified into a right and left wing party. In 1967 leadership was mainly constituted of the right wing group which was overthrown by the left wing of the Front on 22nd June, 1969. This has become to be known as the "Corrective Move" for the Political Organisation of the National Liberation Front. The country witnessed stable political conditions for nine years until June, 1978 when the President was overthrown because of his over-powered handling of the economy In October of the same year the Yemeni Socialist Party was established to replace the Unified Political Organisation of the National Liberation Front. This Party had the same Marxist-Leninist ideology basis. All other socialist groups and parties have been amalgamated within it.

The economy of the country before independence was a colonial one with a dualistic nature. The modern sector, based almost entirely on servicing British rule with its substantial military base and Government in Aden for 129 years. The service sector was very active because of Aden Port, Aden Refinery and the free zone enjoyed by Aden. The remaining parts of the country were largely rural areas where the population were engaged in traditional activities such as agriculture, fishing and pasturing.(5)

The significance of the corrective move in 1969 was brought about by the leaders' attitudes and objectives towards developing rural areas where economic potentialities were feasible. The Government introduced some drastic reforms in order to change the country's former colonial - traditional economic and social structures. This included nationalisation of foreign and major economic and financial entities and foreign trade and agrarian reform, which turned a substantial part of the cultivable land into state and cooperative farms.

Since then, Government policies have been geared to restraining private consumption and to accelerate the rate of capital formation which reached a high level of 31% of GNP in 1977 compared with less than two per cent in 1970. Consequently, between 1973 and 1977, the country witnessed a substantial economic and social development with a GNP growth averaging 9.9% per year. However, despite this progress in PDRY's economic and social fields, with such a low resources base, very low level of consumption, low productivity and growing imbalance in commodity trade, the Government is facing an enormous and challenging task which is virtually impossible to accomplish without a substantial amount of assistance from the international community, commensurate with this formidable task.(6)

PDRY population is estimated at 1.9 million in 1980 and growing at about 2.6% annually. The country, with a 1979 per capita income estimated

at SYD 120 or US$ 320 is considered one of the poorer countries in the world. The problems facing the country are enormous, but the most formidable one is its very low base of natural resources.(6)

Although density of population in PDRY is low compared to populations in least developed countries it is difficult to provide basic social services because of scattered and widely dispersed habitats and calls for highly expensive investment in physical and social infrastructures. See Fig. 1 showing densely populated areas in each Governorate in 1978.

1.2 (a) Physical Structure

PDRY is located in the South Western part of the Arabian Peninsula in Western Asia, extending over a territory about 337,000 sq.kms., including its islands. The country is mountainous and generally poor in natural resources. Oil was discovered in March 1982 but needs five years at least for full exploration. The country lacks permanent water streams and is basically dry. Agricultural production, consequently, is limited to scattered areas "wadis" of 700,000 acres irrigated by short-seasons spate and the limited ground water resources. Presently, PDRY major resources are its considerable fishery resources, its excellent habour of Aden and refinery and a talented labour force of whom a significant number are working abroad and transferring back some remittances to their families residing in the country.(6) The country is divided into six Governorates; each governorate is divided into 4 muderiates (Hadhramaut has six) and each muderiate, in turn, is divided into three to four centres (Fig. 2).

(b) Climate

PDRY has three climatical regions :

(i) The coastal region,
(ii) The mid-altitude region, and
(iii) The high-altitude region

Figure 1

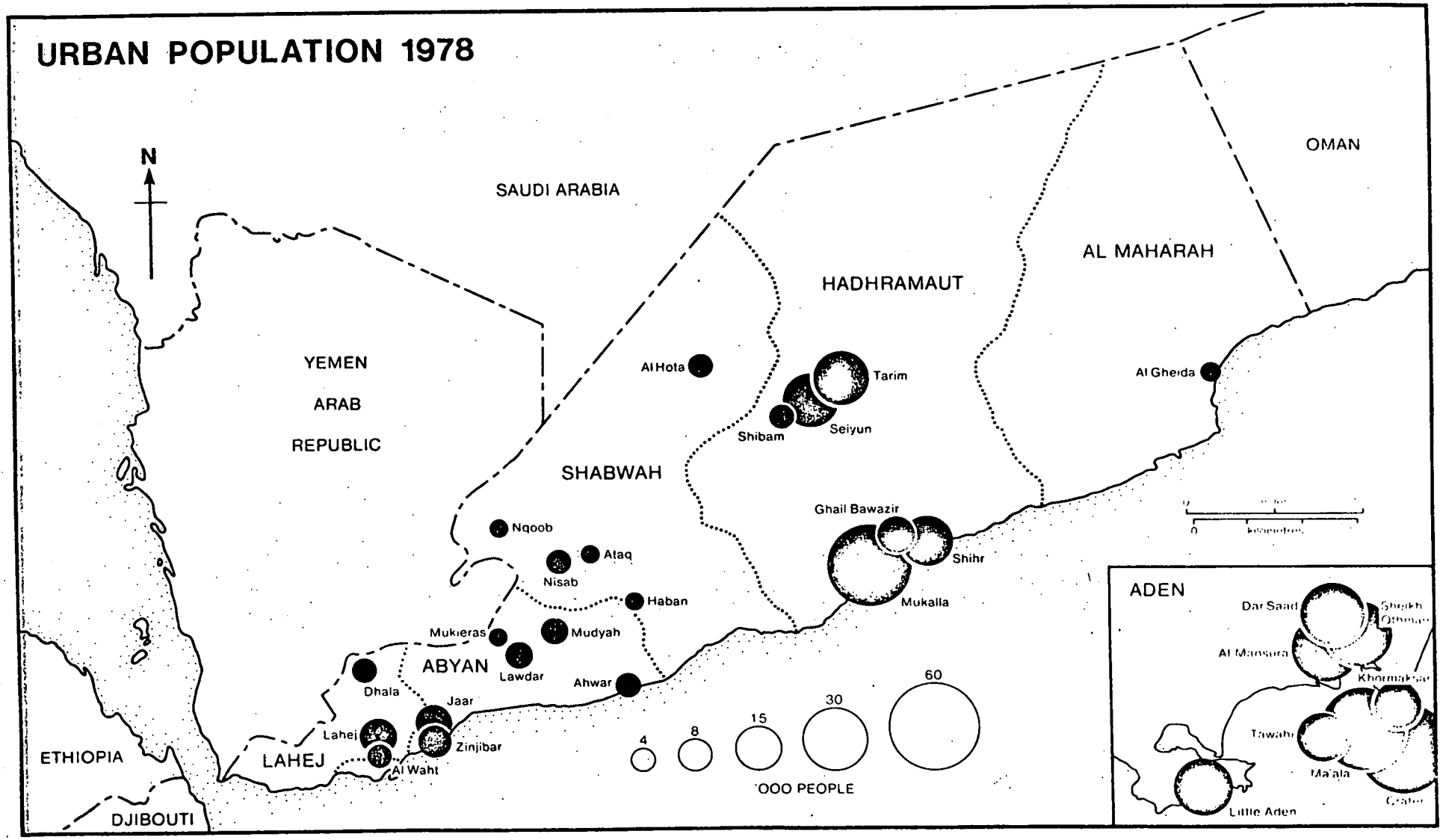
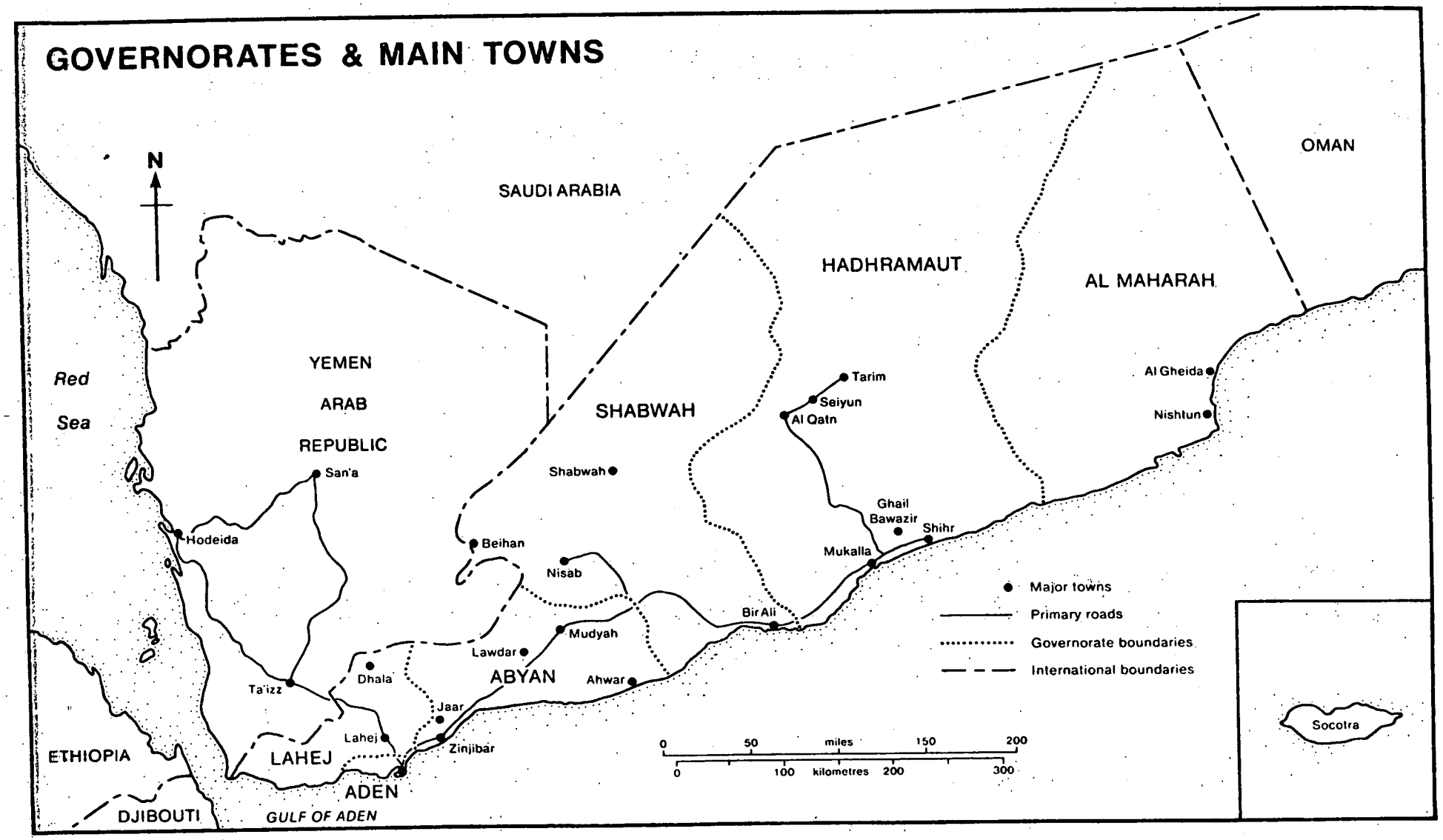

URBAN POPULATION 1978
N
SAUDI ARABIA
OMAN
AL MAHARAH
HADHRAMAUT
YEMEN
ARAB
REPUBLIC
SHABWAH
Al Hota
Tarim
Shibam
Seiyun
Al Gheida
Ghail Bawazir
Shihr
Mukalla
Nqoob
Ataq
Nisab
Haban
Mudyah
Mukieras
ABYAN
Lawdar
Ahwar
Dhala
Jaar
Lahej
Zinjibar
Al Waht
LAHEJ
ETHIOPIA
DJIBOUTI
4
8
15
30
60
'OOO PEOPLE
ADEN
Dar Saad
Al Mansura
Tawahi
Ma'ala
Little Aden

Figure 2


GOVERNORATES & MAIN TOWNS
N
SAUDI ARABIA
OMAN
HADHRAMAUT
AL MAHARAH
Red Sea
YEMEN ARAB REPUBLIC
SHABWAH
Tarim
Seiyun
Al Qatn
Al Gheida
Nishtun
San'a
Shabwah
Ghail Bawazir
Shihr
Hodeida
Beihan
Mukalla
Nisab
Bir Ali
Mudyah
Lawdar
Dhala
ABYAN
Ahwar
Ta'izz
Jaar
Lahej
Zinjibar
ETHIOPIA
LAHEJ
ADEN
DJIBOUTI
GULF OF ADEN
Major towns
Primary roads
Governorate boundaries
International boundaries
0 50 miles 150 200
0 100 kilometres 200 300
Socotra

The climate is tropical with mean annual temperature ranging between 30°C - 40°C, 20°C - 30°C and zero - 20°C in each region respectively. The coastal plains are hot and humid in the summer (80-85), but in the winter they are cool and much less humid (less than 50).

(c) Agriculture

The dry, arid climate of PDRY does not encourage agricultural activity. The cultivable area is estimated at about 700,000 acres constituting only 1% of the total area of the country. Out of this cultivable area only between 200-250 thousand acres are cultivated annually mainly by the spates of the existing 4 main wadis and 14 subsidiary wadis in the country. Today 72% of cultivated areas depend on spate irrigation and 28% on well-irrigation.(7)

Before independence, most arable land was under feudal control and the peasant earned very little of the return, either in cash or in kind. Agricultural infrastructures were few and natural agricultural problems represented by limited water resources and the salinity of both soil and water made agricultural prospects very limited. The worst natural problem in agriculture was the irregularity and unpredictability of floods or droughts of the spates. The four major wadis : Abyan, Tuban, Hadhramaut and Beihan are mainly characterised by swift and short-season floods which sometimes destroy everything in their way - villages, livestock, farms and even bridges and roads as happened recently in the Spring of 1981 and 1982. These floods come twice a year, April and August, and owing to ineffective infrastructures such as dams, weirs or canals most of the spate goes to the sea.

Major crops are cotton and bananas in coastal areas (Tuban and Abyan) plus other cereals such as sorghum, maize, millet and sesame

and fruits and vegetables. In the hinterland wheat and other cereals are also grown, plus vegetables and fruit. Most of the vegetables and fruit are new crops introduced after independence. Tobacco is also grown in coastal areas where the climate is milder.

The mode of production was very traditional before independence; no infrastructure existed and there was no machinery. Rural life was lacking all social facilities and rural markets were highly fragmented. Together with natural problems the Yemeni peasant was insecure and in constant fear of his livelihood being maintained. Faced with these problems, the Government in its plans (the Triennial Plan 1970/71-1972/3; the First Five Year Plan (FFYP) 1974-1978 and the current amended Second Five Year Plan (SFYP) 1981-85) has been giving top priority to irrigation schemes as a basis for agricultural infrastructures. The Government has also realised that these limitations are too severe to bring about any profitable aspects in agriculture and therefore all costs of these expensive infrastructures are to be treated as sunk-costs.

The agricultural sector is also restrained by man-made limitations such as inefficient management, lack of technological know-how, mis-allocation of input resources, misusage of mechanisation and inadequacy of cropping patterns. The new revolutionary policies have on one hand eased certain aspects in land-tenure, cropping patterns, drilling boreholes, land-levelling, machinery introduction, extension services and training of management, but on the other hand added, or rather created, other problems which will have to be discussed in this thesis in the appropriate sections. Figs. 3 & 4 display cultivated and potential-cultivated areas.

The Government's investments in the Triennial Plan amounted to 32 million dinars for which 39% of its allocation was for road construction to connect all rural areas with the Capital (Aden). The rest of the investment went on social services in rural areas (health and educational

Figure 3

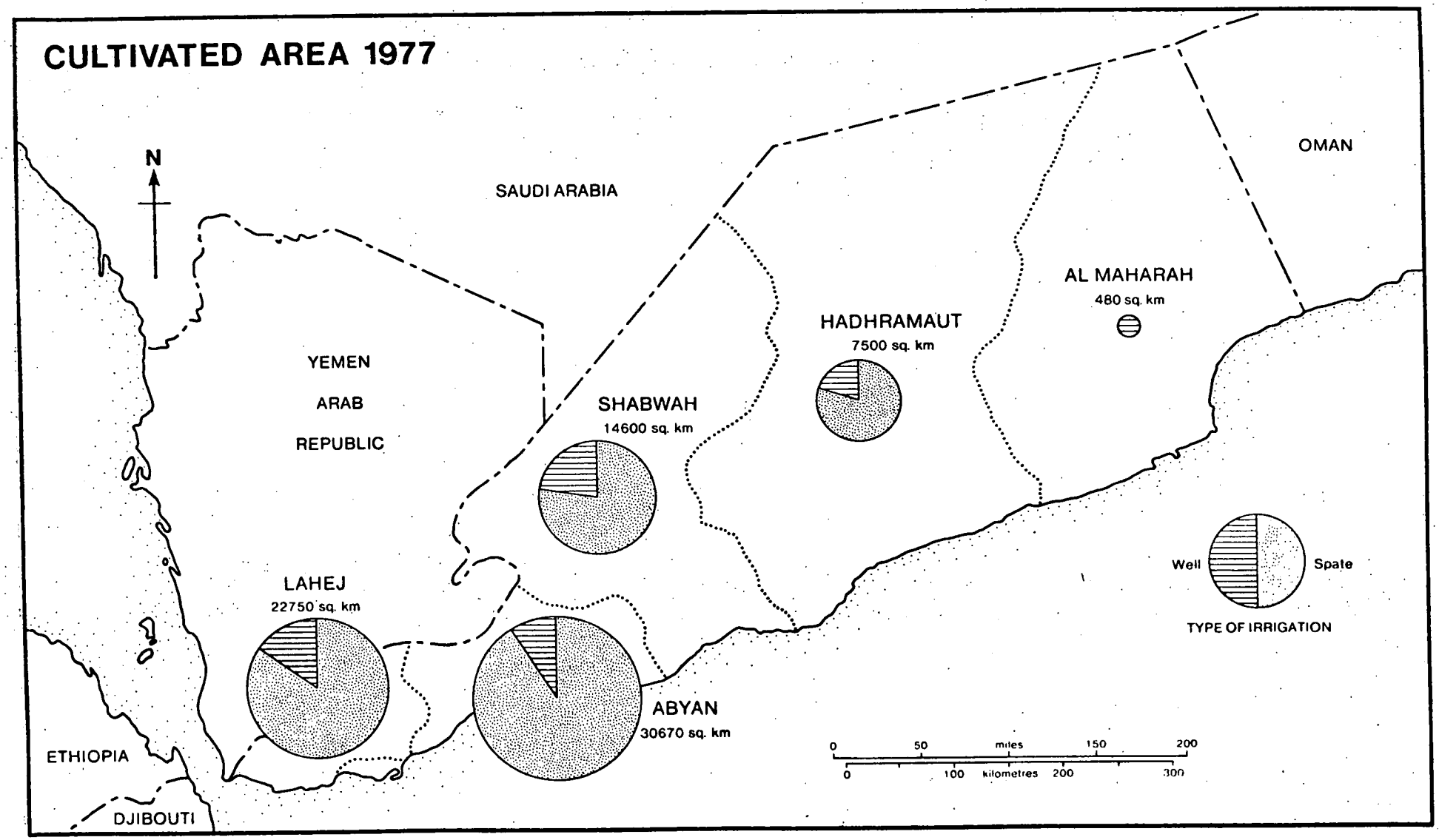
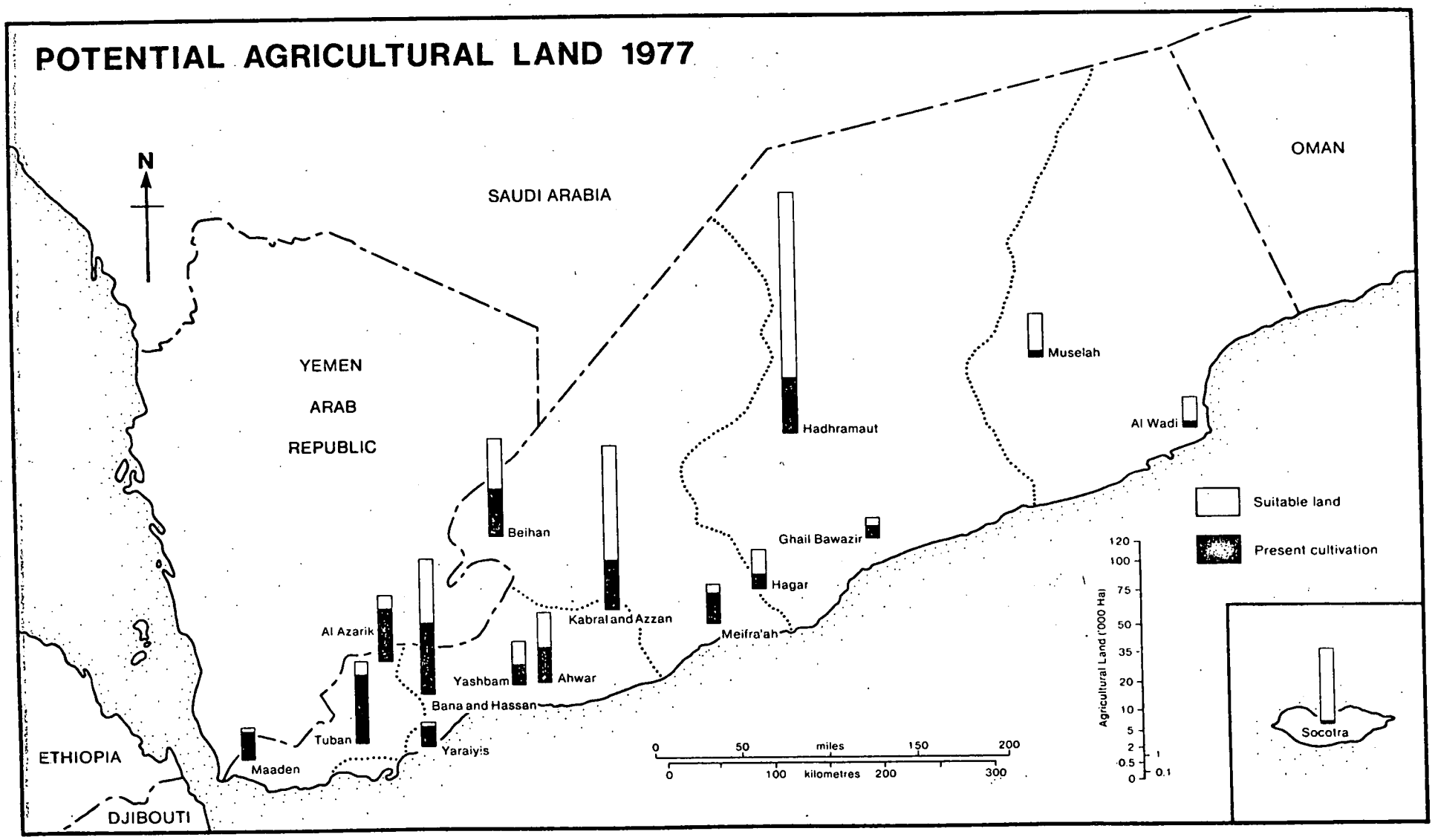

CULTIVATED AREA 1977
N
SAUDI ARABIA
OMAN
YEMEN
ARAB
REPUBLIC
AL MAHARAH
480 sq. km
HADHRAMAUT
7500 sq. km
SHABWAH
14600 sq. km
LAHEJ
22750 sq. km
ABYAN
30670 sq. km
Well
Spate
TYPE OF IRRIGATION
0 50 miles 150 200
0 100 kilometres 200 300
ETHIOPIA
DJIBOUTI

Figure 4


POTENTIAL AGRICULTURAL LAND 1977
N
SAUDI ARABIA
OMAN
YEMEN
ARAB
REPUBLIC
ETHIOPIA
DJIBOUTI
Maaden
Tuban
Al Azarik
Yaraiyis
Bana and Hassan
Yashbam
Ahwar
Kabral and Azzan
Beihan
Meifra'ah
Hagar
Ghail Bawazir
Hadhramaut
Muselah
Al Wadi
Suitable land
Present cultivation
Agricultural Land ('000 Ha)
120
100
75
50
35
20
10
5
2
1
0.5
0.1
0
0
50
miles
150
200
0
100
kilometres
200
300
Socotra

facilities mainly). Only about 86,000 dinars was allocated for agricultural support as will be discussed in Chapter 3. All investments in this plan, therefore, were in rural areas. Similarly, in the FFYP, a high proportion of investment was in transport and communication sectors and social services facilities to support the rural development and a limited amount for agriculture.

The administrative structure of PDRY today consists of sixteen ministries and two State Committees, all of which come under the Premier Supervision. The Ministry of Agriculture and Agrarian Reform (MAAR) is the major ministry in terms of resources and manpower. Each minister and head of a State Committee is responsible for the functions of his ministry/committee to the Prime-Minister and the Cabinet. The Cabinet is the ultimate executive body for all Governmental activities. The higher Public Council headed by the President is a legislative body for the Government's activities.

The Political Structure had the real power to lay-down and monitor Government policies by its central Committee. The Political Structure is a pyramidical structure headed by the 7-9 Polit-Bureau members who are responsible for all policy issues discussed by the central committee. The secretariat of the central committee has several departments, each being headed by a secretary. The Secretariat, at the region is represented by a Party secretary who monitors and follows-up party activities in the region. Similarly, the State is represented, at regional level, by a Governor who is appointed by Premier Statute. It is the coherence between the functions of both the Party Secretary and the Governor that maintains regional stability in rural areas.

The ministries, in their turn are also represented by their units in the region and all officials in the region are integrated under the Governor's administration.

The planning machinery is of central nature and is, primarily, responsible for all developmental programmes throughout the country. Similar to any ministry, it has its pyramidic structure in all regions. It coordinates its activities with all ministries and committees through planning units in the ministries and its planning units in the regions. Strong links are maintained among all structures : political, planning and executive, before investment policies are laid down.

CHAPTER 1

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CHAPTER 2

ADMINISTRATIVE STRUCTURE OF MAAR

The administrative structure of the MAAR is headed by the Minister who has the ultimate responsibility of the sector to the Premier. He has two deputies both responsible for the nine departments in the Ministry. The first deputy "for Irrigation and Corporations" has the responsibility for the main four departments, namely : the DIME, the Corporations department which, in turn, supervises the five Agriculture Corporations (Abyan Board, Tuban Board, PCMVF, Poultry & AF), the Man-power Department, and the Finance & Administrative Department. The second deputy "for Planning and Production" is responsible for the other five departments, namely : the Planning & Statistics Department, the Cooperatives Department, the State Farms Department, the Research & Extension Department and the Animal Production Department.(1)

At regional level the Ministry is represented by an Agricultural Department which has a pyramidic structure of the central ministry i.e. all departments' representatives are encompassed at the regional level. The director of the Agricultural Department comes under the Minister's responsibility directly but coordinates the department's function with the Governor on the one hand and with central department in MAAR on the other.

Agricultural activities are, primarily, coordinated via the planning department in MAAR and ultimately by the "Consulting body" which gathers monthly all general directors of all departments, regions and corporations under the Chairmanship of the Ministry to discuss highly relevant issues such as investment and production plans, pricing policies, projects' problems, training and any immediate issues to be resolved.

2.2 IRRIGATION

The most important functional department in the Ministry of Agriculture and Agrarian Reform (MAAR) is the Department of Irrigation and Mechanical Engineering (DIME) which is regarded as the main agent of the MAAR in its agricultural activities. It is a massive department of about 7,500 employees and technical staff.

The administrative structure of the DIME is governed by the MAAR Law issued recently in 1980. (Decree No.12) This legalises the pre-existing structure. The DIME is headed by a technical Director General who comes under the responsibility of the Deputy Minister for Irrigation activities. Until 1980 the department was divided into five main sections namely : surface water, underground water, secondary irrigation projects, meteorological and mechanical engineering sections; and three other sections for accounts, maintenance and personnel. An irrigation centre is annexed to the Department. The centre runs a two-year course to train irrigation technicians to assist in irrigation projects throughout the country. This absorbs about 40 Secondary school-leavers annually and is run by a well-qualified team of lecturers recruited both locally and internationally.

The surface water section is again subdivided into sub-sections which deal with reclamation, canal work, maintenance, soil conservation, spate irrigation and similar activities.

The underground water section is primarily concerned with drilling of wells, casing, clearing and deepening and rig maintenance.

The secondary irrigation projects section is responsible for maintenance of existing irrigation structures liable to flood/spate damage. It holds gabions, cement and machinery to be available at any time.

The meteorological section runs all the meteorological stations

in the wadis and relevant agricultural areas. (There are about 17 stations altogether). Gauging stations for rainfall and spates are meant to give warning to irrigators that a heavy spate or rain is on its way to specific areas which require prior protection.

The mechanical engineering section was established recently (1979) in the department. This section is in technical and administrative charge of all machinery renting stations (MRS) and Ministry workshops in the country.

Policies and Strategies

Policies in respect of irrigation activities are the cornerstone of policy towards the agricultural sector. They stress the utilisation of all available arable land in the country. Both MAAR and the political party have emphasised the construction of an adequate irrigation infrastructure which will improve the conditions of agricultural and ultimately will improve rural areas.

The significance of irrigation in agriculture is due to the fact that water resources are very limited and represent the main constraint on agricultural development. Furthermore about 72% of the agriculture depends on spate irrigation, but spates are often so irregular in timing and direction that their usefulness is unpredictable.(2) When the spate is strong and swift it damages everything in its course : villages, livestock and farms. When it is meagre, there is little effect and drought conditions prevail. These incidents are quite frequent in South Yemen agriculture and the main policy, therefore, is to strengthen the irrigation infrastructure by building dams and weirs in the main valleys and establishing irrigation networks and gauging stations to ensure the minimum necessary irrigation in relevant areas. Irrigation in recent years has been reinforced by a new policy, namely the making of hydrological and topographical studies prior to any engineering construction.

This policy has been adopted firstly because many ad hoc irrigation projects failed and, secondly, because previous studies had not recognised the need for long-term information on spate courses and their diversions.

In respect of well/ground water irrigation, the policy up to 1978 was to drill as many wells as possible for State farms,cooperatives and the National Water Corporation. For State farms the number of deep wells drilled up to 1980 was 353 and for cooperatives 207 deep wells and over 500 open shallow wells. This is shown in table 2.1 and 2.2 and displays the number of deep wells drilled in each Governorate by the DIME up to 1977. Since 1978, the policy has changed somewhat whereby drilling is only to be maintained in agricultural areas where there is no danger of reducing resources for drinking water. There has been a concentration of drilling in Lahej, Abyan and Hadhramaut areas, the most agricultural areas in the country, but because Aden City draws its drinking water from Lahej area, this region in particular has been greatly affected by over-exhaustion of drilling water for different purposes. As a result, the aquifer is now affected by salinity due to sea intrusion and this endangers drinking water. Consequently, the Government prohibited any further drilling in the area for agricultural purposes.

Other policies for groundwater irrigation were : encouragement of sprinkling irrigation, replacement of a group of shallow wells by a deep well and regular maintenance for old deep wells.

Irrigation strategies, unfortunately, have not been very successful because, so far, they have had a horizontal pattern. With a country like South Yemen - large in area and irregular in relief - a huge sum of material resources will be needed to invest in all of its 18 wadis for an adequate irrigation system. Owing to the limited resources invested in them most of the irrigation schemes so far established are not adequate

Table 2.1 No. of Wells (Deep & Shallow) and their Conditions in June 1980

Governorate	Deep Wells			Shallow Wells		
	Working	Out-of order	Total	Working	Out-of order	Total
ADEN	16	8	24	3	-	3
S.F.	16	8	24	3	-	3
Coops	-	-	-	-	-	-
LAHEJ	68	6	74	306	8	314
S.F.	59	6	65	10	1	11
Coops	9	-	9	296	7	303
ABYAN	161	30	191	1157	852	2009
S.F.	99	26	125	7	2	9
Coops	62	4	66	1150	850	2000
SHABWA	53	15	68	439	37	476
S.F.	37	9	46	3	-	3
Coops	16	6	22	436	37	473
HADRAMOUT	180	23	203	2021	42	2063
S.F.	77	16	93	-	-	-
Coops	103	7	110	2021	42	2063
AL-MAHARA	-	-	-	200	-	200
Coops	-	-	-	200	-	200
TOTAL	478	82	560	4126	939	5065
S.F.	288	65	353	23	3	26
Coops	190	17	207	4103	936	5039

Source : Production Plan 1980/81 - MAAR

Table 2.2 Number of Wells Drilled by Governorate
(1971/72 - 1976/77)

Governorate	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	Total
1st	-	-	-	-	18	7	25
2nd	38	22	20	21	14	11	126
3rd	27	37	28	19	16	34	161
4th	8	3	22	19	24	15	91
5th	19	28	33	13	16	35	144
6th	-	-	-	-	-	5	5
Total	92	90	103	72	88	107	552

Source : Department of Irrigation, Ministry of Agriculture and Agrarian Reform.

to withstand the heavy and swift spate that may be expected to occur at any time and very often irrigation schemes are lost in this way. Last summer (1981) an unexpected spate swept over Delta Abyan destroying a considerable amount of an irrigation network which had been made during the last 5 years. It destroyed the whole dam which had served the area for the last 28 years.(3) Between April 1981 and April 1982 a new design was made to withstand a huge spate of about 4,000 cubic metres per second, but in April 1982 a spate came to the area estimated at about 5,000 cubic metres per second destroying practically everything in the wadi, roads, bridges, livestock and villages. It was the mostterrible disaster ever seen in the area.(4)

Though the horizontal strategy adopted by the Government in order to reach all areas equally has not proved to be very successful, it was unavoidable given the concern with broader issues such as equitable regional development, migration control and rural development.

Methods of Irrigation - surface-water

It has already been indicated that 72% of cultivable land is irrigated by spate irrigation. This is mainly channelled to the cooperatives land. The surface water is estimated to be 1,400 million cubic metres per annum and is characterised by irregularities and uncontrollability.(5) The main surface water areas will be identified. The Tuban and Abyan wadis are irrigated twice a year - in April and at the end of August. The sources of Wadi Tuban are in North Yemen namely from Wadi Agan and Wadi Warayan as well as other secondary wadis. The source of Wadi Abyan comes mainly from the highlands of Lahej Governorate. Both Wadi Hassan and Wadi Bana sweep over Abyan Delta. The physical structure of Wadi Tuban fall into a great rift throughout the Governorate from north to south where the wadi gets divided into two distributaries : Al-Wadi Al-Kabir (the big valley) and Al-Wadi Al-Saghir (the small valley). In the Tuban area,

one dam and seven diverting weirs have been established to spate for a few days on even hours, but most of the spate still goes to the sea. Overall, barely 7% of the water can be effectively exploited for cultivable land.

Abyan Wadi has a similar - if not worse - character. There has only been one dam built and maintained for the past 28 years from the British occupation until last year, 1981, when it was destroyed by an unexpectedly heavy spate.

Both wadis, primarily, regulate the cotton crop production but with some subsidiary cereals and other crops such as sorghum, millet, vegetables and fruits in most of the cooperatives.

Wadi Hadhramout is the third largest wadi in the country and irrigation observation show that once every four years the spate comes heavily and swiftly, destroying everything in its way. In 1976 it washed away a whole State farm and some surrounding villages in Qam area. Its irregularities in its course are apparent. It flows for about 250 km. from the mountains of the hinterland of Hadhramout Governorate to Al-Shiheir - passing through various distributaries in the area. Wadi Idim, Du'an, Al-Ain and Amd are among the most significant wadis feeding the great Wadi Hadhramout which consists of 120,000 acres of irrigable land. Cereal crops such as wheat, sorghum and millet are grown in the wadi but dates are the dominant and the historical crop of the wadi. Fodder and alfalfa in particular has become increasingly significant in recent years. Since 1976 introduction of vegetables and fruit have become more important for the farmers in the wadi owing to their higher prices, relatively speaking, than some cereal crops. Tomatoes and potatoes in particular have been newly introduced and are receiving more attention than other crops. Three main diverting weirs hardly control the irrigation system in the wadi.

Ma'ifa - Hagr area is a coastal area characterised by a perennial spate irrigation which comes from springs in Wadi-Hagr. From an irrigation point of view the area is ideal for agricultural expansion, but the infrastructure of the wadi requires heavy investment which could not yield any return for 20 years at least.

Wadi Beihan is a major one in the Shabwa Governorate (fourth Governorate) but it has almost no existing infrastructure at all at present. A study of the wadi is being done now, financed by IDA of the World Bank and executed by FAO. Crops such as wheat, sorghum and fodder are mainly grown on those patches of land in the wadi where water is concentrated through its irregular course.

Wadi Maifa'a is another main wadi in the coastal part of Shabwa Governorate and is more regular than the Beihan wadi. Infrastructure is almost non-existent but a big project was launched in 1973 by the Government and assisted by Hungary. Cotton, vegetables and fruit are the potential crops in the wadi, in addition to the cereal crops grown at present.

There are also about ten other medium and small wadis such as Wadi Ahwar, Wadi Al-Azariq, Wadi Masila and Wadi Nisab in various parts of the country.

The main method adopted in spate irrigation is to divide the land into small rectangular plots of less than an acre (the majority of plots in Tuban and Abyan areas are between 1/3 and 2/3 of an acre) and allow water to enter via distributary canals. In contrast the new areas affected by certain big projects or programmes, such as the Yemeni-Russian programme, are properly levelled and sub-divided; each plot is about 3 acres controlled manually when the spate is passing through the main controlled canals.(6)

The traditional irrigation methods practiced by Yemeni farmers are not adequate for a modern, transformed agricultural system. Such small irregular plots make mechanisation difficult.

Ground water

The ground water irrigation system is preferable to the spate system for two reasons : first, it is controllable by either the farmer, the State farm or the cooperative and secondly, it is, to a certain extent, guaranteed at least for the medium and short-term. All State farms depend, primarily, on ground water irrigation while cooperatives use their ground water to irrigate cultivable land for vegetables and fruit. As table 2.1 shows in 1980, the number of deep wells in all Governorates was about 560 while there were 5055 shallow wells. It also displays the importance of the agricultural areas namely Hadhramout, Abyan and Tuban respectively. While State farm land constitutes only about 15% of total cultivable land, the table indicates the greater significance of groundwater to State farms than to cooperatives. The average deep well is about 60 metres in depth and only irrigates 50 acres. This implies that only 28,000 acres are irrigated by the deep wells and not more than 50,000 acres by the shallow wells, while the annual average area under cultivation is about 260,000 acres and the total cultivable area is about 750,000 acres.(7)

The main problem with this form of irrigation is its competition with potable water in certain areas. Tuban area has the most important aquifer for both drinking and agricultural water. Drilling for potable water for Aden City started in the early 1940's. In 1981 the area had 45 wells for drinking as well as 74 deep wells and 314 shallow wells for agriculture. Since 1977, salinity (from the intrusion of sea water to the aquifer) reached the potable water reservoir threatening Aden City and its suburbs. As a result, as noted previously, the Government banned any further drilling for MAAR in that area. However, the cooperatives

and State farms which needed more irrigation evaded the problem by replacing the small diesel engines of deep wells by larger ones.

Despite this, well irrigation is useful for vegetables, fruit and other permanent crops such as fodder, sorghum and other cereals. It receives high priority in the investment plan in order to fulfil Government policy for regular food supply in the market.

Machinery Renting Stations

The MRS establishment was seen by the 'Corrective move' as a necessary step to sustain the objectives of cooperatives and State farms in the agricultural sector. The work started when USSR provided the first 3 mechanical workshops in the country (1970); this was followed by the GDR with 5 MRS,each established in a large agricultural area, namely Lahej (Saber), Abyan (Giar), Modia, Maifa'a and Seyoun; and the establishment of eight mechanical and maintenance workshops accomplished with the assistance of Bulgaria. Furthermore the MAAR has a large workshop in Aden (Dar-Sa'ad) for maintaining cars, mobile vehicles, rigs and other agricultural equipment. There are,in total, 17 MRS and workshops for agricultural machinery and maintenance throughout agricultural areas. Table 2.3 shows places of the MRS in all Governorates and the manpower with respect to their activities in each one. The last four stations were under construction during the data collection for the stated report. Only the last one (Scotrah) is still under construction owing to transportation difficulties.

The MRS had become legally recognised as commercial enterprises by law No. 14 of 1972. Until 1980, all MRS had been self-administered and run by a very weak administration incurring heavy losses and equipment destruction in their enterprises. Lack of both experience and the technical know-how in the overall management was responsible for the

Table 2.3 Manpower in Machinery Renting Stations
(information collected in May 1979)

MRS	Governorate	Admin		Technicians		Drivers		Total
		No.	%	No.	%	No.	%	
Saber	Lahej	21	10	78	38	108	52	207
Al-Habilain	"	6	27	5	23	11	50	22
Dala	"	11	31	16	46	8	23	35
Giar	Abyan	37	12	122	39	154	49	313
Lodar	"	38	21	73	40	71	39	182
Ahwar	"	13	16	23	28	47	56	83
Modia	"	18	31	19	32	22	37	59
Laboos	"	-	-	-	-	-	-	-
Maifah	Shabwa	10	11	38	44	39	45	87
Beihan	"	17	19	22	25	50	56	89
Nissab	"	15	13	30	26	72	61	117
Seyoun	Hadhramout	52	16	105	32	169	52	326
Al-Qtn	"	-	-	-	-	-	-	-
Maifa'a-Hagr	"	-	-	-	-	-	-	-
Al-Ghaidah	Al-Mahara	-	-	-	-	-	-	-
Scotrah	Aden	-	-	-	-	-	-	-
TOTAL		238	16	531	35	751	49	1500

Source : Committee Report in MAAR

heavy losses of material equipment.[8] Table 2.4 indicates the quantity of machinery available in the well-established MRS and workshops. With respect to the available machinery and equipment of these MRS, the ideal situation for the MRS manpower is the following:

Administrative manpower	10%
Technicians on fixed equipment	30%
" for mobile equipment (drivers)	60%

The afore-mentioned manpower table of the MRS shows that the deviation from the ideal situation is not great; but there are considerable variations among MRS and workshops from one to the other, with some of the smaller MRS having a large proportion of administrators. There are similar variations in the maintenance of field machinery. In general, not less than 40% of various machinery is out of order, though the condition of the machinery is deteriorating owing to shortage of technical staff and to unskilled use. Generally speaking, however, one can measure the efficiency of existing machinery and fixed equipment in MRS and workshops from the following data :

% of each type in working order	
D4 & bulldozers	62
Tractors	63
Cars and mobile equipment	58
Fixed equipment	68
Combines	50

Various studies and critiques of MRS conditions have been made and forwarded to the authorities concerned to take appropriate measures. All these critiques were crystallised in the National Seminars for MRS which took place in MAAR in February 1980 and where full details of MRS conditions were discussed. As a result many steps have already been taken to improve MRS conditions. The most critical one was annexing MRS to

Table 2.4

Machinery Available in II Machinery Renting Stations Up To May 1979

Name of Mrs.	DU-Bulldozers (Komatso) Total	Working	Tractors-Fergesun Total	Working	Various Cars Total	Working	Fixed Equip. Total	Working	Combines Total	Working
Lodar	28	13	35	17	10	6	27	14	-	-
Modia	6	5	10	6	3	2	16	14	-	-
Nissab	30	17	52	25	9	8	34	34	-	-
Beihan	20	12	79	37	5	1	-	-	-	-
Maifah	19	10	16	13	4	2	36	24	-	-
Seiyoun	35	27	128	122	12	6	60	60	14	4
Ahwar	19	7	25	7	6	3	35	24	-	-
Dal'a	2	2	5	5	1	-	9	9	-	-
Al-Habelain	2	2	5	5	2	2	17	17	-	-
Saber	29	18	67	45	3	2	21	20	-	-
Giar	39	28	111	80	11	6	24	19	-	-
TOTAL	229	141	573	360	66	38	279	245	14	4

Source: Committee Report = Maar

the irrigation Department as one important section of the Department. Previously the MRS were self-administered, but the most well-established ones such as MRS in Saber, Giar and Seyoun were administered by Lahej Reconstruction Board, Abyan Development Board and Governorate administration in Seyoun district respectively. Today the MRS are under the full responsibility of the irrigation Department in all aspects. In contrast to the previous lax and weak technical administration, the MRS now have equal and central attention from a technical team of both local and foreign experts who respond immediately to the MRS requirements.

The financial position of all MRS is generally very poor.[8] Despite the assistance the MRS receive from the Government , most of them continue to be in annual deficit. The main factor here is the discrepancy between the renting price and costs. The MRS charge the State farms and the cooperatives a price for renting machinery on an hourly basis which falls far below the cost of fuel alone (let alone depreciation). This price was set by the MAAR in 1972 and despite fuel price changes, MRS could not convince the authorities of the need for higher prices. As long as the Government kept on providing the MRS with a stock of new machinery and replacing the old stock, there was little incentive for the MRS to put their case enthusiastically. It was only recently (1980) that new prices have been set for all the various types of machinery but they still allow a negligible profit to the MRS. So far all the debts of the MRS have been borne by the Government. A fresh start for the MRS was made in 1981 and changes are under way to lift their standard. A major training programme has been launched for MRS staff and technicians at various levels and a transformation of the old accounting system is being introduced in MRS and workshops. But again so much is needed since some problems remain untouched.

Irrigation projects

Irrigation projects constitute almost 75% of the projects in the annual and five-year plans.(9) As far as investments are concerned, irrigation projects absorb between 60%-80% of the agricultural total. In the early stage of planning, not less than 80% used to be allocated for irrigation, while at present not less than 60% is allocated for irrigation - apart from the irrigation activities involved in other plant or livestock projects.

The irrigation projects in the first five-year plan (1974-78) cost SYD 32,493,800 out of a total investment of SYD 52,556,400 for the agricultural sector. The actual spending on irrigation schemes was SYD 26,776,900 (62% out of the total actual spending of SYD 43,382,000 in the agricultural sector. A considerable portion of these investments has been financed by bilateral agreements and foreign aid.

Table 2.5 and 2.6 show the relevance of irrigation projects in the investment plans. The largest irrigation scheme is the excavation of main and distributary canals in spate irrigated areas in Lahej and Ahwar and drilling of wells with land reclamation in Hadhramout and other areas as incorporated in the Yemeni-Russian programme. Basically the work involves excavation of a main canal and distributary canals on each of Lahej and Ahwar areas to control the spate, establishment of a dam with a capacity to control water up to 2500 c. metres per second on either side and diverting weirs, levelling and reclaiming an area of about 22,000 acres and drilling 55 wells in Hadhramout. The programme has another 4-5 subsidiary integrated projects namely : establishment of a central workshop to maintain Russian equipment; investment projects for completed levelled areas and drilling of more wells in Hadhramout.

The estimated cost of this programme in the second five-year plan (SFYP) is not less than US$ 100 million (SYD 35 million). Other major projects are : Delta Abyan project covering about 45,000 acres in the

Table 2.5 Irrigation Projects in the Second Five-Year Plan 1979-83

The Project	Allocations SYD	Remarks
1. Delta Abyan devpt.	4,000,000	To improve 5000 acres
2. Establishment of main &distributory canal	16,500,000	To improve 26,600 acres
3. Development of Wadi Maifah	3,000,000	To improve 4,750 acres
4. Wells' drilling & Land Reclamation in Wadi Hadhramount	4,200,000	For 75 Wells & 4600 acres of land levelling.
5. Well drilling (in other parts of PDRY)	4,100,000	350 wells
6. Fodder Farm in Abyan	2,400,000	To cover 2900 acres
7. Cotton Farm in Loder	2,000,000	To cover 2500 acres
8. Pilot Farms in Abyan	1,000,000	To cover 1000 acres
9. Central maintainance workshop	1,600,000	
10. Devpt of MRS	2,000,000	No of MRS & Workshops 16
11. Maintainance of irrigation already installed	1,800,000	
12. Irrigation Centre Devpt.	150,000	
13. Secondary Irrign. Schemes	1,500,000	
14. Sprinkling Irrign.	280,000	Pilot work
15. Water Resources Study	2,000,000	
16. Other Studies	1,970,000	Irrigation Studies for Hadramount (149,000 acres), Nissals (16,610 acres), & Wadu Hagr (16,000 acres)
17. Project designs of Wadis Beihan & Ma'adin	250,000	

Source: 2nd Five-Year Plan (1979-83) Document

Abyan area. This has cost about US$ 25 million since 1971 and has been in vain since the summer and spring spate of 1981 and 1982 respectively destroyed the whole work of the project. Drilling projects have been incorporated in plans throughout the seventies and will continue in the 1980's. Table 2.5 shows the concentration of drilling activities in the early 1970's in the most relevant agricultural areas namely Hadhramout, Abyan and Lahej Governorates respectively. There are 12 other projects scattered throughout agricultural areas consolidated by local and foreign expertise from various countries.

Evaluation of Performance

From the above, DIME is clearly one of the main pillars of MAAR. Its total labour force is estimated as 7,500 of which there are not more than 30 technical people and 50 assistant technicians in all the irrigation schemes at the department. The overall performance of the irrigation schemes is not very satisfactory and not as much as was hoped for. The reasons for this are attributed to many complex factors related to low efficiency of manpower and miscalculations of various parameters at planning, execution and supervision levels.

At planning level, most of irrigation projects financed bilaterally or by the Government had not been evaluated prior to the implementation phase and had no feasibility studies. Investments were made available for any project prepared by the irrigation department. However, poorly integrated projects in the irrigation field were not considered, but generally, at the early stage, irrigation projects were not related to each other. This resulted in much waste in administrative manpower. Secondly, miscalculation in investments often took place resulting in repeating the project in every plan in form of finishing-up or expanding the project.Thirdly, programming of the project-phases had always been a problem for planning

owing to uncertainties in foreign finance. More important is the problem of delay of some foreign countries and agencies in fulfilling their pledges to certain projects. There was a six month delay in Delta Abyan project before signing the agreement with foreign funding. Wadi-Tuban project is another example which suffered 18 months delay in its starting date.

At implementation level, problems are numerous but the major ones are as follows:

(a) The lack or shortage of technical manpower in projects creates several difficulties for foreign expertise and consultants who mainly implement the project on sites.

(b) Project schedules are often interrupted by the involvement of several authorities, or by delay in equipment at the appropriate time.

(c) Transfer of either manpower on the job or of equipment to other sites often interrupts the work pattern of the team.

(d) Other related agencies do not always fulfil their obligations towards irrigation projects.

(e) Spare parts of equipment have been a problem in all kinds of projects and can hardly be solved under a centralised market system.

(f) Shortage of labour force in such activities is quite common. High incentives, therefore, has been the only outcome for this problem but at the expense of other agricultural projects in livestock or in State farms.

(g) Project management still suffers serious deficiencies and unfortunately the Department has to give up its key technical staff for project management owing to the considerable amount of investment being put in a specific project. Thus the Department suffers two crosses : insufficient management (from a 'proper' management point of view) and a loss of an

irrigation man from the site.

(h) High depreciation of machinery and equipment such as rigs and combines before making optimum use during their life-span.

There are, however, other minor but important problems in the irrigation field such as storage, transportation of machinery to promote areas and equipment clearance. All these restrict the department's activities to a certain extent but the scale of the problem has been reduced as time has gone by.

At supervision level, the above problems are reflected in the central department activities and consequently influence supervision. Delta Abyan Development project is supervised entirely by the Director General of the DIME who has a great bulk of daily work in monitoring and running the department administratively and financially. Very few lucky projects are monitored and supervised by sound technical personnel, but even these personnel are involved involuntarily with other committees' works. This implies that the marginal efficiency of supervision is pulled down by the diversion of their efforts elsewhere.

In conclusion, irrigation activities are very important for agricultural development in the PDRY and truly represents the backbone of a sound agricultural strategy. They do, however, require heavy and sustained material resources for they are in such difficult physical conditions. A fruitful and meaningful policy would have been to ensure that irrigation activities were more highly concentrated on certain specific areas rather than have been scattered all over agricultural areas. However, a concentrated policy implies a vertical strategy in correspondence with other socio-economic policies.

2.3 COOPERATIVES

The cooperative movement in PDRY effectively started at the beginning of the independence era in 1968 when the first Agrarian Reform Law was issued. The movement was considered, then, as an integral part of the social philosophy adopted by the newly-established State. In 1970, the Agrarian Reform Law was amended so that cooperatives became regarded as the principal agency for rural development in the country and in 1972 the cooperatives' law was issued. This governs cooperatives establishment and organisation and provides the legal basis for all types of agricultural and non-agricultural cooperatives.(10)

Land Reform

The Agrarian Reform Law of 1970 abolished the traditional share-cropping systems and set ceilings on private-held land of 20 acres of irrigated land and 40 acres of non-irrigated land. Land in excess of these ceilings was to be expropriated. All confiscated and expropriated lands were vested in the State for redevelopment as production cooperatives or State farms. The cooperative farms were to be allocated to landless agricultural workers, poor farmers, and citizens who had migrated into the agricultural area either from the cities or the desert.

Structure

Since then, about 44 agricultural cooperatives have been established compared with some 85 non-agricultural cooperatives (fisheries, industrial and consumer cooperatives). The size of a cooperative varies between about 5,000-15,000 acres depending on its location and its fertility. The total number of cooperatives members is about 39,000 with an average of 800 members per cooperative.(11)

Most cooperatives are in four main valleys : Abyan, Tuban, Hadhramout and Beihan and depend mainly on spate irrigation. Only 28%

of the cultivated land is irrigated by ground-water and this supply is limited as cooperatives have very few artesian wells and many shallow wells with no more than 30 feet in depth as indicated in table 2.1 (3 maps are attached on cooperatives on the three major wadis of Abyan, Tu'ban and Hadhramout).

There are two types of cooperatives :

(i) Service Cooperatives

In this category the members farm their own plots individually, while the cooperative organises supplies and services on their behalf. The majority of cooperatives is of this type.

(ii) Production-Service Cooperatives

In this category some or all members are grouped into small "production units" (between 5-20 members). The members of production units pool their land and labour, and share the costs and the income of the unit. The cooperatives are in other respects like those in category (i), providing a service to all members whether farming individually or in production units. In the national Law on cooperation, this type of cooperatives are seen as "transitional organisations" in which cooperative production can be encouraged and developed. This type, however, exists mainly in Wadi-Hadhramout.(7)

The cooperative functions to their members are summarised as follows:(11)

- procurement and distribution of seeds, fertilisers and insecticides.
- providing seasonal credit, in cash or kind, for inputs and labour.
- providing pumps and occasionally, other equipment on long-term.
- supplying machinery services either using the cooperatives' own equipment or hiring from machinery rental stations and
- transport, storage and marketing of farmers' product.

Cooperatives also collect their fees and State taxes from members.

A cooperative is managed by a managing board constituted of a manager, an accountant and between seven and fifteen elected members, depending on

Figure 5

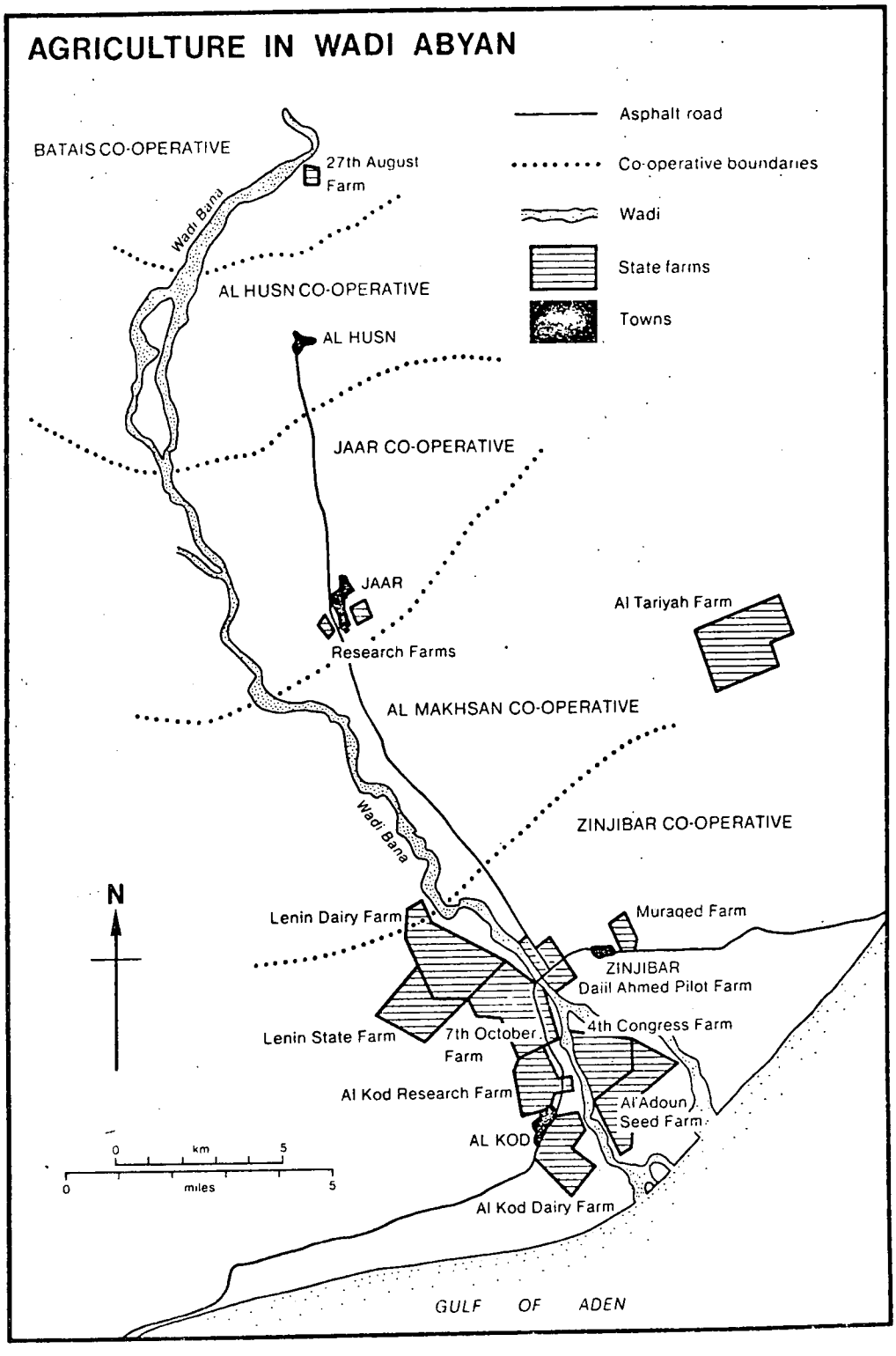

AGRICULTURE IN WADI ABYAN
Asphalt road
Co-operative boundaries
Wadi
State farms
Towns
BATAIS CO-OPERATIVE
27th August Farm
Wadi Bana
AL HUSN CO-OPERATIVE
AL HUSN
JAAR CO-OPERATIVE
JAAR
Research Farms
Al Tariyah Farm
AL MAKHSAN CO-OPERATIVE
ZINJIBAR CO-OPERATIVE
Wadi Bana
N
Lenin Dairy Farm
Muraqed Farm
ZINJIBAR
Daiil Ahmed Pilot Farm
4th Congress Farm
Lenin State Farm
7th October Farm
Al Kod Research Farm
Al Adoun Seed Farm
AL KOD
Al Kod Dairy Farm
0 km 5
0 miles 5
GULF OF ADEN

Figure 6

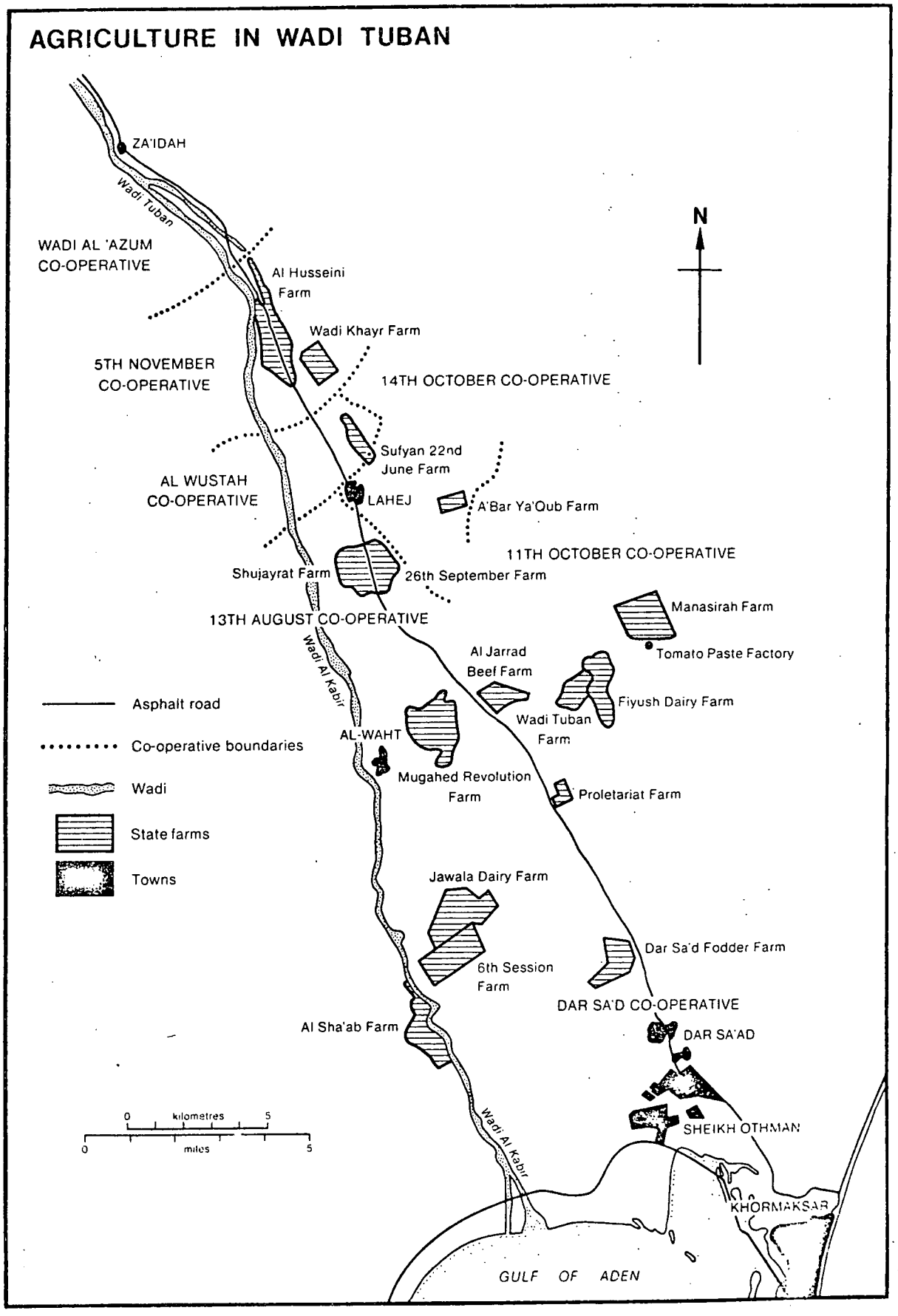
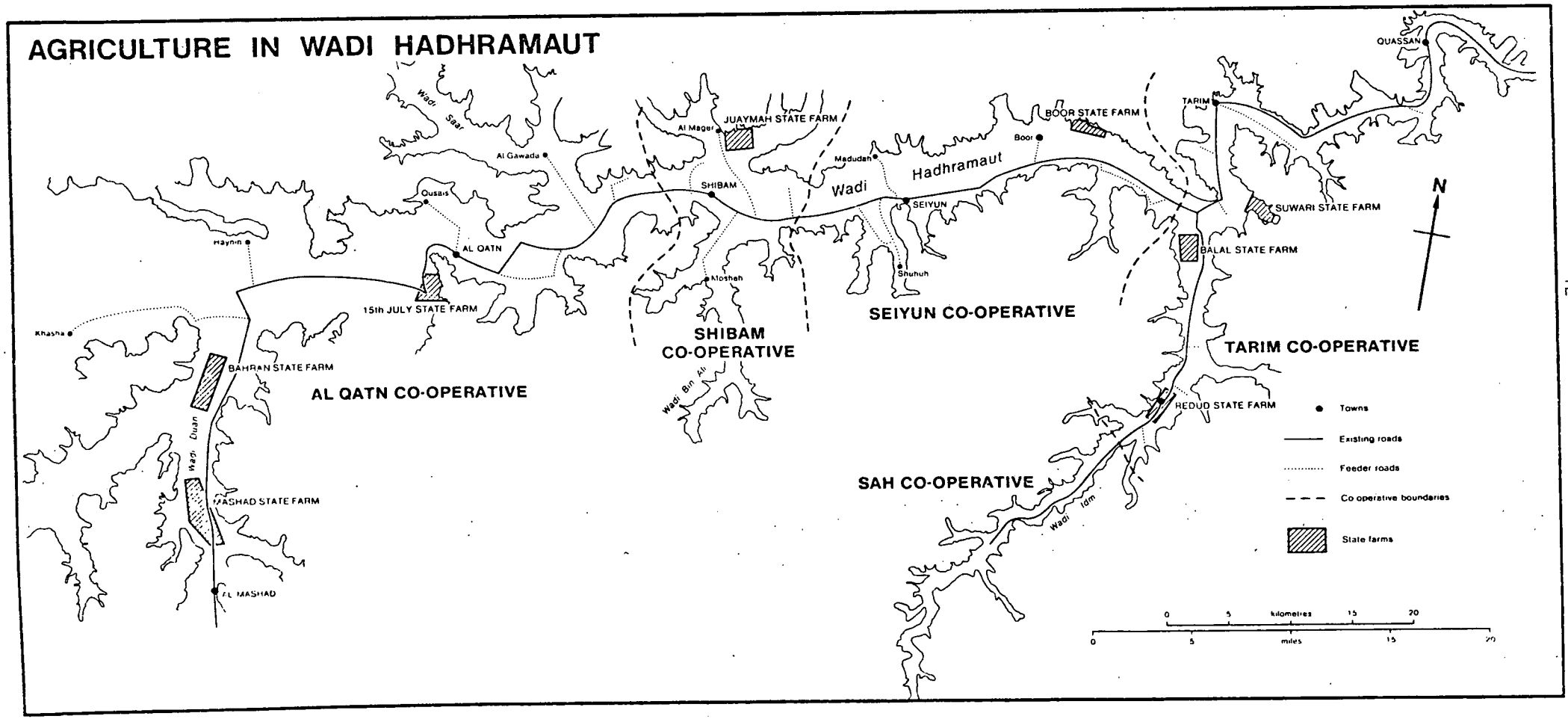

AGRICULTURE IN WADI TUBAN
ZA'IDAH
Wadi Tuban
WADI AL 'AZUM CO-OPERATIVE
Al Husseini Farm
Wadi Khayr Farm
5TH NOVEMBER CO-OPERATIVE
14TH OCTOBER CO-OPERATIVE
Sufyan 22nd June Farm
AL WUSTAH CO-OPERATIVE
LAHEJ
A'Bar Ya'Qub Farm
11TH OCTOBER CO-OPERATIVE
Shujayrat Farm
26th September Farm
Manasirah Farm
13TH AUGUST CO-OPERATIVE
Tomato Paste Factory
Wadi Al Kabir
Al Jarrad Beef Farm
Fiyush Dairy Farm
Wadi Tuban Farm
AL-WAHT
Mugahed Revolution Farm
Proletariat Farm
Asphalt road
Co-operative boundaries
Wadi
State farms
Towns
Jawala Dairy Farm
Dar Sa'd Fodder Farm
6th Session Farm
DAR SA'D CO-OPERATIVE
Al Sha'ab Farm
DAR SA'AD
SHEIKH OTHMAN
Wadi Al Kabir
KHORMAKSAR
GULF OF ADEN
N
0 kilometres 5
0 miles 5

Figure 7


AGRICULTURE IN WADI HADHRAMAUT
Wadi Saar
Al Gawada
Qussis
Hayhin
AL QATN
15th JULY STATE FARM
Khasha
BAHRAN STATE FARM
AL QATN CO-OPERATIVE
Wadi Duan
MASHAD STATE FARM
AL MASHAD
Al Mager
JUAYMAH STATE FARM
SHIBAM
Mosheh
SHIBAM CO-OPERATIVE
Wadi Bin Ali
Madudah
Wadi Hadhramaut
SEIYUN
Shuhuh
SEIYUN CO-OPERATIVE
Boor
BOOR STATE FARM
TARIM
QUASSAN
SUWARI STATE FARM
BALAL STATE FARM
TARIM CO-OPERATIVE
REDUD STATE FARM
SAH CO-OPERATIVE
Wadi Idm
N
Towns
Existing roads
Feeder roads
Co operative boundaries
State farms
0 5 kilometres 15 20
0 5 miles 15 20

the size of the cooperative. The Manager and the accountant are the only two members appointed and paid by the Government. Other members of the managing board are paid by the cooperative.

Cooperative Policies

The policies for cooperatives are laid down by the Party authorities and adopted by the Government represented by MAAR. The general policy has been the promotion of all cooperatives so that they play a positive role in national development by enlarging the public awareness of the benefits of cooperation, by utilising all resources effectively to increase production and by creating a self-reliant spirit in rural areas. Two more specific objectives have been laid down for cooperatives, namely :

(i) To achieve a sustained development in production of food and agro-industrial crops to meet the requirements of both a growing population and growing local industries.

(ii) To raise the standard of living of the peasant in social and economic terms via the cooperatives and other progress institutions so that advantages of these new institutions for social transformation can be shown.

To achieve and sustain these general aims, the Government adopted other macro and micro-policies for the cooperatives. The major policies are as follows:-

(a) In formulating projects for the Plans, priority is given to those agricultural and economic projects which will serve the cooperatives directly or indirectly (e.g. irrigation schemes and rural highways).

(b) All agricultural requirements (fertilisers, seeds and chemicals) are to be provided at 50% of their cost. (this policy was effective until 1979 at which time a high portion of subsidies was removed).

(c) The establishment of Machinery Renting Stations (MRS) was intended, primarily, to serve the cooperatives. Sixteen of these MRS are scattered all over the country; each one serves a group of cooperatives and State farms available in a wadi.

(d) All extension services and institutional training schemes are provided

free of charge to farmers and cooperatives management staff.

(e) The cost of all levelling and drilling activities and canals' excavation are met by the Government.

However, the Government also has to fulfil its obligation to the nation by ensuring the supply of food at reasonable prices, so it fixes the prices of each food item throughout the country without consideration of the variations in productivity or costs of these products in various areas. The Government, represented by MAAR, also lays down the production plan of food and crops with respect to the requirements of the population and local industries and regulates the importation of food (which still covers the bulk of the nation's requirements).

The major emphasis in the cooperatives' policies have not changed or even been influenced by current changes as cooperatives are seen as so important a form for social transformation and therefore have to be encouraged at any cost. However, various micro-policy changes have been taking place.

At political level, the cooperatives in their early stages were politically oriented most of the time. The reason for this was the speed of the change that took place in the agrarian reform with respect to the pre-feudal system prevailing. Peasants who benefitted from the land of Sultans and Sheikhs did not feel fully entitled to the land so they had to be motivated politically to acquire confidence. After a few years of independence and particularly since 1972, the cooperatives had become politically well-established and so the emphasis was on the increase of production via new technology, High Yield Varieties (HYV) and mechanisation. An increase in production was quite noticeable up to 1975-76 but thereafter it increased at a declining rate and by 1978 agricultural production of some basic crops was declining.

In reaction to this, the agricultural authorities agreed to new

measures, the most important of which were to provide more rewards for achievements such as increased labour wages in the agricultural sector, release some of the 'sticky' price policies that had been going on for 7 years and allow some freedom to cooperatives in marketing their products.

The agricultural output is, principally, assessed by the performance of the "Production Plan" in which the cooperatives have the highest share. All agricultural policies are, ultimately, reflected in the Production Plan and its effectiveness. It is, therefore, important to examine the production plan mechanism before evaluating agricultural output in cooperatives.

The Production Plan is prepared annually (July/June) by the Production Plan Committee (P.P.C) and is reviewed quarterly. The Production Plan Committee is headed by the deputy Minister for Planning and Production in MAAR and has the following members : the Director of Planning & Statistics Department in MAAR as a Secretary, the heads of both planning and statistics sections of the Planning Department, Directors General of Cooperatives, State farms and Animal Production Departments, agricultural Directors in regions, representative of Farmers Union, representative of the party, representative from the Ministry of Planning, General Director of PCMVF and some farmers' representatives from both State farms and cooperatives.

The PPC draws out a proposed plan with respect to demand and available resources of area, water, equipment and labour. With a sketch of a proposed production plan, the PPC goes down to every region discussing the plan with all farms and the majority of farmers. Amendments are made on the final draft and each State farm or cooperative is bound by the plan which allocates areas for each crop in each farm. The PCMVF which markets all output through its receiving and retail centres, is also bound by the plan to market all farmers' output in cooperatives. This gives security to the cooperative farmer in marketing his sales. Often there are losses in

marketing operations due to bad handling or inadequate storage and transport and these are settled by the Government in the form of subsidies. However, despite this relief in marketing operation, the cooperative farmer seemed to be less contented with the whole centralised mechanism of production which involved "Sticky Prices" for his output, centralised marketing and pre-planned cropping pattern.

The experience of over-centralisation has been proved unsuccessful and consequently some changes took place in 1979 when some farm-gate prices of some items have risen and a certain portion of marketing process decentralised. Both State farms and cooperatives, today, are required to fulfil the production plan target and to grow beyond the plan's target any crops they like. The PCMVF is entitled to market the plan's targets only. Non-basic items such as salads and cabbages are to be marketed by the cooperatives or State farms directly to consumers. These relaxion policies have been initiated to act as incentives to them.

Evaluation of Performance

In the face of the general problems, cooperatives have not been able to fulfil production targets at the planned rate. On average, the production plan would have been fulfilled at 50% and, at best, 67% of the planned targets. The reasons for this are summarised as follows:

(a) Productivity of both labour and crops in the cooperatives has not been progressing as was hoped for. On the one hand, the 'sticky' pricing policy and the lower wages in agriculture have been responsible for discouraging farmers from attaining high productivity in labour and crops. But, on the other, cultivation has not been carried out by skilled farmers at large scale. Most of the cooperatives' farmers are traditional and used to old cropping patterns. The new techniques of using fertilisers, seeds, insecticides and machinery which are demonstrated by skilled and technical

agricultural staff are seldom followed by some traditional farmers. Of course salinity and dry climate influence crop productivity but prices and labour shortage worsen the situation. Whereas tomato productivity in Bulgaria is 28 tons per acre, it is only 5-7 tons/acre in PDRY. Similarly, in other crops, large gaps have to be covered on productivity if production is to be increased.

(b) A lack of agricultural facilities stands as a bottleneck to agricultural expansion. Extension services have been emphasised in all agricultural plans to be provided, primarily, to the cooperatives throughout the country. An extension centre was established in 1971 to train local farmers and peasants on their fields and at the centre on various extension facilities provided most of the time free of charge by the Government. In practice many peasants and farmers appreciate these facilities but fail to keep up with instructions given. Another problem was that extension services were very weak up to 1975 owing to the lack of technical staff in this field. In fact the absence of an integrated extension system in the agricultural structure was the main defect of rural development strategy. It was quite late when the authorities started to give significance to it in MAAR.

The credit facilities have, to some extent, eased some farmers' problems. The Agricultural Development Fund (ADF) provides credit facilities to farmers at 2% interest rate. Unfortunately, the records show that hardly 10% of these loans are paid off. Apparently as the ADF is an organ of MAAR, farmers do not take its restrictions and regulations seriously.(12) While the Industrial and Agricultural Credit Department of the National Bank of Yemen (NBY) provides credit facilities to farmers or cooperatives at 5-6% interest rate and maintain a lot of restrictions in granting loans, their records show satisfactory repayments by cooperatives and farmers. This is due to the fact that the NBY has more experience in lending facilities and the follow-up performance of loans at field level.

(c) Management of cooperatives has been another limiting factor in cooperatives' growth.[7] To enhance political motivation in rural areas and among farmers and peasants, cooperatives' managements were, primarily, politically-oriented. This was an inevitable stage in the agrarian and collectivisation changes. Management training for cooperatives only started in 1971 with the establishment of the Cooperative Institute (financed by the Government and the UNDP and executed by the ILO and some technicians from GDR). The Institute has been providing short, medium and long-term courses, varying from 3 weeks to 2 years. Training on cooperatives' management, book-keeping and accounts are the main subjects in each programme. The cooperatives standards have improved to some extent in terms of rural management but they still need better management to cope with various development stages the country is passing through in various fields.

(d) Wages are another element depressing agriculture in both cooperatives and State farms. The majority of cooperatives are of type I where farmers either own or benefit from their land and during harvest or sowing time they hire labour. Unfortunately, as a typical LDC, agricultural labourers receive very low wages, while wages in other sectors and in rural areas are extremely high. Owing to the fact that PDRY suffers a labour shortage, it is very likely that labourers will drift to other non-agricultural sectors such as construction which pays not less than ten times the agricultural wages. This problem has been met by the Government several times and agricultural wages have risen twice since 1978 so far from an average wage of SYD 19-21 to SYD 43-50 per month, but they are still far below other competing sectors.[8]

(e) A prices policy came about to balance the positions of both the producer and the consumer. But as time went on, the consumer's economic condition has been improving with rising wages and various labour

opportunities on his way while the farmer's position with unchanged prices over a longer period did not improve. Thus the prices policy (with imposed taxes) favoured the consumer rather than the producer.

Finally there is another category of factors responsible for the relative inefficiency of the cooperatives in rural development compared to that hoped for at an earlier stage. Firstly, agricultural objectives have been highly ambitious. Indeed in the early seventy's, the agricultural expansion was spectacular but agricultural objectives continued to be unrealistic by expecting, for instance, a growth rate of 12% for the agricultural sector, whereas good growth rates achieved in Third World countries are of the order of 5%. Secondly, the revolutionary leaps adopted by the authorities concerned did not allow a smooth and sustained development process for the cooperatives.(8) Intervention by various political authorities in cooperatives' management weakened the democratic administration hoped for in cooperatives. As a result of all these complicated factors many agricultural labourers have left the agricultural sector and no longer depend upon it as the main source of their livelihood. They have sought jobs in other nearby sectors and maintained their plots for part time work. Even the authorities have begun to lose confidence in the cooperatives capabilities to supply adequate food for the nation and recently various alternatives in the cooperatives approach and organisation have been under discussion.

2.4 STATE FARMS

Origins

The establishment and expansion of State farms in PDRY is closely tied with the corrective move of 1969 which led to the execution of the Agrarian Reform Law in the country. The State farms are composed of the land in excess of the ceilings allowed for privately-held lands. Most of

the confiscated arable was bore-land (i.e. virgin cultivable land) in major wadis. The Government levelled these areas and established most State farms on them.

Structure

By 1975, the Government had established about 41 Plant State farms and 6 Dairy State farms in the country, but these were, then, reduced to 33 Plant State farms by the amalgamation of the small ones into nearby cooperatives (a list of the State farms in all Governorates is in the Appendix). The dairy State farms were scheduled to expand, but did not and remained as they were. The areas of State farms vary but, in general, they fall between 500-3,000 acres each. The total area of all State farms in the country is approximately 30,000 acres - some 20% of the total cultivated areas in PDRY. Unlike the cooperatives, the State farms depend, mainly on ground-water resources for permanent irrigation which is required for vegetables and fruit.

The State farms are regarded as the most distinctive form for agricultural transformation and for this reason they are given more attention and higher priority than the cooperatives. For example, proper land-levelling and land-planning for State farms have been emphasised in each annual plan of MAAR and Party meetings.

Policies

The ruling Party often stresses the encouragement and promotion of the standard of State farms to ensure a regular supply of vegetables and fruit to the nation which could make the country self-sufficient. This has been the main general objective of State farms, stressed by both the Party and the State. The other subordinating objective for the establishment of State farms was to initiate a sophisticated social institution run by the State to help in the economic transformation of the rural areas.

The policies adopted to fulfil such objectives were various. Firstly, the Government took full responsibility for the physical initiation of the State farms, levelling their whole areas to a modern standard. Secondly, the main continuing policy for State farms has been the financing of all the required investment in the first 2 years by the Government. In practice, for reasons to be discussed below, the Government is continuing to fund a great deal of investments beyond the 2-year period with an average of a million dinars annually, apart from other subsidies involved in agricultural inputs. Thirdly, the Government has been subsidising fertilisers and chemical prices for State farms at a rate of 50%. In many cases State farms get their agricultural requirements free of charge (such as machinery, pumps etc.) in the form of a development project within the investment plan. Fourthly, and more significant, the Government drills all the wells and excavates the canals for the State farms, even beyond the two-year initial period if expansion is needed and more wells are required. Similarly with mechanisation, the State farms own a little or some machinery (tractors, ploughs, trailers and sprayers) which the Government provides in the investment programme. In most cases, current maintenance of wells, for example, is done free of charge by agricultural authorities. Thus State farms enjoy top priority and better facilities than cooperatives with respect to Government investment. Fifthly, State farms products are marketed by the PCMVF which takes the responsibility for marketing operations throughout the country. Thus State farms do not have to think of storage and marketing problems.

Finally, the MAAR provides all extension, credit and training facilities to State farms. Owing to their limited areas compared to cooperatives, extension facilities are more effective and fruitful - especially in those State farms in proximity to main towns and research centres. As far as training is concerned, relatively speaking, it has more impact

on State farms than in cooperatives as the agricultural labourer who receives wages is more able to change practices than the peasant whose income is directly tied to his land's and family's production.

Against all these above-mentioned advantages for State farms, the Government has laid down certain obligations for State farms. The most important one has been the prior obligation of cultivating vegetables and fruit and only then other cash crops (if any) as allocated by the Production Plan. The second one has been the fixing of farm-gate prices of all crops produced by State farms at levels such that the State farms are expected to get some profit and the consumer pays reasonable prices for his requirements of vegetables and fruit. The third obligation is that the State farms must sell all its products to the PCMVF at the controlled prices and not allowed to sell its production to a third party. However, in 1979 when a portion of the marketing process was decentralised, State farms could sell non-basic items such as carrot, cabbages and salads to consumers on the free market and to sell the production beyond the Plan's targets also to consumers, as do cooperatives.

Current changes

After 10 years (1969-78) it has been realised that State farms have not fulfilled the expected objectives for which they were established. Various evaluations have been carried out to pin-point the restricting factors responsible for their failure, and as a result a new approach in policy has been adopted for State farms.(7)

At political level, it was realised that State farms, functioning as public enterprises, had been spoiled to a great extent by the heavy investment and subsidies made by the Government to them and any further expansion would only add more failures to preceding ones. Consequently, a restrictive policy has been suggested to let State farms stand on their own feet like any other commercial venture.

In view of the limited financial resources available for other sound national projects, the Government has restricted agricultural investment in State farms. Any further drillings, repairs or maintenance have to be met out of the farms' revenues. Subsidies on fertilisers and insecticides are to be stopped. On the other hand, incentive policies have been worked out for State farms to improve their own economic conditions.

Agricultural wages have changed twice since 1977 to allow some incentives for agricultural labourers. Today they have almost doubled compared to 1976 levels to keep labourers in the sector.

Prices of basic items have also risen by about 100% to give more income to State farms and cooperatives and they are also allowed to market any surpluses at market prices. They have continued to use machinery at less subsidised rates from MRS for their farming operations.

Above all, the Government at least has stopped thinking of State farms expansion in terms of numbers or in acreage. Rather, it thought of eliminating some of the hopeless State farms in very remote areas and either handing them to private holders or amalgamating them into one large State farm as in Fayoosh area of Wadi-Tubban where 3 State farms became one recently.

Evaluation of Performance

The performance of State farms overall had many ups and downs but, in general, they did not perform as was hoped. In mid-1978, a financial evaluation was made for State farms for 1977/78 and found that 36% made some profit, 31% made permanent deficit and 33% just covered their expenditures, while an amount of roughly one million dinars was offered by the Government as a subsidy to State farms during that period.(8)

The Dairy State farms have been in an even worse situation as their circumstances are complicated inasmuch as most of their requirements

are imported at a heavy cost. Up to 1978 hardly any of them could even cover their running expenditures. With milk prices very low and meat prices controlled, while fodder prices were spiralling upward internally and abroad, dairy farms continued to be a burden on the Government.

There are many factors restricting State farms' development such as low wages, sticky prices, natural problems, inefficiency of management, shortage of labour and low productivity. All these factors have already been discussed in the cooperatives section, but the following factors are thought to be more critical to State farms than to cooperatives.

While the cooperatives management is an elected one, the State farms' management is an appointed one based on technical merits rather than the political merits (or supposed to be so). In the early 1970's, one could hardly allocate a technical graduate to a State farm or a cooperative while there were many big projects in the agricultural sector looking for graduates. The State farms, therefore, were left to be managed by traditional farmers who could hardly absorb the management lessons of sophisticated administration. Even at a later stage, with discouraging conditions prevailing in State farms and cooperatives, no one would forfeit a good opportunity in urban areas to work in a rural one. Thus poor management conditions in many State farms were reflected on production quantity and quality. Today not more than 8 graduates are State farm managers, but the Government is looking ahead to replace traditional managers with qualified ones.

The other important factor is the agricultural labourers' wages. Unlike the cooperative peasant or farmer who owns or benefits from the land and can spare some time working at something else and still farm his land, he depends totally on his wage. He is tied to the State farm he works for, so long as his wage and other benefits in the State farm are better than

he can get in the labour market. If the labour market provides him with better chances, he will desert the State farm and go elsewhere.

Unfortunately, many agricultural labourers have left the State farms for better conditions and wages in other sectors. Despite the rise in agricultural wages recently, other competing sectors have been too strong to leave the agricultural sector in peace as wages in other sectors have also been rising rapidly, especially in construction where an ordinary worker gets 10-15 dinars a day compared to 2-3 in agriculture. Since 1977 even Government projects throughout the country started to take agricultural labourers away from rural areas to work at other non-agricultural activities. In other words, the diversification of rural areas in various activities has not favoured the agricultural sector and never will owing to an overall shortage of labour which characterises the country. Any further expansion in other sectors in rural areas will only be at the expense of the agricultural sector in terms of labour.

Productivity in State farms has the same problem as in cooperatives. However, in general, although it is low, it is a little better than the cooperatives in many crops but considering the more favourable factors they enjoy in terms of extension, demonstration plots and expertise, they are not doing as well as they should be. It is worth mentioning, however, that fodder productivity is very high and recently its production exceeded the production plan ceiling, often at the expense of other basic crops. This is due to the fact that fodder production has no controlled market neither in price nor in production owing to the fact that a large sector of livestock are in private hands.

Finally the last factor to be pinpointed is that the relationship between State farms and other Government agencies outside agriculture is very poor. Such a relationship influences State farms activities causing delays and a poor response to their needs. For instance, dairy farms

need proper roads to main towns so that milk reaches the factory (in Aden) in good condition. In practice, State farms must deal directly with road construction authorities for such jobs but owing to the poor management of State farms, the department of State farms in MAAR arranges all action. Daily contacts, however, are inevitable during the implementation stage between State farms and the road authorities but neither side can work with the other without the involvement of central authorities. Some State farms which are managed by good technical and capable managers need not involve central or higher authorities in their contacts with other Governmental agencies.

In conclusion State farms have become important in Party literature and Government plans and have been considerably fostered in agricultural plans and investments. Their objectives have been partly fulfilled as a sophisticated social framework for the economic transformation of rural areas, but most economic objectives were too high to be fulfilled in such a short time and under a traditional farming system. The revolutionary leaps in respect of State farms' promotion were very unrealistic given the prevailing rural situation. The contradiction between a highly controlled system and personal incentives to farmers was obvious. Individual incentives cannot be stated in Plans' figures or planned for as the agricultural authorities thought. Over-investment in rural areas with a shortage of labour was not a rational policy since it created rural diversification but at the expense of agriculture. Rural imbalance has been the main problem of PDRY in its rural development programmes.

2.5 RESEARCH AND EXTENSION

The research station at Al-Kod in Abyan Governorate was established in 1955 by the British in order to improve the cotton crop grown in the Tuban and Abyan areas. The station, then, consisted of only three sections namely : cotton, forestry and other cereals.Since1970, the centre's activities were extended and so diversified with the following nine sections:-

(1) Cereals
(2) Entomology
(3) Horticulture
(4) Pest control
(5) Forestry
(6) Tobacco
(7) Pathology
(8) Irrigation and soil
(9) Agricultural economics

Furthermore, an extension centre attached to the station was established in 1970. A sub-station was established in Seyoun (in Wadi-Hadhramout) with a similar structure to fulfil the research requirements of the surrounding agricultural areas. By 1980, the research station had established thirteen other nurseries (i.e. small research stations) throughout the country mainly to carry out extension services nearby.

The main objectives of the research station and its nurseries are to improve and upgrade existing crops, to find new high yielding varieties suitable for home consumption and export and to increase the productivity of all crops but with particular attention to agro-industrial crops such as tomatoes, cotton and tobacco.

There are two types of programmes for the research station. The first and most important is a general one applicable to various crops such as maize, sorghum, fruit and non-basic vegetables. This type of programme takes different forms. On one hand, the experts with the local cadres

demonstrate modern agricultural practices to local farmers on their own fields and keep visiting them every fortnight or month. On the other hand, the research station has about 500 acres on which various crops are grown with modern techniques and practices for display to farmers and agricultural labourers.

The other type of programme is specific to certain crops and four are currently available :

The Potato Programme
The Tomato "
The Cotton "
The Wheat "

Each of these programmes has a significant status in agriculture.[13] The first two are regarded as basic Yemeni food. The cotton crop is the basic cash and agro-industrial crop; and wheat is, undoubtedly, the basic strategic crop but one for which only 20% of local consumption is produced domestically. Furthermore, these are the crops with particular problems in terms of damage, disease and low productivity.

These programmes have, in general, contributed a lot to agricultural development. The productivity of many crops, e.g. onion, okra, egg plant, banana, wheat, potatoes and tomatoes has been increasing markedly in many agricultural areas. Almost all State farms' and cooperatives' farmers are acquainted with the extension services and aware of their relevance so that if there are failures in using modern practices, it can be attributed to farmers' negligence rather than to the research technicians.

Evaluation

The valuable role of the research station, its sub-station in Seyoun and its nurseries cannot be underestimated. The whole research structure represents the scientific advisory body for the MAAR and the Minister on

agricultural technology and development.[14] Its manpower today consists of about 50 skilled technicians, 110 semi-skilled people and not less than 500 labourers and other administrative staff. It has quite a good reputation, not only in the country but also in the whole Middle East region from the United Nations point of view.

Ultimately most of the research and extension success can be attributed to the UNDP and FAO programmes incorporated in Governmental activities. The UNDP's contribution has been executed by FAO who recruit experts and arrange fellowships abroad. Through UNDP project, each section of the research station was initially directed and supervised by an international expert, but now many sections are headed and run by highly qualified locals. Some 60 academic fellowships have been granted to research staff from this project and about 80 short courses were undertaken both abroad and locally.

In spite of all these facilities and the attention given to the research and extension services, there are still certain gaps to be filled. Basically, the problem is not the research structure or a shortage of means, it is in the transfer of technology or the improved practices to the farmers. Getting the idea is one thing, but grasping it is another.

The Yemeni farmer, as a typical Third World farmer was very scared of any change on his land at the beginning of the new era of independence. The introduction of improved practices was to him not only an expensive idea, but also very risky. After some years he has become convinced of their relevance but other factors discourage him from implementing new, improved practices. Firstly, a typical farmer in a typical cooperative has a limited mental and physical facilities and does not have cash in his pocket, so he will only apply those inputs provided by the cooperative (either as a gift or loans). Secondly, he has to plant what the production plan or the cooperative asks him to grow, and his produce will be

automatically sold to the marketing corporation of fruit and vegetables at a fixed price which means he need not bother about improving his produce. Thirdly, even if he is keen to improve his productivity by spraying regularly or applying more fertilisers, he has to go miles to the cooperative headquarters or the nearest research nursery, with no certainty of getting what he wants and, if he does get it, he may be asked to convey inputs to others which will almost inevitably delay him. Fourthly, farmers outside the cooperatives must travel a long way to reach areas where he can find the required fertilisers, insecticides and other inputs as well as having to cope with various payment complexities.

In conclusion, the research and extension services have been through a gradual expanding process horizontally and vertically. Assisted by UNDP and FAO, the research and extension services contributed so much to vegetable and fruit production and to some specific important crops such as cotton, wheat, potatoes and tomatoes. It took some time for these services to have positive repercussion in farmers' minds and to have confidence in their benefit. The farmers' position, however, in terms of mentality and resources, does not allow him to make optimum use of the available services. But with further integration in these services, MAAR authorities hope for better results from these services in the sector.

2.6 AGRICULTURAL CORPORATIONS

(1) Abyan and Tuban Development Boards

Abyan and Tuban Development Boards were both created at different times before independence. The former was developed in 1948 as the Abyan Committee and the latter in 1954 as the Reconstruction Committee. Both committees had similar objectives, namely the supervision of the cotton crop and the ginning of the cotton at the local ginnery in each area and control

of the irrigation methods for the cotton crop. Each committee provided all inputs to farmers and supervised, monitored and controlled their farming methods for the cotton crop which was shipped to the United Kingdom after being ginned, or snared.

Despite the agricultural changes that have been taking place since independence and the emergence of new agricultural institutions, both committees have achieved their basic objectives and even expanded their activities by taking on MRS and literacy programmes. The major reduction in their activities is that the marketing of long staple cotton is carried out by the Foreign Trade Company. The farmers, however, sell their produce to the respective committee which does the ginning before selling to the Foreign Trade Company. A further change is that they are now called the Abyan Development Board and the Tuban Development Board respectively.

The role played by both boards is quite significant for local cotton crops, despite differences in their capacities in terms of activities, manpower and their assets. The volume of cotton production and the size of area planted ultimately determines the power of the Board. In 1972 the labour force of Abyan Development Board was 926, while that of Tuban was only 393.

Each of these development boards used to administer and supervise a large machinery renting station - Giar (MRS) for the Abyan delta and Saber (MRS) for the Tuban Delta beside their respective ginneries. Though all MRS are now being centrally administered by the Irrigation Department in the MAAR (Section 2.2) both boards still have high priorities at these MRS. Whenever a cotton plantation is threatened by a heavy flood, the board can coordinate the efforts of its institutions to stop or minimise the damage. If there is a drought the board can provide compensation or advance loans to farmers. It might even deepen wells and negotiate relief programmes for farmers with local or MAAR authorities.

Evaluation of Performance

Both Abyan and Tuban Development Boards have been keen to improve but, unfortunately, not to a standard that could cope with the transformation which the agricultural sector has been passing through. The management staff of both boards are politically oriented but not technically qualified. Hence in both deltas, various programmes have been scheduled and carried out but training programmes have been almost non-existent. Despite the volume of work achieved and enthusiasm of both Boards to function appropriately, most of the management and technical staff are inefficient and this low efficiency is one reason for the decline of cotton production and processing as shown in the following data:-

COTTON PRODUCTION (TONS)

1970	1971	1972	1973	1974	1975	1976
12,833	15,391	12,111	13,158	10,327	9,987	8,000

Source : Socio-economic Report for 1969-1976 - Ministry of Planning

1977	1978	1979
4,900	10,400	6,600

Source : Annual report of Central Bank of Yemen 78/79

Although other factors such as the irregularity of the spates in the wadis are responsible for production fluctuations, much of the long-term decline is due to the low prices paid to farmers. Both Boards have made high profits out of the difference in price between raw and linted cotton so in 1981, raw cotton prices were increased to motivate farmers to produce more for the local Textile Factory and for export.

A debate about the future of the boards has been taking place since 1979 as the establishment of agricultural departments in the respective Governorates have reduced their utility. For instance, the

agricultural department in Abyan Governorate is a Statutory Body representing the Ministry in all its activities and Abyan Development Board with its massive administrative structure, just for cotton, is regarded as a waste of resources (particularly in view of the shortage of labour and technical staff in the area). The other view is that such boards are vital for the vertical integration of certain crops, while the agricultural department can undertake horizontal expansion. Whatever the outcome there must be an integrated agricultural structure at Governorate level with combined efforts under a unified administration and not permitting rivalry so that the MAAR policy can be put into action.

(2) The Public Corporation for Marketing Vegetables and Fruit (PCMVF)

The PCMVF was established by Law No. 23 of 1976. Before that, this marketing organisation was known from 1973 to 1976 as the Horticulture Cooperative Union which was in turn, based upon the wholesaling organisation existing in Aden during the British occupation.

The PCMVF today has a massive administrative and operational structure consisting of about 2000 people, 25 receiving centres, 51 retailing centres, 80 trucks and 2 (1,000 tons capacity) cold stores, 8 stores (500 kgs - 4,000 tons) and a computer unit for its accounts. The export, import, maintenance, agricultural inputs and accounts sections are the most important within the corporation.

The main objectives of the PCMVF are :

(a) The marketing of all agricultural output (including eggs) produced locally and from abroad to all areas in the country.

(b) Importing and exporting agricultural produce and eggs.

Both of these objectives have been fulfilled but at a very expensive cost in terms of both subsidies and investment borne by the Government .

The contribution of PCMVF in agriculture has been striking despite various shortcomings. Its main role involves the PCMVF contracting with each cooperative and State farm for the quantity of the output to be purchased within the terms of the production plan. However, since it is the only legal marketing organisation, it is obliged to purchase all quantities produced - whether below or in excess of the production plan - at a fixed farm gate price and then sell all items to consumers at a fixed retail price. The difference between prices is supposed to cover the marketing expenses, plus a marginal profit. However, as mentioned previously, the marketing system was modified in 1980 whereby cooperatives and State farms were allowed to market only a portion of their produce through PCMVF and sell the rest direct to consumers at uncontrolled prices.

The main positive impact of the PCMVF has been that it has given the rural population access to vegetables and fruit. In PDRY, the majority of rural people who do not live in agricultural areas and used to depend on fish or livestock (goats or camel meat), can now have variety in their customary diet or food habits. The introduction of new crops in traditional agricultural areas - such as potatoes in Wadi-Hadhramout - has had another important impact. The degree of mobility of agricultural products from the farms via wholesale centres to retail centres despite some damage to perishable produce in the handling process has also been important.

Evaluation

The beneficial impact of PCMVF on agriculture in particular, and on society in general cannot be underestimated even though it was not running efficiently as a commercial enterprise. Any marketing operation for agricultural produce to serve such a large country with a small scattered population requires not only huge investments and sound

infrastructure, but a high degree of efficiency. Almost inevitably an emerging State enterprise in a Third World country lacks management capability and control. As a result, a considerable proportion of perishable items are damaged before reaching the consumer. This is due to a shortage of storage facilities on the one hand and mishandling of the produce on the other. Secondly, most of the transport facilities were running at a loss when transporting the produce from farms or centres owing to being loaded to only half their capacity. Thirdly, because of the PCMVF's connections with other agencies, all their defects are reflected in its operations causing more damage and contingenies. Finally, the PCMVC does not confine its function to marketing operations alone as it is also involved in the provision of inputs to cooperatives and State farms, thus dividing its activies and not really succeeding in either. Further details of problems in PCMVF are discussed in the appropriate sections below. The PCMVF has eliminated middlemen and all intermediary agencies which used to exploit the farmer, but it has still neither adequately satisfied the producer nor the consumer. It has suffered such financial losses that the Government has often had to cover them with heavy subsidies. However, one cannot put the blame for such losses entirely on the PCMVF because they also represent the price to be paid for social equitable policies dictated by the Government.

(3) The Public Corporation For Development of Poultry

The Public Corporation for Development of Poultry (PCDP) was established by the Republican Ordinance No.45 of 1968 as a mixed Corporation and then was transformed into a public corporation in 1976. In 1970 its Law was incorporated into Corporations' Law No.13.

The PCDP was established to fulfil the following objectives :-

(a) Encouraging and developing the poultry industry, particularly in consumer areas.

(b) Introduction of High Yield breeds of eggs, chickens and broilers.

(c) Horizontal expansion via increasing production units.

(d) Vertical expansion by promoting technical and administration facilities.

(e) Development of poultry production in rural areas by distributing sufficient numbers of improved breeds to poultry farmers.

The main financial support for the PCDP is a development plan project which, with Cuban assistance, provides its infrastructure and its administration.(7)

The PCDP's activities have been limited to the Aden, Abyan and Hadhramout Governorates. The PCDP has chicken farms and houses for improved breeds and the original 'PARENTS' which are brought from Havana. It has a work force of just over 500 today and a poultry school for training annexed to it.

The PCDP was improving output at an increasing rate between 1968 and 1976 when its production increased as follows:-

Year	Eggs (Units)	Meat (kg)
1968	127,713	576
1976	18,816,646	218,902
1977	15,015,221	193,429
1978	12,748,146	102,000

In 1977 and 1978 production started deteriorating and the PCDP suffered serious deficits amounting to SYD 166,551 and SYD 237,880 in 1977 and 1978 respectively.(8)

Various reasons can be advanced for the decreasing returns to the PCDP. The major ones are : Firstly, in the late 1960's and early 1970's, fodder prices were reasonable enough to be met by the corporation which then had a small volume of work to cope with. Secondly, with international

inflation affecting foreign fodder prices, the PCDP depended mainly on local farms and the local fish-meat industry for its supply. Both parties, however, were reluctant to supply PDCP at the low sanctioned prices because they preferred to supply private and international markets at higher uncontrolled prices. Thirdly, the PCDP has Cuban expertise but insufficient local technicians and consequently in 1977 a considerable stock of chicks died owing to the spread of foot and mouth disease which local technicians could not combat on a large scale. Finally, and most important of all, is the fact that PDRY, with its humble resources, has adopted Cuban experience in this field namely, rearing and developing the 'original Parents' which nowadays is adopted by only a very few advanced countries. As an isolated island Cuba has to operate such a strategy and can afford to do so, but this method has proved to be very expensive and unnecessary for PDRY. In the face of continuing losses, the MAAR decided, in 1980, to make the project less burdensome by introducing new breeds. The one-day chicks are bought and reared as broilers and eggs but in two different lines. This policy commenced operation in 1981 in coordination with help from Hungary and Bulgaria alongside the Cuban project which is still maintained but with less concentration upon it.

(4) The Agricultural Development Fund (ADF)

The Agricultural Development Fund (ADF) was established by a Ministerial Order in April 1970 to fulfil the following objectives -

(a) Provision of agricultural inputs as short and medium-term loans at an interest rate of 2% for the cooperative sector and no more than 5% for other agricultural institutions.

(b) Import of agricultural inputs for agricultural projects and institutions provided that they are paid for prior, immediately upon, or no more than one year after delivery.

(c) Establishment of stores for agricultural machinery, spare parts and other inputs.

(d) Investment of bonds and establishment of economic relations with international organisations.

(e) Training staff in agricultural credit and finance.

The working capital of the ADF was initially made up of 40% of the returns from cotton of the Abyan and Tuban Boards. After two years, this percentage was reduced to 30% up until 1976. Since then, both boards have had to comply with Law No.13 of 1973 on Corporations' profits from which they had previously been exempted.

The ADF has advanced various forms of loans in cash and kind over the period 1970-77. Most of these loans were in the form of fertilizer, irrigation equipment and tractors. The efficiency of agricultural credit by ADF has been very low and as a result total debts by 1977 amounted to SYD 1,376,873.[8] It therefore had to stop all credit facilities to agricultural institutions and the debts were regarded as bad debts. This means that it has failed in its function as an agricultural credit institution.

It is impossible not to be critical of the ADF and its impact on agricultural performance, but at the same time one cannot argue with the relevance of credit in agriculture in a Third World country. Basically ADF drew its working capital from only two out of over one hundred agricultural institutions. This imbalance created a financially weak structure. Secondly, most of the credit facilities went to benefit other crops and other areas, but they, in turn, did not contribute to ADF and did not even repay all their debts. Thirdly, the credit mechanism in ADF has been very weak, both technically and managerially. The whole structure did not have a single qualified accountant, economist or even a mechanical engineer. Fourthly, the ADF was involved in other credit facilities

which had nothing to do with the agricultural sector - such as lending money to private people, providing gifts and assistance to non-agricultural recipients and so on. Such practices naturally weakened the ADF as a crediting structure. The Government, however, as part of its economic transformation, will be establishing the "Development Bank in 1983 which will include agricultural crediting on a sound commercial basis.

(5) The Public Corporation for Meat Marketing

The Meat Marketing Corporation (MMC) was supervised by the MAAR until 1979 when it was annexed to the Ministry of Trade & Supply. The MMC purchases livestock from State farms, cooperatives, individuals and abroad (mainly Ethiopia and Australia) and sells them to consumers through its retail outlets. It also imports frozen meat and chickens in accordance with national demand throughout the country.

The MMC had about five farms in 1979 where it kept its stock which it purchased from agricultural farms, individuals or abroad. The stock is supposed to remain for a very short period (2-7 days) before being moved to the MMC slaughter houses. The MMC has several retail centres throughout the country and has recently opened a few shops in urban centres to facilitate marketing functions to citizens. Like the PCMVF, it enjoys a marketing monopoly in urban areas but, in rural areas, private shepherds can sell their stock direct to consumers.

The MMC divided its activities into two parts : live-weight and frozen meat. Meat prices are constant throughout the country and are fixed by the Government for both slaughtered and frozen meat. The MMC, however, sells live animals to consumers and only here makes most of its profits - particularly from local breeds. The MMC gets the local breeds, and sometimes even foreign breeds, at a cheap rate i.e. about SYD 15 a goat and sells at a high rate, at about SYD 50 to 60.

The MMC is, however, better equipped than the PCMVF owing to its limited requirements in terms of labour force and range of products. It also enjoys a better financial position particularly in recent years when it became entirely independent. It achieved most of its success since the decentralisation of its marketing operation. The MMC used to purchase, slaughter and sell the meat to consumers direct but today, it slaughters its stock and sells the product to private butchers who, in turn, sell the meat to consumers. Private butchers are allowed to make a profit of 25 Fils per lb. which, though seeming to be a marginal profit, amounts to a considerable return considering the fact that he has no overhead costs. The butcher is also provided with weighing equipment and the market facilities such as storage and cleaning materials. In a critical evaluation of the marketing process of meat products, undertaken by MAAR authorities, it has been found that the agricultural sector makes losses while the MMC makes all the profits, as well as the private butchers who recently illegally increased their profits to 100 fils per lb. of meat.(7)

2.7 AGRICULTURAL EDUCATIONAL INSTITUTIONS

Agricultural transformation in PDRY has required not only massive investments in physical infrastructure, but also a skilled and semi-skilled labour force. At independence the MAAR had no more than ten graduates and very few technicians to carry out expensive projects. Training, therefore, was, and has been, an important issue to be tackled alongside other agricultural programmes. In order to meet the immediate need and fill the numerous gaps in various fields in agriculture, it was thought necessary to carry out agricultural training at several horizontal and vertical levels. Academic education was provided locally and abroad by the Ministry of Education, while other levels are totally controlled by the Ministry - whether they are conducted locally at its institutions or abroad through bilateral arrangements with other countries.

Considering only those local institutions run by MAAR, there are the following five, each of which is attached to the relevant department -

(a) The Irrigation Centre, attached to the DIME, runs a two-year course beyond the Secondary school level to train students in irrigation techniques, soil science, surveying and hydro-agricultural engineering. It started in 1973 and about 26 to 30 irrigation technicians graduate annually. The centre is purely funded by the Government. Since 1979, the centre has had a qualified team in its staff, as well as some experienced local technicians.

(b) The Cooperative Institute, attached to the cooperatives department, was established in 1971 by the Government and assisted by UNDP/ILO project to train cooperative managers and their staff in accounts, cooperation, book-keeping, extension and cooperatives' farming at various levels. Short course are run for periods three weeks to three months, medium- term courses from 4 months to 9 months and long-term courses for 2 years. At least 1,200 cooperatives' members have benefitted from these courses.

Today, the Institute is well-equipped with accommodation, 4 international experts (recruited via ILO), 8 German experts by GDR and some 8 local technical graduates qualified to run cooperative courses and research. The institute has audio-visual aids and mobile units which visit cooperatives and rural areas regularly.

(c) The Giar Centre, attached to the research and extension department, has been an integral part of the Research Station at Al-Kod in Abyan Governorate. It was basically established to provide training for State farms and private farmers in respect of extension services and farming techniques, but in practice it provides courses to all farmers. It ran short courses during the period 1973-1978, then in 1979 it started the first medium-term course for nine months for students finishing preparatory

education. Most of the courses are practical and in the field. Occasionally, it runs rural development courses for women for six months in which health, sanitation, cooking and child welfare courses are taught by local and international staff. The UNDP/FAO project on production improvement contributes considerably to the centre in terms of equipment, vehicles, fellowships and staff recruitment. It is the most effective centre in terms of impact on farming in the country's programmes. It is planned to be transformed in the near future into an agricultural polytechnic.

(d) The Veterinary School, attached to the animal production department was established in 1976 to provide courses on artificial insemination, animal production, animal health and alike subjects. The animal production department formulates courses, together with international experts who work in the department. The school expanded in 1979 to take more qualified students from preparatory stage to train and employ them in dairy projects; but unfortunately, in recent years, dairy projects have been decreasing in importance and have been almost eliminated in the second amended Five Year Plan (1981-85). Consequently the school is affected and has closed down for some time but the department and MAAR are fighting hard to have it reopened and operated on a smaller scale.

(e) The National Poultry School, attached to PCDP, was established to train poultry labourers of both sexes in various aspects of this industry. Again, as elsewhere, low level trainees are selected for minor but specialised courses which run for 3-6 months. A Cuban team with local translators makes up the staff. These courses have proved to be especially useful because they are more practical than theoretical.

In conclusion, these local institutions, though humble in facilities and resources, are very useful in the current stage of the agricultural sector. Similar courses are arranged abroad but it has been found that

those trainees taking the local courses are often far better off than those being trained abroad. There are, however, many gaps to be filled in training programmes and both the MAAR and the Government are aware of them but limited resources still determine their priorities.

CHAPTER 2

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CHAPTER 3

AGRICULTURAL INVESTMENT

At independence in 1967, the Government was faced by various and immense socio-economic problems, of which the most important one was the transformation of the existing service economy into a production-based one. With few resources and an impoverished State Treasury, socialist planning was seen as the only way of creating a cohesive society out of the seventeen dispersed states. It implied a survey of available resources and then their distribution into projects according to national objectives and priorities so as to avoid wasteful expenditure on unpredictable activities or areas and match goals to resources.

3.1 THE TRIENNIAL PLAN

The planning machinery in PDRY started in 1968 and the Triennial Plan (1971/72- 1973/4) was its first product. The plan was a simple and straightforward one in both its objectives and its resources which amounted to SYD 29 million of actual expenditure.[1] The Triennial Plan, however, had a very weak technical and economic basis in terms of both manpower and capital. The scanty and unreliable data on all social and economic issues made the situation even worse. The plan, therefore, can be regarded as no more than an investment programme for basic projects.

Taking the agricultural sector, the Triennial Plan's objectives were not production oriented. They were not even aimed at specific crops or confined to specific agricultural fields such as research or livestock production, rather they were of a general nature, touching all fields but concentrating, to a certain extent, on irrigation. All the objectives in the sector stressed the creation of basic infrastructure for agricultural development based on a horizontal strategy.

Table No. 3.1 displays the agricultural investment during the

TABLE 3.1 AGRICULTURAL INVESTMENTS IN THE TRIENNIAL PLAN 1971/72-1973/4

Field	Planned	Actual	% actual to planned
Irrigation	3,812	3,684	96.6
State farms	412	399	96.9
Animal prod.	454	452	99.7
Research & Training	1,008	465	46
Studies	1,135	785	75
TOTAL	6,721	5,785	86

Source : Planning & Stats. - Ministry of Agriculture

Tnennial Plan by field activities. It shows that irrigation activities had the lion's share of agricultural investments with about 57% of the planned and 64% of the actual expenditure. Animal production and state farm activities also involved irrigation projects, namely drilling boreholes (wells) and land reclamation. In general, however, the high percentage of actual expenditure compared to the planned, is attributed to effecting the 'take-off' of agricultural development in its initial stage. The low percentage of research and training components was due to lack of technical manpower in the sector.

The Tnennial Plan was unfortunate not to have the required facilities or resources in the agricultural sector - neither in terms of capital and machinery, nor in terms of manpower and so depended heavily on bilateral assistance. Most of the equipment that had to come from friendly countries was delayed or came with insufficient spare parts,thus affecting on-going projects. Problems of storage, transportation of heavy equipment to project sites, maintenance, shortage of important equipment such as rigs, bulldozers, excavators, motor-graders and tractors were basic problems on the material or capital side. On the manpower side, a shortage of technical personnel in all agricultural fields was a general setback. There were only four irrigation technical staff, of whom only two had any real experience. Most of the projects' staff had little technical know-how but fortunately as most of the projects were involved in construction work, the majority of constant labour force became more experienced with construction.(2)

EVALUATION

It is very hard to assess the achievements of the tnennial plan in the agricultural sector today in relation to the very difficult circumstances then existing. Considering the non-availability of data, the agricultural sector did not do too badly. It accomplished the following:

(i) Construction of eight diverting weirs in Tuban area.

(ii) Drilling of 200 deep wells for State farms and cooperatives.

(iii) Land reclamation on several State farms (including the dairy farms).

(iv) Construction of elementary poultry farms in the first (ADEN) Governorate

(v) Other minor activities such as the building of stores on State farms, the creation of an irrigation department and the establishment of three small machinery workshops.

As well as this humble material contribution, the Triennial Plan gave various lessons to the traditional agricultural sector. In terms of discipline, the financial and administration laws and regulations started to have real effect and the agricultural administration at various levels started to see the significance of planning. Above all, the intra-sectoral relationship began to be developed through the planning machinery. In conclusion, it could be said that the Triennial Plan had pinpointed major obstacles to agricultural and national development for the first Five Year Plan to tackle.(3)

3.2 THE FIRST-FIVE YEAR PLAN 1974-78 (FFYP)

The preparation for the First Five Year Plan started in the early 1970's during the implementation of the Triennial Plan. At that time most of the available economic data were roughly estimated with an approximate allowance for error , particularly in the agricultural sector. Effective preparation for the annual plans, however, kept going on while the Plan was under implementation. This resulted in wide deviations of actual allocation from those planned. Positive deviations indicate vigorous activities of the planning mechanism and ambitious goals of planners.

The planning machinery itself was also being transformed as a law was passed in 1974 by which planning units had to be initiated at

Governorate level. The availability of information was improved when a computer unit was installed in 1973 in the Central Statistical Bureau (CSB) to run the Population Census and other data collection programmes. Furthermore, during the FFYP, the Ministry of Planning placed some of its technical staff in planning units of various sectoral ministries to help in planning activities outside the Central Planning Ministry, and to ensure proper coordination with them. Production planning also started during the FFYP period; effectively it began in 1974/75 when the first agricultural production plan was laid down though it had only limited links with the annual investment plan. As time went on strong ties developed between the production and the investment plan as any obstacles or bottlenecks faced by production were given top priority for elimination by the investment plan.

Within the broad framework of transforming the economy to one based on production, the FFYP stated certain specific quantified objectives. For example, there were to be 50-55 thousand acres to be reclaimed during the plan period and increases of cereal crops by 47%, of cotton by 114%, of vegetables by 111%, of fodder by 89%, of milk cows by 3%. of goats by 2%. of beef by 25%, of mutton by 32% and of milk by 69%.(4)

Regarding resources and facilities, they were far better than for the Trennial Plan. In terms of man-power, employment opportunities increased immensely for both men and women, particularly in rural areas to which a high portion of investment was directed. In terms of capital, Table 3.2 displays the tremendous increase - by about 253% - in the amended plan's investment. Local resources constituted 62.5% of these investments while foreign contribution amounted to 37.5% early in the sector . The table also shows the significance of irrigation in agricultural investment, as this took 80% of the planned expenditure and 62% of both the amended and the actual expenditure. The large shift in the

TABLE 3.2 AGRICULTURAL INVESTMENTS FOR THE FIRST FIVE-YEAR PLAN 1974-78

Field	Planned (1)	% to the Total	Amended (2)	% to the Total	Actual (3)	% to the Total	%3:1	%3:2
Irrigation & Studies	16,756.8	81	32,493.8	62	26,776.9	62	160	82
Animal prod.	1,673.8	8	6,198.8	12	5,834.1	13	349	94
Plant prod.	1,257.8	6	5,423.0	10	4,572.3	11	364	84
Research, training marketing & others	1,108.6	5	8,441.0	16	6,198.7	14	559	73
TOTAL	20,797.0	100	52,556.4	100	43,382.0	100	209	83
of which Local Resources	9,374.5	45	32,897.9	63	27,108.5	62.5		
Foreign "	11,422.5	55	19,658.5	37	16,273.5	37.5		

Source : Planning & Stats.Dept. - Ministry of Agriculture

planned and the amended allocations for animal production, plant production and marketing were due to other non-agricultural pressures within the national economy such as the milk plant, tomato-paste factory and consumer demand for more vegetables and fruits respectively. The shift in research and training field was necessary for the horizontal expansion of agricultural development and for any future vertical expansion.

Table 3.3 displays the value of building and construction during both the trennial and the FFY Plans with respect to economic activities in each Governorate. It indicates that both plans placed a heavy emphasis on the transport and communication sector and on agriculture and fisheries sector in order to link the country together with as many as possible of productive areas as a prerequisite for rural development. Indeed, the transport and communication projects were mainly justified by their agricultural use (i.e. to ensure proper roads for the distribution of agricultural output). Thus the communication sector was an essential and integral part for the agricultural development strategy. The agricultural and fisheries sector increased its construction by about 400% during both plan periods.

As regards its effects, Table 3.4 presents evidence of the low growth rates achieved by FFYP. Cereals and cotton are the main crops dependent on spate irrigation in Wadi Tuban and Wadi Abyan, but during the FFYP period both wadis were affected by long-range irrigation projects. The planners, both in MAAR and the Ministry of Planning, were very optimistic that the work in both wadis would be completed but for technical drawbacks, major portions of land were not released for cultivation as planned. Another reason for the low growth rates achieved was that the figures of the base year production were over-estimated. Furthermore, growth rate targets for all plant production were really too high for a

Table 3.3

Value of Building and Construction during the Triennial and the First Quinquennial Plans by Governorate and Sector

Governorate	Grand Total	Total		Social Services Sector		Transport and comunication Sector		Industry Sector		Fishery and agriculture Sector	
		Quinquennial	Triennial	Quinquennial	Triennial	Quinquennial	Triennial	Quinquennial	Triennial	Quinquennial	Triennial
First	10161.3	8140.9	2020.4	4362.9	499.7	770.0	104.0	1648.8	1224.7	1359.2	192.0
Second	6901.8	4617.8	2284.0	1366.4	496.9	757.2	173.9	358.6	67.2	2135.6	1546.0
Third	1560.8	9567.8	6040.2	1201.7	306.2	3152.2	4616.9	1046.5	284.1	4167.4	833.0
Fourth	2985.1	2550.3	434.8	633.7	142.1	1194.0	175.2	236.7	93.5	485.9	24.0
Fifth	10700.7	9758.5	942.2	1615.0	253.0	5489.6	220.1	859.7	218.1	1794.2	251.0
Sixth	1163.5	874.6	288.9	529.5	77.3	236.2	198.6	34.2	-	74.7	13.0
Total	47520.4	35509.9	12010.5	9709.2	1775.2	11599.2	5488.7	4184.5	1887.6	10017.0	2859.0

Source : Report of the committee of building and construction sector for preparing the Economic and Social Report.

Table 3.4 THE ACHIEVEMENTS OF QUANTITATIVE OBJECTIVES DURING THE FIRST FIVE-YEAR PLAN 1974-1978

CROP	PLANNED PRODUCTION FOR 78/79	AVERAGE % RATE GROWTH (PLANNED)	PROD^{n} IN 1974	PROD^{n} in 1978	AVERAGE% RATE GROWTH (ACTUAL)
Cereals	130	47,4	26,61	26,51	ZERO
Cotton	25	113,7	10,8	5,6	-51,85
Fodder	460	88,5	86,66	87,69	+1,2
Potatoes	1,4	55,5	2,13	4,74	+122,5
Tobacco	1,7	25,9	1,2	1,06	+11,7
Vegetables	107,6	111,8	30,45	40,5	+33

FOR LIVESTOCK

	Rate Growth Target	Achieved Growth
Milking Cows	3%	3%
Goats	2%	2%
Beef	25%	6%
Mutton	32%	4%
Milk	69%	24%
Poultry - Meat	200 tons	170 tons

Source: Evaluation of the 1st Five Year Plan Report - Ministry of Planning

traditional sector with an unpredictable irrigation system. A reasonable growth rate for an agricultural sector in the Third World would be 5-7% and so the FFYP growth rate for certain crops of above 100% was just unrealistic.

In monetary terms, the total value of the agricultural output (plant and livestock) reached SYD 10.4 million in 1978 though it was planned to be SYD 36.5 million.[5] This overall result reflected the loss of land being held for irrigation projects. The average rate growth of the agricultural value over 1974-78 was about 3%.

EVALUATION

To evaluate the FFYP in agriculture, one has to understand the nature of planning, distinguishing between investment planning and production planning on one hand; and knowing the relationship between policy-making structures and planning structures on the other. In effect there were no strong links between production and investment plans at that time despite serious efforts to link them. This was due to the fact that a high portion of investments went on overhead costs of irrigation schemes and even those investments directed to State farms and other fields were still to establish and strengthen the institutional bases and infrastructure (e.g.20 State farms were established as well as 3 dairy farms and other establishments in Tuban, Abyan and Hadhramaut Governorates). Not more than 25% of investments contributed directly to production and, compared to the base year production of 1972/73, a high portion of Tuban and Abyan land (22,000 acres and 45,000 acres respectively) was held back from farmers for irrigation schemes. Thus the investment plan was paying attention to long-range schemes which hoped to give returns in the long-run and actually reducing production in the short-term.

The agricultural production achieved during the FFYP period was attributed mainly to the activities of cooperatives which had little assistance - or hindrance - from the investment plan. Some sixteen agricultural cooperatives were established during the FFYP period and by 1978 there were 44 agricultural cooperatives in the country. Apart from drilling a few wells and subsidies on agricultural inputs, the cooperatives did not get the attention required from the Government. In contrast, State farms (about 41 in 1978) were getting all their production requirements from the investment plan while their contribution to the agricultural production was hardly 20% of the total value. However, one would argue that irrigation schemes were designed to serve, primarily the cooperatives; indeed they will, but when they are completed, and the cooperatives will then be better off.

There are, however, also "structural" reasons which are directly or indirectly responsible for the short-fall of the plan's objectives. The most striking one was the weak technical links between the policy-makers, the planning and the implementing structures of the agricultural strategy. In other words, the people who formulate the policies were not the same as those who planned agricultural development and the link of both structures to those who implement plans was even weaker. The basic institutions for planning and implementation were set-up but effective contact did not exist appropriately due to differences in attitudes and capabilities at top levels of each structure. In the FFYP period, the politicians decided the agricultural policies without planners being involved, then planners received the policies and formulated the objectives with insufficient involvement of executors and consequently implementation meant various amendments and subsequent shortfalls.

The other distinctive feature of FFYP was a technical one. Adequate planning implies at least one policy instrument for each objective

to be reached (e.g. to reduce unemployment, income tax may be reduced) and if this is not achieved another policy instrument has to be added. The FFYP has far too many ambitious goals, but far too little policy instruments. Sometimes even policy instruments used such as "centralised marketing" to secure farmers' incomes and "sticky" pricing policies did not work out favourably. As a result too much burden was put on producers and agricultural labourers and little satisfaction was provided to the consumers. In general planners and politicians failed to see the negative effects of certain policy instruments such as low prices and projects congestions which meant to lift up the agricultural and rural standard of living.

On the more positive side of the plan, the FFYP created the technical agricultural institutions by which the traditional sector could be transformed and diversified. The establishment of 16 machinery renting stations with a large stock of various agricultural machinery was a valuable investment made by the plan. In cooperatives and State farms most agricultural operations are mechanised today by the virtue of the machinery bought by the plan. Major agricultural studies to explore agricultural potentialities in various parts of the country were started by the plan. Furthermore, agricultural marketing corporations such as the vegetable and fruit marketing corporation (PCMUF), the meat marketing coporation (MMC) and the poultry corporation (PCDP) were established legally during the plan's period and provided with very expensive equipment, machinery, cold-storage and transport facilities. Irrigation works such as drilling of more than 400 wells and the excavation of canals contributed a lot to an increase in output which, though it was not up to the level required, indicated the potential for further improvement. Above all also the FFYP led to a substantial number of technicians and qualified staff to run agricultural projects and their

administration at an acceptable standard.

In terms of popular welfare, the FFYP enabled nutritional improvement in two ways. The increase of agricultural output and introduction of new crops such as potatoes was one way and the increase of personal disposable income by creating many employment opportunities was the other.

The general operation of the FFYP did have an adverse effect on agriculture by creating many projects in other sectors which took labour away from agriculture. The plan in general measured achievements quantitively rather than qualitatively which was rather unfortunate in the case of agriculture since this encouraged inefficiency in many aspects.

3.3 THE SECOND FIVE-YEAR PLAN (SFYP)

The Second Five-Year Plan (SFYP) 1979-1983 started in 1979 with actual expenditure of approximately SYD 52 million for all sectors.(6) During 1979 and 1980, the plan had to be amended in order to be parallel to other friendly countries' plans and, therefore, the preparation of the "Amended" Second Five-Year Plan 1981-85 started during 1979 and 1980.

The SFYP, started effectively in January 1981 and marked a new era in planning improvement and development whereby investment plans became more closely linked with production plans. The total investment of the plan in the whole economy is SYD 508,203,900 of which the local resources amount to SYD 153,999,400 and foreign resources SYD 355,204,500.(7)

The objectives of the SFYP in all sectors have been more specific with respect to production plans. In the agricultural sector the plan aims to attain the following -

(a) Achievement of agricultural output-increase from SYD 30 millions in 1980 which is the base year for the SFYP to SYD 47.2 millions in 1985 (i.e. a 52.3% increase during this period or an 8.8% annual average growth rate).

(b) Increase of agricultural (plant) output by 64.2% and of animal production 40.9% in 1985 (to the base-year 1980 level) as shown in Table IV.5.

(c) To enhance the importance of the public sector in agricultural institutions as shown in Table 3.5. The Government attaches great importance to the public sector (i.e. State farms and public corporations) with the cooperatives' sector coming next, and finally the private sector.

(Detailed tables on crops and areas that are planned to be cultivated are in the appendices).

To achieve these objectives, the Government has provided a total of SYD 61.9 millions for agriculture. This amount has already been increased to 81 million dinars during the current two years. The agricultural investment, however, as originally planned, represents 12% of the total investment of the economy. Table 3 .6 shows the breakdown of the agricultural investment into all the agricultural projects in each field. Table 3.7 displays the irrigation activities constituting about 72% while other agricultural projects constitute only 28%. It is worth indicating that 63% of total agricultural investments comes from foreign sources and only 37% from local sources. Irrigation will depend a great deal on foreign sources (81%) while other agricultural activities will largely be financed by local resources.(7)

Despite the significance of the agricultural sector in the economy as a whole, its share in total investment has been falling from 23% in the FFYP to only 12% in the SFYP. In terms of local sources, which

Table 3.5 The Value of Agricultural Output During the Second (amended) Five Years PLAN (1981 - 1985)

Millions of Dinars

	OUTPUT - VALUE		Rate of Increase	Relative Importance	
	1980	1985	% 1985/1980	1980	1985
Prodⁿ (Plant)	21,2	34,8	64,2	68,4	73,7
Prodⁿ (Animal)	9,8	12,4	40,9	31,6	26,3
TOTAL Agric. Output	31,0	47,2	52,2	100	100
Public Sector	5,1	13,6	166,7	16,4	28,8
Coop's Sector	9,9	16,5	66,7	31,9	35,0
TOTAL	31,0	47,2	52,3	100	100

Source: The SFYP - Ministry of Planning.

Table 3.6

THE INVESTMENT PLAN FOR MINISTRY OF AGRICULTURE AND AGRARIAN REFORM DURING THE SECOND FIVE-YEAR PLAN 1981-1985

000's DINARS

	PROJECT	TOTAL	1981	1982	1983	1984	1985	RESOURCE OF FINANCE LOCAL	RESOURCE OF FINANCE FOREIGN
		2	3	4	5	6	7	8	9
	TOTAL INVESTMENTS FOR AGRICULTURE	61,935.0	16,331.1	12,227.9	11,129	11,439	10,808	23,218.5	38,716.5
A.	IRRIGATION PROJECTS	44,886	12,253	9,436	7,941	8,086	7,170	12,500.5	31,385.5
1.	Building main and subsidiary canals, Survey and Levelling Land	16,500	3,000	3,000	3,500	3,500	3,500	4,293	12,207
2.	Wells Drilling & Land Reclamation in Wadi Hadh.	3,000	550	550	600	600	700	851	2,149
3.	Investment on Reclaimed Land	2,883	580	454	551	632	666	1,062	1,821
4.	Maintenance of Irrigation Works	1,830	265	296	370	419	480	470	1,360
5.	Central Workshop	2,771	1,300	1,471	-	-	-	355	2,416
6.	General Studies for Wadi-Hadhramout	483	83	400	-	-	-	13.5	469.5
7.	Delta Abyan Development	2,225	1,675	550	-	-	-	650	1,575
8.	Agricultural W.Hadhramout Project	480	480	-	-	-	-	316	164
9.	Studies of Nisab & Markha Wadis	1,514	600	500	414	-	-	414	1,100
10.	Delta Tuban Development	4,500	2,034	955	951	560	-	960	3,540
11.	Wadi Maifaa Development	600	400	200	-	-	-	475	125
12.	Subsidiary Irrigation Projects	1,000	180	190	205	220	205	1,000	-
13.	M.R.S & Workshops Development	880	321	-	-	200	359	521	321
14.	Water Resources Studies	280	65	50	50	55	60	250	30
15.	Wadi-Maifaa-Hagr Studies	370	210	160	-	-	-	120	250

Cont.....

Cont...

1		2	3	4	5	6	7	8	9
16.	Vegetables Farm	1,400	60	440	500	400	230	420	980
17.	Protection of Coffe-farms	300	100	200	-	-	-	300	-
18.	2nd Phase of W.Ad.Agricultural Project.	3,710	190	20	800	1,500	1,200	1,060	2,650
19.	Irrigation Training Centre	90	90	-	-	-	-	90	-
20.	Youth Vocational Training Centre	70	70	-	-	-	-	70	-
B	OTHER AGRICULTURAL PROJECTS	17,049	4,078.1	2,791.9	3,188	3,353	3,638	9,718	7,331
21.	Grain Stores	771	562.9	86.1	122	-	-	250	521
22.	Establishment of a Tobacco Farm	202	106.2	95.8	-	-	-	202	-
23.	Development of Banana Production	1,500	260	280	300	320	340	1,500	-
24.	Seed Multiplication	1,700	409.7	290.3	320	330	350	1,700	-
25.	Agricultural Support Services Project	5,000	60	940	1,150	1,300	1,550	1,600	3,400
26.	Agricultural Production Improvement	2,491	964.9	356.1	370	390	410	2,081	300
27.	Milking cows	600	119.4	109.6	111	120	140	600	-
28.	Goat fattening	200	39	30	40	43	48	200	-
29.	Poultry Development	3,800	1,461.2	533.8	600	600	605	1,000	2,800
30.	Improvement of Fruit & Vegetables Storage	370	10	-	100	160	100	60	310
31.	Transportation Development & Distribution of Vegetables & Fruit	415	84.8	70.2	75	90	95	415	-

Source: The SFYP - Ministry of Planning.

Table 3.7 INVESTMENT ANALYSIS OF AGRICULTURE SECTOR FOR S F Y P (1981 - 1985)

FIELD	TOTAL INVESTMENT (1)	LOCAL RESOURCES (2)	FOREIGN RESOURCES (3)	PERCENTAGE (RATIO) 2:1	3:1
Irrigation	44,886	13,500.5	31,385.5	30	70
Agriculture Production:	17,049	9,718	7,331	57	43
of which:					
Livestock	4,600	4,600	-		
Plant	12,449	5,118	7,331		
TOTAL	61,935	23,218.5	38,716.5	37	65
% of irrigation to Total Agric.	72%	58%	81%		
% of Agriculture Production to Total Agric.	28%	42%	19%		

Source : The SFYP 1981 - 1985 Ministry of Planning.

are more reliable than foreign sources, its share is 15% - better than its share in foreign sources which amounts to only 11%. This is due to the fact that most bilateral assistance and agreements favour service sectors for political reasons.

Regarding the resources and facilities of the SFYP, one can say that this plan is in a much better situation than previous plans in terms of capital and manpower. Due to the horizontal expansion during the past ten years, most establishments are relatively well-equipped with technical staff and machinery. What this plan has to do is to ensure that these staff and equipment are working efficiently. An emphasis on vertical expansion in all fields has been stressed in all Party and Government literature and particularly so in the case of agriculture. The Plan's programmes incorporate improvements in inputs, the use of machinery, further and higher training, to improve the yield of crops both per man and per acre. Problems such as wastage of resource and disguised unemployment have been identified and given the available resource and with some ingenuity, this plan can try to overcome some of them.

Finally, it is necessary to say something about the agricultural investment in relation to the on-going agricultural policies. It is quite natural for agricultural policies to change from time to time as long as the broad lines of policy for a specific ideology are maintained. So far in PDRY, agricultural policies have been strictly within socialist philosophy. Up to 1977 no changes took place in basic agricultural policies with production and marketing totally controlled by the State. Many problems were observed due to such centralisation both in terms of lower yield of production and in lower efficiency in marketing operations. Consequently, the Government tried to assist the public sector by allowing some decentralisation in marketing operations as already described in Chapter two, section 3 on the cooperatives. In

terms of production, farmers and State farms are also allowed to cultivate any profitable crops beyond the production plan's capacity.

Against this background of the overall agricultural policies, the investment plan is something of a spoiled child in the agricultural sector. It has enjoyed a very lax investment control whereby all requirements of investment programmes are fulfilled within the limits of available resources while the production sphere of agriculture has suffered from strict implementation of agricultural policies - such as the sticky pricing policy or the limited credit facilities.

The other discrepancy between agricultural investment and production policies is that the former take long-term views while the latter take immediate and short-term views. In investment plans efforts are made in all agricultural areas to find agricultural potentialities in the long run. Production policies on the other hand have tended to ensure fair prices to both the producer and the consumer. The investment policies, therefore, reflected very little on the production policies because most of its activities relate to irrigation projects which will support agricultural policies only over a long-range period. If investment policies were concentrated and vertically integrated with production policies, higher production with higher yield could have been achieved in specific areas. Also, if production policies came into line with the long-range investment policies (e.g. if prices were allowed to move within specific ranges) that might have given farmers greater incentive to produce certain profitable crops.

Eventually, we can argue for and against each policy adopted, whether in investment or production, but given a socialist doctrine and limited resources, the conformity of various policies and activities is essential for development. The experience of both the Trennial and FFYP have already identified specific technical bottlenecks so the SFYP can try to avoid

with minimum inconsistencies that are bound to be brought up among sectorial policies (e.g. to allow some release in price policies with minimum disparity in income). However, the agricultural sector is left to pursue a horizontal strategy with few vertically integrated activities and programmes (e.g. no further expansion on state or dairy farms and concentration on yield improvement). The limited resources will not allow the vertically integrated programmes to be effective with major horizontal programmes going alongside, particularly in irrigation. One will be improved at the expense of the other and here the horizontal programmes are more influential in monetary terms and, therefore, unfortunately, the agriculture sector will tend to continue its horiztonal expansion.

CHAPTER 3

References

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(3) An Evaluation of the economic institutions in agricultural sector during the past ten years (1968-1978) - 1978 produced by an Agricultural Committee read by the author in MAAR (in Arabic).

(4) The First Five Year Plan (1974/75-1978) - Objectives of the Agricultural Sector - Ministry of Planning.

(5) An Evaluation of the FFYP - Ministry of Planning (in Arabic).

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(7) The Amended Second Five Year Plan 1981-85 - Ministry of Planning.

CHAPTER 4

AGRICULTURAL POLICIES ON PRICES, TAXATION AND SUBSIDIES

The prices of all goods in the country are controlled by the Government, usually at constant levels throughout the country, and agricultural prices are no exception. Producer and consumer prices of almost all agricultural commodities are proposed by MAAR and fixed by the Government. Producer prices are set to cover an estimated average of variable costs, plus a margin for the farmer. Fixed costs - such as land, wells, canals and even water - are not currently taken into account since they have already been met, so far, by the Government. Consumer prices are set according to the current personal disposable income of the ordinary citizen. In many cases consumer prices do not defray the producer price, plus the marketing expenses so the difference is met by the Government in the form of subsidies.

The Government's main aims in controlling and supporting agricultural prices are : firstly, to supply basic food requirements at reasonable prices, secondly, to eliminate the middlemen who had been taking advantage of the farmer, as well as the consumer, and thirdly, to eliminate regional differences in the income of agricultural labourers and farmers. In general, despite Government subsidies and the heavy Government investments in the sector, producers are not enthusiastic about the pricing policies which seem to them to favour the consumer.

As we have discussed in Sections 2.2&2.52, most input, farm-gate and consumer prices were "sticky" until about 1979 and then rose fairly sharply. The pattern, however, varies by commodity as we shall now see in examining some of the individual causes and effects of policy change in prices, subsidies and taxation.

INPUT PRICES

(a) Seeds :

Traditionally, farmers depended on their own production for seeds. After 1972 the Al-Kod Research Centre was the main agricultural agency to import, test and certify improved seeds. The research station, however, imported seeds from abroad, primarily for its demonstration programmes and very little of its stock went to State farms or cooperatives.

In 1974, the first production plan was launched to specify for each crop, when, where and how much should be grown. In order to fulfil the production plan, the then Horticulture Cooperative Union (HCU) (now PCMVF) was instructed to import the required seeds. Technical specifications of seeds were drawn up by the research station staff and the HCU imported the seeds annually.

In 1976 a new seed programme was launched by the Cooperative Programme of the FAO, namely the seed multiplication programme. This programme aimed to provide local improved seeds to farmers to reduce the foreign exchange spent on seed imports. The programme has been effective mainly for basic crops : wheat, sorghum, potatoes and maize.(2)

At present, the PCMVF is still responsible for the bulk of imports and the distribution of improved seeds for cooperatives and State farms at cost price, while the multiplication programme provides free seeds to cooperatives and State farms which have programme plots. The research station cultivates high yield varieties and distributes them free of charge to actively involved farmers in both State farms and cooperatives.

It is very hard to evaluate the effectiveness of seed programmes on total agricultural production because seed quality represents only one minor variable in the whole production mechanism. But it can be said

that where there has been effective Government supply of seeds to farmers the impact on production has been noticeable. For instance, in the potato and tomato programmes, with the MAAR really keen to promote these two products, farmers willingly received the seeds. These were provided free of charge at first, in 1975/76 and 1976/77, and then at a nominal price. Tomato production more than doubled as the following data indicate:- (3)

	(Tons)			
	73/74	74/75	75/76	76/77
Tomatoes (Household consumption)	1321	2536	5686	6859
" (for canning)	-	43	592	1232

Potato production is also significantly expanded by seed programmes which still provide considerable subsidies to farmers. The following figures display the remarkable upward shifts in production:-(3)

	(Tons)			
	73/74	74/75	75/76	76/77
Potato production	2	120	4731	3874

The drop in production in 1976/77 may be attributed to less land being allocated to potatoes in the production plan because a large reserve remained from the preceding year.

In the case of wheat, particularly in Wadi Hadhramout, the local consumer prefers the local variety and not the High Yield Variety recommended by experts. The farmer is therefore less interested in the HYV which the Government encourages. The main factor for this is in fact the local wheat price is very elastic and buoyant and recently being pushed up in the local market.

With other vegetables and fruits, the impact of seeds is less noticeable because the marketing policies and mechanisms do not take quality into account. This gives no incentive to the farmer to prefer HYV's.

(b) Fertilisers :

Fertiliser imports are, primarily, the responsibility of the Agricultural Development Fund (ADF) in the MAAR, although a few large projects co-financed by the World Bank are allowed to import fertilisers for their own use. Fertiliser prices were set the by Government at subsidies up to 40% to cooperatives and 50% to State farms from 1975 to 1979. Thus the price of a 50 kg. bag of urea was SYD 4.0 to cooperatives and SYD 3.0 to State farms, while a bag of triple superphosphate cost SYD 5.0 to both. (4)

Apart from the internationally funded projects, the total fertiliser usage for the period 1975-1980 was as follows :

Year	Tonnes
1975	1,196
1976	3,451
1977	3,487
1978	3,728
1979	1,518
1980 (estimated)	4,400

It is clear that usage of fertiliser was encouraged by the low prices prevailing up to 1978. In 1979, however, fertiliser prices rose to SYD 7.0, which covers the cost price plus transport and storage costs. The sharp decline in usage in 1979 may be attributed to this increase. The overall increase for the estimated inputs of fertilisers includes all the internationally funded projects' requirements. Cereals and cotton, however, account for the bulk of fertiliser usage with lesser amounts going to tomatoes, potatoes, bananas and tobacco.(4)

The impact of fertilisers on production is again not easy to assess because of the fluctuation of other variable factors such as spate,

machinery and other inputs. The second five-year plan estimates the usage of fertilisers to be as follows for the period 1981-85:-

Year	Tons
1981	4735
1982	6222
1983	6117
1984	6990
1985	8075

These figures cover the requirements of all projects as well as that for current production plans during this period.

It is rather more difficult to disassociate fertiliser's effect or its impact from other factors which determine agricultural production on spate irrigation areas, such as the condition and course of the spate itself. However, assuming a normal spate course, adequate fertiliser shifts up agricultural production which tends to shift down when less fertiliser is applied. At present prices it is very unlikely that the farmer will apply adequate fertiliser and therefore in the SFYP projects which are using and can afford to apply fertilisers will have higher productivity than the ordinary farmer.

(c) Insecticides

The research station and its nurseries have prime responsibility for extension work in the country. Semi-skilled extensionists are trained locally and recruited by the research station to spray various agricultural areas seasonally, free of charge. Cooperatives and State farms also have their own local extension groups who are trained by the researchers and extensionists in either the research centre or the cooperative institute.

Most insecticides are imported by both the research centre and the PCMVF, which supplies those plant protection chemicals required by the production plan. The insecticides are sold to State farms and cooperatives on a credit basis at the import cost.

The impact of insecticides on agricultural production can be noticed particularly with the elimination of various crop diseases, and with pest control. Regular spraying is well maintained, especially in large wadis. Unlike fertiliser, insecticides do not cost much compared to their effect on production. The farmer foresees that without use of insecticides, his crop will suffer serious losses; therefore it is not costly to avoid such a catasrophe.

(d) Machinery and Fuel :

Fuel prices had been heavily subsidised by the Government until March 1980 when they rose by almost 100% owing to the removal of all subsidies on them. Machinery and spare parts are imported by the Agricultural Development Fund (ADF) or the Foreign Trade Company and are generally distributed to State farms, cooperatives and projects at import cost and free of duty.

Although cooperatives generally own some machinery,they increasingly rely on tractor services provided by the MRS. Until 1980, the charges for MRS tractor-services were far below their costs at roughly SYD 0.65 per hour for a farm tractor with driver and equipment and SYD 1.50 per hour for a crawler tractor. During the course of 1980 the rates were increased to SYD 1.75 and SYD 4.0 per hour respectively. Even so, according to official estimates, a subsidy of SYD 0.50 per hour was involved and in 1981, the farm tractor charge was further raised to SYD 2.25 per hour.[4] However, considering the low efficiency of the MRS,

the real cost could be reduced again if efficiency is considerably improved.

OUTPUT PRICES

Output prices, both farm-gate and consumers, are basically determined by the agricultural authorities, namely by the Political Committee for the Ministry of Agriculture headed by the President in the past (up to 1977) and by the Consulting body of the Ministry at present. This body involves the directors of all the main departments and corporations and all the regional directors of the Ministry and discusses all the major agricultural issues monthly.

Pricing policies are, generally, guided by the estimated average variable costs of a crop but other factors are also considered. For instance, the role of the product in the Yemeni diet is rather more important than the average costs. With crops such as tomatoes or potatoes which constitute a considerable part of the daily food of a typical family, the price is set at a reasonable level for those with the minimum income. (Both crops mentioned have costs higher than the price in terms of production and marketing operations and require Government subsidies). In some cases farm-gate prices alone exceed consumer prices and in many cases consumer prices do not fully cover marketing and storage expenses. Table 4.1 indicates that tomatoes (winter) crop in 1981 and 82 and red onion and okra in 1978 were heavily subsidised by the Government as consumer prices fell short of farm-gate prices. Table4.2also indicates generally that most crops have very low marketing margins. These cannot cover marketing expenses which have been rising owing to a spiral in fuel prices. The rising prices of other inputs such as fertilisers, machinery, equipment and insecticides, were creating great pressure on the sticky pricing policies

Table 1.1 Fixed Prices of Selected Fruits & Vegetables for the period 1973-1982. (P/Kg)

	1973		1974		1975		1976		1977		1978		1979		1980		1981		1982	
	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C
Tomatoes:																				
Winter	20	30	25	45	25	45	25	45	35	45	40	46	40	50	75	50	150	+ (75)	150	+ (80)
Summer	70	150	60	85	60	85	60	85	60	85	75	85	100	120	100	150	150	200	150	200
Red Onions	40	60	40	65	40	65	40	65	50	65	70	+ (65)	95	150	140	175	140	180	140	180
Okra	30	45	30	50	30	50	30	50	35	50	70	+ (50)	70	50	100	130	100	130	100	130
Egg plant	20	30	20	35	20	35	20	35	20	35	25	35	25	40	50	80	50	80	50	80
Bananas	20	30	20	40	20	40	20	40	30	40	30	40	45	100	55	100	55	100	55	100
Potatoes	80	120	80	125	80	125	80	135	80	135	80	135	100	150	150	170	150	200	100	200
Paw Paw	30	45	20	40	20	40	20	40	20	40	20	40	45	80	55	90	55	90	55	90
Sweet Melon	30	45	30	50	30	50	30	50	15	25	45	50	45	100	85	100	85	100	85	110

F = Farm Gate Prices

C = Consumer Prices

+ : figures in brackets indicate heavy subsidies to producers & PCMUF

Table 4.2 : Fixed Prices of Selected Fruits and Vegetables, 1976 & 1977

Crops	Farmgate Prices		Consumer Prices		Marketing Margin	
	1976	1977	1976	1977	1976	1977
	Fils Per Kg					
Vegetable Crops						
Winter Tomatoes	25	35	45	45	20	10
Summer Tomatoes	60	60	85	85	25	25
Oct/Nov Tomatoes	70	70	85	85	15	15
Red Onions	40	50	65	65	25	15
Eggplant	20	20	35	35	15	15
Winter Okra	30	45	50	50	20	55
Summer Okra	30	35	50	50	20	15
Dry Red Pepper	200	300	300	650	100	350
Cabbage	25	25	40	40	15	15
Carrots	30	30	50	50	20	20
Cauliflower	30	30	55	55	25	25
Leeks	50	100	80	155	50	75
Green Squash	20	20	40	40	20	20
Cucumbers	50	50	80	80	30	30
Garlic	145	180	300	300	155	120
Potatoes	80	80	135	135	55	55
Cantaloupes	30	35	50	50	20	15
Watermelons	15	15	25	25	10	10
Fruits						
Bananas	20	30	40	40	20	20
Papaya	20	20	40	40	20	20
Guava	25	25	40	40	15	15
Oranges	100	100	150	150	50	50
Limes	100	100	160	160	60	60
Peaches (Local)	75	75	115	115	40	40
Peaches (Indian)	100	100	160	160	60	60
Apricots	80	80	150	150	70	70
Coconuts	20	20	40	40	20	20
Dates (Fresh, Ripe)	60	60	100	110	40	50

Note : Prices which were first fixed in 1973 were not changed until February, 1977.

Source : Department of Planning and Statistics, Ministry of Agriculture and Agrarian reform.

adopted by the Government. Consequently the Government found itself in an awkward financial situation by providing all necessary subsidies to productive sectors. In 1979 certain economic measures were taken by the State. The most important were the rise of wages and the release of the pricing policies in the agriculture and fishing sectors. Farm-gate and consumer prices of many items have risen though the latter's prices have risen in a higher proportion as indicated in Table 4.1.

Eventually price changes for vegetables and fruits came about as a result of various forces : First, as mentioned above, the rise of fuel prices and of other inputs had an increasing impact on the limited resources of the Government. Secondly, despite the heavy subsidies provided by the Government to farmers and PCMVF, depression of production in the second half of the 1970's on the producers and on the efficiency of the marketing operations. Thirdly, the Government had admitted that without self-motivation of the producers, huge subsidies of this type are not justified. Consequently, the general policy for the State in 1979 was to reduce subsidies to a minimum and provide freedom in marketing and cultivation pattern to farmers as discussed above in the sections on cooperatives and marketing.

Other categories namely cereals, cash-crops and fodder have different consideration in price structures. For instance, cereal prices are generally guided by import prices. Most cereal crops fall short of self-sufficiency and therefore, protection policies are inappropriate. In wheat, the country produces, at best, 20% of its consumption. Local millets and sesame are in great demand; and sesame in particular, witnessed higher prices in recent years.(5) Only basic cereals such as wheat and sorghum are strictly controlled in price

while others have some price fluctuations with respect to supply and demand factors.

Cash crops have two prices : an agricultural, farm-gate price and an industrial or trade price. Cotton, for instance, has a farm-gate price for the producer (the farmer) (175 fils a lb) and the Board, after ginning, sells it at a different price to the National Company for foreign trade which in its turn exports it at a different price. The case of tobacco is similar. Farm-gate prices of cash crops are guided, mainly, by production cost, while their industrial or export prices are guided by international prices taking quality into consideration. In recent years - from 1979 onwards the farm-gate prices of all cash-crop prices have been pushed up sharply. For example cotton : from 75 fils per lb to 110 fils per lb for short and medium staple and to 175 fils per lb for long-staple; Tobacco, first,from SYD 1.250 per kg. to SYD 2.00, then to SYD 3.00 per kg. today; Bananas from 20 fils per kg. to 55 fils per kg.(6)

Fodder crops such as Alfalfa, fodder-sorghum, enjoy a free market price. The State has six completed dairy farms and two under construction. High-grade breeds of dairy cattle (Freisians and crossed Herefords) are kept and reared. In total there are about 80,000 cattle, of which about 5,000 are State owned. There are two million goats and sheep, of which not more than two or three thousand are on the State farms. Thus the majority of livestock is in the private sector. State dairy farms, however, are self-sufficient in fodder, apart from some minerals that are imported for their livestock. The private sector obtains its fodder from cooperatives and State farms. Due to a high demand for fodder, cooperatives have in recent years expanded fodder crops at the expense of vegetables, fruits and cereals. This situation worried the

agricultural authorities very much when plan-production targets were not achieved. Restriction on fodder planting has therefore now become of prime concern to the agricultural authorities. The Government, therefore, is now engaged in grouping shepherds and providing basic facilities for their herds such as wells and pastures.

Livestock prices are uniform throughout the country as discussed above in the section on corporations - Meat Marketing Corporation. The private sector price is for live-weight goats or cows and is subject to the Supply-Demand market.

For economic stability, the Government through its marketing agencies (PCMVF & MMC) imports several items such as onions, potatoes, fruits, dried chillies, garlic, chickens, eggs and frozen meat in order to cover shortages of local production. Imported items are controlled and have the same prices as locally produced items.

Looking at the whole structure of agricultural prices, it is hard to establish a single-basis for these prices. The assemblage of socio-economic factors is taken into account each time when prices are changed. Some consultants have tried to analyse price changes with respect to purely economic factors but such an approach does not fit the socially-manoevred economy. For example, if the opportunity cost of land for any strategic crop such as wheat or sorghum were considered, the whole country would instead produce tobacco, which is the highest-return product! Pricing policies are, therefore, to be viewed and analysed with respect to the socio-economic and political objectives of the national economy as a whole.

No doubt the heavy costs borne by the Government in subsidising agricultural output were the major feature behind price rises in recent years. But some critics would attribute the gradual decline in

the output of certain basic crops in the mid 1970's to low prices. Cotton and dates notably fell short in 1976 of their records of the early 1970's and continued to decline up to 1979. Sesame, onions and nuts had almost stagnant or declining yields per acre. Most critics in MAAR would think that stable prices had been for a long time and therefore no longer provide any incentive to farmers, while other sectors such as construction and communications provide better pay, return and conditions to their workers. Stagnant prices for agricultural output would have destroyed the farming sector and the Government budget if prices had not risen in favour of producers. But whatever is said about the decline of the mid 1970's in output, it is very hard to single out one factor as responsible for this phenomenon. There are other crucial but uncontrollable factors in the production process. The irregularity of spate irrigation could be held more responsible than sticky prices, or inefficiency in management could be another factor and so on and so forth. The element of prices is a factor, but not the only one.

Taxation

Almost all imports for agricultural institutions (State farms, cooperatives, corporations and institutes) are duty-free in accordance with the statute regarding development plans. The exemption from duty on raw materials, equipment and machinery is not specific to agriculture but applies to all public and cooperative sectors of all productive industries.(7) Imported machinery bought by the private sector and outside the development plan programmes is subject to duty at relatively low rates, for example 2% on agricultural pumps and 15% on tractors (compared to 100% on other vehicles).(4)

On the production side, a State tax is levied on the value of

agricultural production. Within the public and cooperative sector the tax applies to a farm's total output of grains, sesame, cotton and tobacco and to the marketed portion of its production of vegetables and fruits.

The rates of tax applicable from 1975 to 1981 were as follows :[4]

Grains	10%	Cotton	15%
Sesame	10%	Tobacco	15%
Potatoes	10%	Bananas	10%
Dates	10%	Fodder	NIL
Tomatoes	10%	Livestock	NIL

The tax on cotton was reduced to 10% in May 1981; taxes on other products remained as above.

The private sector is not subject to State taxes since it receives hardly any Government assistance and its marketed portion is very nominal. Only the production of Qat, which is a mild drug, is severely restricted (as is its use) and taxed. Further expansion of Qat is prohibited and every encouragement is given to replacing it by coffee. Table 4.3 displays revenue from tax on agricultural production and indicates the significance of Qat production-tax to the Ministry of Finance.

Cooperatives are responsible for collecting the State tax from their members, usually by deduction when the member is paid for produce marketed through the cooperative.

Cooperatives levy a membership fee on their members to cover administration and other overhead costs. The rate of levy is normally 5% but cooperatives are permitted to set a higher rate up to 10%.[8] A few cooperatives, mostly in Wadi Hadhramout, make small additional

Table 4.3 Revenue from Tax on Agricultural Production

Product	Tax rate* %	Revenue from tax ('000 dinars) 1976	1977	1978	1979	1980**
Qat	20	662	657	1,033	1,257	1,600
Cotton	15	146	213	5	204	180
Tobacco	15	22	42	37	38	40
Fruit and Vegetables	10	154	198	249	248	250
Cereals	10	195	183	150	175	150
Other Products	-	94	49	40	76	1
Total revenue from agricultural tax	-	1,273	1,342	1,514	1,998	2,221
Total Government revenue , all sources	-	24,764	34,890	n.a.	n.a.	n.a.
Ministry of Agriculture current expenditure ***		752	1,107	1,119	1,156	2,012

Source : Ministry of Finance

* Percentage of output valued at producer price
** Estimate
*** Staff, administration and office costs.

n.a. ⅜ not available

percentage charges for pump replacement, insurance and social purposes. These levies are also collected by sales proceeds' deduction.(8)

Furthermore, farmers dependent on spate irrigation are charged the nominal sum of SYD 1.0 per acre per season in Abya Delta and Wadi Tuban areas. This represents a considerable subsidy to farmers benefiting from developed irrigation schemes.

Taxes are also levied on certain imported agricultural products to bring the prices up to the local level; conversely, they may be subsidised, if necessary, for the same purpose. Example of the current rates of duty on commodities that are important in domestic production are:-

Grains	5%	Tomatoes	10%
Sesame seeds	5%	Dates	10%
Sesame oil	5%	Raw cotton	15%
Potatoes	10%	Cotton lint	15%

Other imported items necessary for domestic consumption, garlic, dry chillies, eggs and various fruits were substantially subsidised from 1970 until 1981. In 1982 most of these items have higher consumer prices as personal income is now increasing; thus relieving the Government gradually of large subsidies. Due to the excess in banana production, the State has a protective tax for it reaching 30%.

Finally, there is the taxation levied on the profits of agricultural institutions and corporations. All corporations and financial/productive institutions are subject to Law No.11 of 1973 which states that 75% of all net profits goes to the State. Until 1980 this was in the ratio: 50% to the Development Fund (i.e. Ministry of Planning) : 25% to the current budget (i.e. Ministry of Finance) and 25% to be ploughed back in further investment. This ratio was changed in 1980 and 90% is to go to the Ministry of Finance which, together with the Ministry

of Planning, allocates it to national programmes.

In conclusion, agricultural prices are controlled throughout the country by price policies which were for a long period 1969 - 1979 very sticky and did not change. Prices set by agricultural authorities approved by the State were guided to a certain extent by the average variable costs of production. Fixed costs are not considered and are usually borne by the Government. Socio-economic factors, however, play a major role in determining the prices of basic productions such as the personal disposable income and the position of the product in family diet.

Input prices have been heavily subsidised in order to help the producer to cope with the low farm-gate prices of his output. Irrespective of quality, the farmer's output maintains a guaranteed market with no burden on him in marketing activities. Furthermore, the farmer receives relief or compensation during drought or flood seasons respectively.

Critics of the sticky prices policy attribute the decline in agricultural production of 1976 and 1977 to stagnant price policies, despite the heavy subsidies borne by the Government. With the intention of reducing subsidies to a minimum level, the Government changed the price structure in favour of the producer to motivate him for more production in 1979. Farm-gate and consumer prices rose as income and wages were rising. The Government reduced local subsidies but continued to subsidise imported products needed for consumption. The marketing system, somehow, relaxed so that a farmer can market privately any products beyond the Plan's target. Such incentives made by the Government are throught to increase the production to meet rising demand for food and improve productivity per acre.

Taxation, for some time, was thought to be rather harsh on farmers, but considering all the essential infrastructure borne by the State, it is just at the right level. Where there is a need to promote a specific crop, taxes are reduced as in the case of cotton. Similarly if production of a specific crop is in excess of national consumption, a protective tax is set up as in the case of bananas.

Unfortunately, most of the basic items fall short of local consumption and therefore nominal taxes are applied to bring the necessary imports into line with the prices of locally produced items.

CHAPTER 4

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CHAPTER 5

RURAL DEVELOPMENT

Rural development is usually treated as one of the vital issues in socialist literature and has been particularly emphasised in the Marxist-Leninist theory. Indeed, it is often argued that without rural development, socialism is meaningless.

As a newly established State with the majority of its population in rural areas, PDRY has repeatedly underlined rural development issues in Party and State literature. The issues have been addressed and emphasised in all the economic plans of the State since independence. The importance attached to rural development in PDRY reflects three main factors, namely: First, the whole country was divided politically into seventeen States and economic and social gaps existed between the then scattered Sultanates and Sheikhdoms. Secondly, most of economic potential for the development of the country exists in the rural areas - agriculture, fisheries and oil. Thirdly, most of the leaders of the Party and the State have rural roots which gives them a special enthusiasm for the effective implementation of rural policies.

With respect to rural strategy the country adopted a balanced growth strategy in its social and economic development plans (i.e. giving equal attention in investment programmes in both social services and in productive sectors). Unlike most other developing countries (Venezuela, for example) which in the 1960's invested most heavily in the industrial sector, PDRY gave priority to agro-rural sector to build up its national development from. Accordingly, the communication sector was the first to be given attention in the first economic plan.[1] About 40% of the total triennial plan (1971/72-1973/74) resources allocated to the building of roads to link all the main towns with the capital (Aden).[2] This was

an essential step - not only for rural development - but also for defensive purposes.

The 'balanced growth' strategy contributed enormously to rural development through the spread of social facilities. At independence only Aden City enjoyed some social services (3 secondary schools for boys and 1 for girls; about 9 primary schools; 6 preparatory schools, 2 hospitals and about 5 health centres). Even those social services were not sufficient for the growing population of Aden, which was at least 350,000. Other main towns such as Mukalla, Seyoun, Zingibar and Lahej hardly enjoyed any decent social facilities. Up to 1965 none of these main towns had any secondary school or a technical college. However, since independence - and especially since 1973, the number of schools, colleges, hospitals and health centres has increased in number as displayed in Tables 5.1,2 and much of this increase has been outside Aden indicating the horizontal expansion of national development.(3)

Table 5.1 shows that educational expenditure has risen from about SYD 1.5 million in 1970 to about 8.2 million in 1977. This represents the Government's deep concern on basic educational programmes despite its meagre resources. The big rise in number of students in all stages is an important achievement of the country's plans. However, the ratio of educational expenditure to total State expenditure has been rising.(4)

Table 5.2 displays medical establishments in the country during the period 1969-1977. Unlike schools, hospitals and medical centres involve more time and capital (beds and medical equipment). The increase, therefore, is not as spectacular as schools. Medical units, however, easy to establish with 2 to 3 qualified nurses and a visiting doctor per day for each have been of great use in rural areas. All medical

Table 5.1 Amount of Expenditure and Number of Students and Schools in the Education Sector

In 000' dinars

Year	Educational Expenditures (E.E)	% of E.E to Total State Expend.	No. of Schools		No. of Students	
			Primary & Preparatory	Secondary	Primary & Preparatory	Secondary
1968/69	n.a.	-			109,227	1,560
1969/70	1,517	10.2	781	17	114,956	2,058
1970/71	1,976	11.3	940	17	156,130	3,023
1971/72	2,293	11.4	972	18	163,231	3,627
1972/73	2,397	11.5	1,033	22	178,928	5,206
1973/74	3,547	15.5	1,131	22	206,984	6,933
1974/75	4,134	15.0	1,114	22	226,940	7,915
1975	4,012	15.7	1,153	24	237,965	9,767
1976	5,877	15.0	1,303	28	249,763	11,147
1977	8,260	18.5	1,379	32	263,682	13,501

Source : The Statistical Year Book 1980

Table 5.2

Amount of Expenditure and Number of Medical Establishments during 1969-1977

Year	Medical Expenditure (M.E.)	% of M.E. To Total State Expenditure	No. of Hospitals	No. of Medical Centres	No. of Medical Units	No. of Clinics	No. of Mother & Child Centres
1969/70	767	5.2	15	-	91	57	-
1970/71	928	5.3	19	-	99	41	-
1971/72	1013	5.0	19	4	147	41	-
1972/73	996	4.8	20	4	158	57	-
1973/74	1157	5.1	21	6	213	44	-
1974/75	1499	5.4	21	12	230	79	-
1975	1408	5.5	22	13	242	73	16
1976	2244	5.7	24	15	254	91	19
1977	2450	5.5	26	17	263	92	20

Source : The Statistical Year Book 1980.

establishments provide free medication.

The main rural policies of the Government were to provide basic needs of life to rural populations namely, shelter, water, food, clothing, education, health and employment. Initially the major emphasis was on the main towns and nearby villages where the short term economic potential was promising. However, before attempting to deal with basic economic needs, certain constitutional changes were needed as a legal basis for the new economic policies (such as the family law, illiteracy law, women's right and, above all, land reform). The Government, thus, spent the first four to five years manipulating social and economic legislation.

There have been many different instruments for implementing rural policies. For example, the Agrarian Reform Law No. 27 of 1970 had the MAAR, the State farms, the cooperatives and other institutions; while the 'Housing' Law No. 32 of 1972 had the newly created Ministry of Housing; and the Yemeni Women Federation was one of the instruments for the Family Law No. I of 1974. At the local level, several more institutions were established to act as instruments for social and economic policies such as community development centres, social centres, party institutions and Government departments of sectoral and social services ministries. Thus all policies had several instruments at both central and local levels to ensure effective supervision and manipulation, but still coordinating problems do take place as will be discussed below.

Rural development programmes are a combination of economic activities - agriculture, fisheries, communication and transport, water and electrification and of social services - education, health and cultural activities. The effects and impact of the Government investments and policies in rural areas are examined sector by sector below.

It has already been indicated that the Government has adopted a horizontal pattern for its national development. Tables 5.3, 5.4 and 5.5 display investment expenditure in the Trennial Plan, FFYP and SFYP respectively. The Trennial Plan, stresses the communication and construction sector to lay down the required infrastructure (roads) for national development. The FFYP gives stress to the agricultural sector as a leading productive sector and to transform rural life together with social services programmes. The SFYP continues with the horizontal pattern of the national development with some stress on housing, electricity and agriculture.

Agricultural sector has been the most important sector, not only for its population but for its socio-economic potentialities. About 80% of the population live outside Aden city - in rural areas and about 60% of them depend on agriculture for their livelihood.(5) The Government feels the great need of more investment in this sector to provide the required food production and the raw materials for citizens and growing industries respectively. The infrastructures, however, are very expensive but being inevitable for rural development, they absorb a high portion of investment plans and labour.

The fisheries sector is also a rural one but limited to the coastal area. Before 1969, fishing was the occupation of about 13,000 private fishermen, mostly grouped in primitive villages scattered along the coast and controlled by chiefs and fish traders. Since then the Government has drastically changed this structure. At present, most fishermen are grouped into cooperatives whose catch is mainly for domestic consumption. The ministry also has a large fleet whose catch is mainly for export. At its peak in 1977, fish production was far behind its full potential. It is estimated that the minimum sustainable yield should range between 425,000 and 650,000 tons - three to four times the 1977 level. Such vast potential in this sector had encouraged the

Table 5.3 Investment Expenditure of The Trennial Plan (1971/72 - 1973/74)

SECTOR	ALLOCATED	ACTUALS
Agriculture	6.81	5.88
Fisheries	0.78	0.84
Inudstry	9.20	5.33
Transport, Communications and Construction	12.90	10.15
Social Services	2.72	2.52
TOTAL	32.41	24.72

Source : The Trennial Plan (1971/72-1973/74)

Table 5.4 Investment Expenditure

FFYP 1974 - 1978

YD millions

Sector	Planned	Allocated	Actuals
Agriculture	20,797	52,556	43,382
Fisheries	9,447	37,475	26,810
Industry	11,574	46,974	33,966
Transport & Communication	3,103	36,752	25,726
Constructions	16,285	40,136	31,023
Social Services	14,153	62,254	33,905
TOTAL	75,359	276,247	194,812
	P E R C E N T A G E %		
Agriculture	28	19	23
Fisheries	12	14	14
Industry	15	17	18
Transport & Communication	4	13	13
Constructions	22	15	16
Social Services	19	23	17
	100	100	100

Source : Evaluation of the FFYP - Ministry of Planning.

Table 5.5 Total Investment For The Second Amended Five-Year Plan 1981-1985

YD millions

Sector/Ministry	YD 000,000	%
Ministry of Industry	19,6	3.9
Public Corporation for Electricity	68,6	13.5
National Water Corporation	20,7	4
Minerald and Oil Corporation	31,4	6.2
Ministry for Fish Wealth	33,2	6.5
Ministry of Agriculture	61,9	12.2
Ministry of Construction	48,9	9.6
Ministry of Transport	44,3	8.7
Ministry of Education	22,6	4.4
Ministry of Public Health	14,4	2.8
Ministry of Culture and Tourism	16,0	3.1
State Committee for Information	16,5	3.2
Ministry of Labour and Civil Service	1,5	0.3
Ministry of Trade and Supply	5,3	1.0
Ministry of Housing	86,3	17.0
Ministry of Local Administration	15,0	3.0
High Sport Council	1,1	0.2
Central Statistical Bureau	0.8	0.16
Central Bank of Yemen	0.2	0.4
TOTAL	508,2	100

Source: The Second Amended FYP 1981-85, Ministry of Planning.

Government to invest more in this sector, not only to generate capital but also to improve rural and urban nutritional standards.(6)

The transport and communication sector is a key support of rural development. Before 1969, except in the privileged district of Aden, the country's regions were connected only by unpaved tracks. There were airlines using unpaved airfields and minor coastal shipping services, using traditional boats, linking Aden and Mukalla. Now Aden is linked with Mukalla (620 kms.) and Taiz in Yemen Arab Republic (80 kms. in PDRY) by paved roads and the total length of paved roads is about 1,500 kms. In addition there are unpaved roads of about 5,500 kms. compared with 4,368 kms. in 1969. During the period 1971-77 some YD 46 million (28% of total plan investment) were devoted for the development of this sector. The second part of the seventies saw some attention to other kinds of communications, namely : telephones in other main towns of the Governorates; increase in transport equipment such as buses, taxis and aeroplanes; cables and telex communication among Governorates and abroad. In general, the Government is still pursuing the expansion policy of linking all rural areas with the urban population by roads and other means.

Starting with education on the social services sector, the Government attached high priority to it, particularly in rural areas where there had been virtually no development in the pre-independence era. During the period 1968/69-77/78, the number of students enrolled in all levels of formal education rose from 110,787 to about 277,183 as indicated in Table 5.1 (Total Number of students, primary, intermediate and secondary). In addition to formal schools there are now about 446 adult literacy centres (with 44,000 participants) and a limited number of vocational training institutes. However despite these achievements, the illiteracy rate is still as high as 80%. It dropped at the primary

school level to 50% of the age group and at secondary school level to 66%.[6] Moreover, there is a great need to improve the quality of education facilities. Not least, due to lack of resources, almost all education is co-educational - a step that met resentment at the beginning - for cultural purposes - but has begun to be accepted.

The health services were, on the whole, poor before independence but since then they have been expanded quite rapidly. The PDRY 1970 constitution stated that medical care "is the right of each citizen, and the Government guarantees this right.....through expansion of free health services." As part of this guarantee, private clinics were abolished in 1973, while the number of physicians has increased from 71 in 1970 to 222 at present (of which 114 are locals). The number of hospitals beds rose from about 1,278 in 1970 to around 3,000 in 1980. At present there are 29 hospitals, 17 medical centres, 263 stable and mobile medical units and 91 clinics throughout the country. Mobile units now tour rural areas to inject people against dangerous diseases such as T.B and malaria. Table 5.2 displays the medical establishments which have been increasing owing to Government concern over the health aspect in rural life. The general decrease in the number of clinics in early 70's, however, is due to the fact that many private clinics run by private doctors were closed and some of the doctors emigrated to surrounding areas in the Gulf States. To sustain these services the Government has invested heavily - with assistance from the UNICEF and WHO - in the health manpower institute to supply graduates and qualified manpower. The medical expenditures in the plan in 1981 reached SYD 3.7 million constituting 3% of the total plan's expenditure of the same year.

The supply of drinking water to all people is a major national policy. The public water coporation was specifically established to fulfil this need, working in coordination with the drilling section of

the DIME at the MAAR. (Very recently (1981) the drilling section has been transformed into a drilling Corporation attached to MAAR). Drinking water is mostly ground water supplied by a well or a spring. In the early years of the Public Water Corporation, its annual budget for drinking water programmes (apart from current administrative expenses) was weighted towards the tremendous problem of supplying Aden but still about 25% on average was directed towards specifically rural projects. The following table displays expenditures on specific water projects (in SYD):-

Water Supply	69-70	70-71	71-72	72-73	73-74	74-75	Total
Rural water	45,709	86,635	53,518	75,371	181,853	178,000	621,086
North-Desert	22,000	17,000	3,119	9,002	26,397	-	77,518
ADEN	522,578	561,644	639,532	787,497	766,142	768,368	4,045,761
MUKALLA	12,000	33,000	38,725	31,471	53,503	92,818	261,517
Other Purposes	39,134	N.A.	14,926	38,061	122,549	107,687	322,357
TOTAL	641,421	698,279	749,820	941,402	1,150,444	1,146,873	5,328,239

These programmes were not the only ones as other drinking water programmes were incorporatedin the integrated rural development programmes (which will be discussed in this chapter below). National drinking water programmes in the late 1970's and early 1980's have been accelerated - especially in rural areas - but with ever increasing unit costs. For example, the Aden Water Supply Project started in 1981 to withdraw water from Abyan about 60 kms. away - at a total cost of about SYD 700,000. The total SFYP investment of the Public Water Corporation is now SYD 3 millions of which this SYD 700,000 is for Aden and the remaining

75% is for rural areas. This is in addition to programmes for drinking water incorporated in other projects.

Rural electrification did not exist in the pre-independence period except in very few main towns, such as Mukalla, Lahej or Modia, which had limited capacity for electric production. Even Aden city only had two power stations, each with a capacity of 25 megawats (MW).

Undoubtedly urban and rural electrification is very much needed for production methods and processing in modern days. Modern techniques in both agriculture and industry cannot be applied without electric power - particularly if these are at large scale.

In PDRY, however, agricultural areas at the outskirts of towns used to be run on diesel pumps and generators. In order to increase production and to introduce modern farming methods, most of the cooperatives and State farms have now replaced their diesel pumps by electrical pumps after being connected to the local urban supply nearby. Up to early 1982 - before completing the Wadi-Hadhramout electrification project - a substantial sector of agriculture was not electrified. Rural electrification only started to have proper programming in 1971, the first year of the Trennial Plan. Before this, there were a few rural schemes run by the local residents but all involved non-planned expansion which resulted in technical faults. With central planning of economic activities, electricity projects go in parallel with other major projects in urban and rural areas. Rural electric stations have their own technical staff in their respective stations ready to repair any fault. Aden City, however, still dominates the major portion of generated capacity (about 60%) and owing to limited financial resources, rural electrification is mainly confined to productive areas and densely populated areas such as Mukalla, Seyoun, Ashihr, Zingibar and Lahej.

Finally at the formal social services front the housing sector received little attention in the early stage of development. There was no public housing sector before 1972 and, since then, the sector has faced many problems as the Government could do very little financially - only investing SYD 1 million in 1976. In 1979 and 1980, the housing investment increased to SYD 1.5 and 3 millions, respectively and even those amounts are meant to cope with urban population growth rather than rural growth. It is the task of the SFYP, however, to contribute to rural housing with its housing allocations of SYD 86 million for both urban and rural housing projects. The private sector in housing - financed by Yemeni immigrants abroad contribute, to a certain extent, to rural housing problems. However up to now the housing problem is on a much larger scale in urban areas than rural areas owing to the fact that extended families still tend to live together in rural areas while in urban areas nuclear families are predominant.

Amongst the main elements in rural development are the rural formal and informal organisations such as the Yemeni Women Federation (YWF), Farmers' Union, Youth Unions, Cooperatives, Public Councils and, above all, Community Development Centres (CDC).

The YWF was established in 1974 with the integration of two women's organisations founded during the liberation movement. Its policies and political activities are designed to achieve greater participation of women at all levels of economic and political life, the eradication of illiteracy and the implementation of the principles of compulsory education for women with regard to matrimonial rights. It has advocated the establishment of a minimum age for marriage; the right of girls to have the final decision in their marriage; the abolition of polygamy, the establishment of a fixed amount for the dowry and the limitation and reduction of the incidence of divorce claims largely supported by the

Family Law of 1974.(7)

The Farmers' Union was organised in October 1976 in accordance with the resolution of the Central Committee of the Unified Political Organisation - National Front. Its main function is to raise the standard of living of rural people, represent them at the Central and Political Committees; guide rural public opinion; change the outlook of farmers and participate in the planning and implementation of development schemes.

The Yemeni Youth Democratic Federation play a great role in rural areas by organising and mobilising youth for social, economic and political activities. They contribute to self-help projects and initiate campaigns for implementation of development schemes by voluntary work. They also participate in the illiteracy eradication campaign in rural areas.

The Community Development Centres (CDC) are the most important institutions because they are mainly designed for rural areas where nomads predominate. About seven CDC's have been started in 1975-77 in the northern desert of the Shabwa, Hadhramout and Al-Mahara Governorates. Each centre has indoor and outdoor activities, kindergarten, child and mother welfare section, handicraft workshop for men, sewing and embroidery classes for women, animal treatment unit, literacy classes and a library. The centre organises training courses and extension work in all aspects of interest to rural people. Self-help activities are the backbone of the centre.(8)

Another important issue in rural development is that of employment opportunities which the huge amounts of development plans in the form of large-scale and long-range projects are provided in rural areas. PDRY's working age population in 1980 was estimated at 950,000 (i.e. 50% of Total Population) of which 860,000 were capable of employment. Of these only about 490,000 are employed and about 370,000 are effectively unemployed. However, 350,000 of the unemployed are not seeking jobs

(e.g. urban women out of the labour force and those depending on remittances sent to them from abroad). Consequently the number of those who are really unemployed is about 12,000 workers,compares favourably with 47,000 in 1969. All these are unskilled labourers coming originally from the rural areas.(6) At present, most of the unemployed are being absorbed and the country actually imported about 15,000 workers from India and Bangladesh in 1981 to fulfil constructional projects.

In terms of urban and rural investments, it can be said that not less than 80% of total investments have been directed towards rural areas. It is, however, very hard to draw a strict line between the two; but from Tables 5.3, 5.4, and 5.5 which represent the plans allocations and expenditures of the Trennial Plan, the FFYP and SFYP respectively, the high portion of rural investments represented by all sectors,except industry,can be observed. Even the industry sector includes certain rural projects such as rural electrification, drinking water and oil and mineral exploration projects. Table 5.6 displays investment expenditure of FFYP on social services sector. About 60% of these investments on social services were destined for rural areas.

It has been questioned whether these rural activities have any linkages with each other or just reflect a series of separate decisions. It cannot be denied there have been irregularities in the programming of some of these rural activities. For instance, a marketing centre would be opened and only some time later would the question of storage be taken up, or there might be the establishment of a State farm without thinking of an access road linking the farm with the main road. Such uncoordinated action has taken place even during the period of planning. For these reasons the idea of integrated rural programmes was initiated by planning machinery and encouraged by international organisations such as the United Nations,

Table 5.6 Investments On Social Services Sector During the FFYP

Ministry/Corporation	Planned 1	Actual 2	% 2:1
Education	6,060,0	10,297,0	169,9
Health	3,410,0	3,292,0	96,5
Information	861,0	3,194,6	371,0
Culture & Tourism	65,0	1,764,0	2713,8
Labour & Civil Service	-	941,0	-
Local Administration	437,0	4,323,6	990
Housing	3,320,0	4,739,4	142,7
Trade & Supply	-	1,423,6	-
Planning	-	364,2	-
Secretriat of Presidium	-	1,064,2	-
Socotra Is.	-	317,0	-
Thamoud District	-	346,8	-
Al-A'br District	-	185,4	-
Others	-	1,652,3	-
TOTAL	14,153	33,905	

Source : The Evaluation of the FFYP 1974-78. Ministry of Planning.

World Bank, FAO, IFAD, UNICEF, UNIDO and UNESCO as these organisations substantially advocated integrated rural development in the world in their programmes.

It has been admitted that integrated approach minimises wasteful resources and lead, more or less, to optimal use of available resources combined in a much shorter time than would have been allowed by separate actions - one at a time.

In this chapter three of the major projects will be reviewed, namely :

(1) The Bedouin Development Project

(2) The Wadi Hadhramout Development Project &

(3) The Wadi Tuban Development Project

to determine the impact of the integrated approach on the rural development.

The Bedouin Development Project is a settlement project for those 200,000 nomadic bedouins (10% of the population), intended to bring them to the mainstream of the Yemeni life. The project from its initial phase in 1973 has covered the northern part of the 4th, 5th and 6th Governorates. The main objectives of the project were to provide appropriate settlement for 120,000 nomadic bedouins with their animal flocks in those areas and to raise their standard of living. This implied provision of water points for them and their livestock; provision of health units, literacy programmes, schools for their children, handicrafts training and initiation of socio-economic institutions to bridge the gap between the nomadic and sedentary life.

The project consisted of the following components:-

(1) Identification of relatively permanent places for nomadic bedouins and those places visited seasonally in the project area.

(2) Drilling of 42 deep wells and 10 karrifs for the bedouins and their livestock.

(3) Establishment of six community develoment centres to integrate nomads into the Yemeni life stream.

(4) Preparation of a socio-economic study on the nomadic bedouins in the project area aiming at identification of their problems and their attitudes towards settlement and to find out ways and means for their integration into the society.

(5) Preparation of a study of the bedouins' livestock and pasture areas, the reasons for their deterioration and methods for its development.

(6) Construction of 3 - 5 veterinary units for the bedouins livestock and provision of free extension on their livestock development.

The project started in March 1973 and is still going on its third phase. It has achieved a lot of its ongoing objectives and the bedouins benefited substantially - particularly from the wells and the water points provided by the Government. Today not less than 60% of the bedouins' children are now in what are called the nomadic bedouins schools. Roughly 33,000 primary students have been admitted to these schools in 1978. The health units have changed the bedouins' attitudes towards modern medical treatment and are replacing old-fashioned practices.

Grazing remains the main occupation of the bedouin. In 1973 it was 90% but by 1981 this percentage had decreased to 73%. Other occupations, such as constructional labourers, truck-drivers, pump-operators, teachers, Government officials, veterinary and health assistants, have become more common gradually and now involve about 16 % of the bedouin population in the project area. Agriculture is practised by

bedouin to a very limited extent at places such as Nisab, Al-Soam and Gouf Al-Awamer. Goats, sheep and camels still constitute the main wealth of bedouin within the project area.

Maybe the most important and long-term feature of the project is the provision of the bedouins' children school. Indeed this aspect was viewed by the Government as so important that it has been isolated as a separate project in the plan with the assistance of IDA and WFP. In the early stages of its development, the project was implemented with great difficulty since bedouin were reluctant to deliver their children to schools which were mainly situated outside the nomads' areas. Gradually the idea started to be meaningful to them and since 1979 the existing schools can only accept all children by an annual expansion. Children are admitted at the age of 5 for the six-year syllabus of primary schools and then 4-5 years of vocational training on various practical activities : teaching, typing, nursing, medical, electrical and various handicrafts. The very brilliant ones can go to further formal schooling if they wish, and quite a few have done so. Children are given a small amount of cash monthly to give to their parents in return for being in school and giving up their time instead of helping in family activities, Despite the limited resources of the Government, the project - from the international organisations' point of view - has been quite successful and has changed the bedouins' life to a great extent.

The second important integrated rural development project is the Wadi-Hadhramout Agricultural Project. Wadi-Hadhramout is regarded as one of the most important wadis for historical, agricultural and demographic reasons. It has a population of 200,000 (of which 66% are females owing to the fact that the majority of its men are immigrants). The agricultural potentialities are considerable but more incentives are needed in this field. The Government, therefore, decided to have

an integrated project whereby other infrastructures such as drinking water and feeder roads can be injected in the project. From the start the project was thought of to be consisting of several activities namely : agriculture, extension, feeder roads, drinking water, electricity, health units and schools. During the project identification it became clear that the electricity component would be very expensive if it had to cover the project area and so it became a separate project (valued at that time US $14 millions). The schools and health units were to be incorporated within ongoing projects under the UNICEF and WHO organisations respectively since they needed very little finances yet considerable supervision. Consequently, the project consisted of the following components in its first phase:-(9)

(a) A hydro-geological study for the ground water in the Wadi.

(b) A vertical integration scheme for an area of about 20,000 acres depending primarily on well irrigation.

(c) Provision of machinery of various types to the Machinery Renting Station in Seyoun to support its services to State farms and cooperatives in the area.

(d) Provision of agricultural inputs such as fertilizers, seeds, insecticides and spraying machines to farmers.

(e) Preparation of a socio-economic study on the wadi to find out the most economic crops and methods to encourage them.

(f) Construction of 120 milometres of feeder roads connecting eleven villages with the main road in the wadi.

(g) Construction of two water reservoirs in the two main towns of Shibam and Qan to provide drinking water to citizens.

(h) Expansion of extension services by training 40-60 well-equipped

extensionists in the State farms and cooperatives to combat seasonal and permanent diseases prevailing in the wadi (especially on date crops).

The project had some successes as well as failures; it faced many problems owing to the strong forces the region has had. The continuing higher wages, the shortage of labour and the influx of remittances from abroad did not favour the integrated rural approach sponsored by the Government as hoped for.

According to the latest progress report (No.7) received from the project management in 1981, the production area was only increased by 5% in 1977 and 10% in 1980, and even this increase (in the area) was due to an expansion in Alfalfa production rather than in basic items such as wheat or dates. In general the cropping intensity of all crops was only about 53%. (10)

Dates production - the major agricultural product of the wadi - suffered serious decline in recent years for many economic and organisational reasons. Reliable figures of date production in the wadi are not available but according to earlier reports from the project management, the production was estimated at 20,000 tons in 1974/75. The present estimate made by Sogreah is only about 3,500 tons in 1981. This indicates a sharp decline of the most important product of the wadi whatever the scale of the unreliability of data might be.(10)

Feeder roads, which is a considerable component in the project, also had a serious time and difficulty in its implementation. In 1981, only about 75 km. of feeder roads could be accomplished out of the planned 120 km. and at almost double the price as represented by the following figures:-

	SYD
The withdrawals from IDA credit 615	259,952
Local Contribution	207,573
Value of food provided by WFP-Project 2265	65,410
TOTAL COST	532,935

It is worth indicating that even IDA component for feeder roads has been increased to almost double the original allocation.

Other components in the project, however, have not encountered serious obstacles since they are either contracted with foreign companies (studies and equipment) or do not involve high labour input. The three main factors : the higher wages, shortage of labour and low farm-gate prices of products, particularly of dates, have been responsible for the stagnation (if not decline) of the agricultural output in the wadi. Other factors such as higher fuel prices, cultural rigidity and organisational structures - with less impact - hampered rural development in the area at a faster rate.

In view of the fact that many male population are immigrant, a great influx of remittances reach relatives regularly to pay for their living and some of them build new houses. Together with ongoing economic projects in the region, labourers are attracted to move from low paid wages to higher ones within the same area. The existing shortage of labour aggravated the problem of the agricultural sector as already indicated above. The result is an unofficial rise of wages continuously. As an example, a labourer on a feeder road was receiving, in 1976, around SYD 1.25 a day; in 1980 he must be paid at least SYD 3.00 plus some food if the job is to be done in time. The project management, therefore, had to double the allocation by local contribution from the Government and decrease the volume of the work. Fuel prices which increased in 1980

by 100% further aggravated the problems of the project but this was a common problem in all regions. Farm-gate output prices have much greater impact on agriculture in Wadi-Hadhramout than in other areas. Due to the influx of remittances and the provision of much more work opportunities than other regions, the farmer in the wadi does not have sufficient incentives with the controlled farm-gate prices in farming. As a result around 13% of agricultural labourers and farmers leave the sector annually to other jobs in the same area (mainly in construction).[11] According to Sogreah report, if such a move persists, there will be only 25% of the farming labour force left by 2000 (end of C20th). However, in the face of these problems, the Government has already improved farmers' wages twice in 1978 and 1980 - and formulated a formula for extra incentives with respect to piece-work and production increase. Output prices also increased as discussed in Chapter 4. Marketing process also decentralised to a certain degree to favour producers as explained above in Section 2.5c.

In general, however, despite all these economic drawbacks, the project contributed a lot to agricultural practices, many of which have become mechanised. The introduction of modern machinery has raised the farmers' opinion of the value of modern techniques in farming, while the provision of large areas of levelled land gave new possibilities for cooperation in farming with more incentive to work on a family basis. Feeder roads have been, indeed, socially and economically, very meaningful and useful. Mobility between the village and the main towns has increased and brought about many economic and social benefits. One of two water reservoirs is completed with a capacity of 100,000 gallons (in Al-Hotta near Shibam town) and pipe fitting is under way. Together with health units and electricity, this seems to have remarkably improved sanitation and rural life.

The third integrated rural development project is the Wadi-Tuban agricultural development project. It has a very similar structure to that of Wadi Hadhramout with the following components:-(12)

(a) Irrigation works covering 5,000 acres of perennial irrigated land with about 135 km. of asbestos underground canals.

(b) Agricultural services which include the provision of fertilisers, insecticides, machinery, equipment and 100 acres of windbreaks.

(c) Improvement of Lahej Ginnery by replacing old ginning machines with new ones more suitable for medium-staple cotton produced in the project area.

(d) Construction of two water reservoirs and extension of water pipes to 6 villages in the area.

(e) Construction of 20 km of feeder roads to connect nine villages with the main road in the project area

(f) A hydrological study of the water resources of the wadi.

The project started implementation at the end of 1979 and is still in process. Again social services in the wadi have been developed alongside the project and other infrastructural projects - such as weirs, canals and main road construction - are taking place.

As far as organisation is concerned, rural development programmes are, primarily, implemented under regional supervision with some control from the central authorities.

The region in PDRY enjoys some autonomy power since both the State and the Party are homogeneously represented. The Governor, who is also a top party member, is the head of the local public council which discusses the problems of the region locally and then at Government level with the authorities concerned. All members of the local public council of a

region are elected and are mainly from all sectors and social services agencies. The basic idea of a project or a programme comes from the local level and often formulated at the central authority by the Ministry of Department concerned. Once it is approved, it is implemented regionally with some help from the central authority. Social services, however, has been the responsibility of the region exclusively once the required investment is allocated by the central concerned authority. For example the building of a school in a region implies provision of investment by the Ministry of Education (in coordination with the Ministry of Planning) and then the amount is transferred to the region where education authorities within the Governor's establishment headed by the executive office of the local public council are situated.

Sectoral projects, however, are rather difficult to monitor and implement under regional supervision alone due to the technical knowledge required which is not available at the regional level permanently. Typically, a sectoral project is headed by a technician from the central authority or ministry based temporarily on the project site and the whole project is implemented with direct contact with the central authority. There is also close contact with the regional authorities for day-to-day work, such as provision of more labour, or to settle local disputes arising with other regional agencies or some other local contingencies.

The integrated rural programmes, however, have special organisational arrangements owing to the huge investments involved and the requirement by the co-financiers that there is some commitment from the region. The Wadi Hadhramout Project, for example, is implemented in one of the remoter parts of the Governorate, a long way from the regional central authority. The manager - in this case - is an IDA expert and the

co-manager is usually a local technical man appointed by the ministry. The project is implemented by a technical team from both foreign and local experts and the contract and schedule documents are signed by the Government, co-financiers and executing agencies. In our example, the project is supervised, primarily, by the MAAR, but at the regional level, a committee has been formed headed by the Governor with a membership of the Project Manager, Co-Manager, the Manager of the district/s, all heads of involved departments in the area such as the Department of Public Works (for roads), Water Corporation (for water reservoirs), Department of Agriculture and so on - , Secretary of the Party of the district and the accountant of the project. The objective of the Committee is to smooth the machinery of the project's implementation and to solve basic problems of the region. Basic decisions are taken by central authorities, in this case, the MAAR takes up decisions with co-financiers and the Ministry of Planning; e.g. types of machinery, Companies to be contracted with for studies or equipment and project programming. Regional authorities, however, may decide local issues, e.g. which feeder roads to start with, where to get stones or gravel from, which areas in cooperatives to be provided with inputs and other such issues.

The integrated rural development programmes in PDRY are scattered among different agencies. To coordinate so many authorities takes time and a lot of effort despite the homogeneity of Party and State authorities at both regional and central authorities. There is no single and consolidated administrative structure for integrated rural programmes at present and it is not likely to change in the near future. However, no one denies its importance and yet no one intends to take the initiative. Despite this, the aforementioned programmes have achieved a lot of their objectives which were neither simple nor straightforward. On the contrary

these programmes were highly intricate and more complex than might seem, but their success came from the attention given by the Government to them at top priority in development programmes. Above all, both the Party and the State authorities at the regional level are strongly in favour of such an integrated approach in rural development.

In conclusion, the Government has been adopting a balanced growth strategy for its national development in all sectors and social services. This strategy, however, has favoured rural development though at an expensive cost. Policies and programmes for rural areas have been substantially encouraged and fulfilled by adequate and useful instruments set by both the Party and the State authorities in a homogeneous manner. A high portion of all plans' investment - so far - has been allocated for rural programmes and projects to raise, primarily, the standard of living in rural areas and ultimately of society as a whole. Rural activies, however, though properly implemented, had only partial successes for lack of useful linkages with each other at optimal standard.

The integrated rural approach was thought of to be the appropriate approach for rural development whereby wasteful resources should be minimised and technical people optimally used in large-scale programmes. Rural activities within such approach were also thought of to be properly linked together and integrated in a useful manner. However, despite the combined efforts of national and international agencies and the homogeneity of the Party and the State at both central and regional levels, problems at macro- and micro-levels were in view. Continuing higher wages, shortage of labour, inflation, low-productivity and low prices of output have been the major problems of rural areas. The Government still maintains top priority to these programmes and, therefore, does its best to smooth their machinery and provide their

requirements in giving them sanctioned policies such as increasing rural wages, investments and output prices. Even foreign cheap labour has, recently, been imported from abroad to fill the gap in the labour force. Eventually, rural development is a costly task and the more rigid the society is, the more price is needed to be paid for in cash and kind.

CHAPTER 5

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CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

PDRY became independent in 1967 with revolutionary leaders who adopted Socialist philosophies as a basis for transforming the service-based economy into a production-based one. The country's natural resources are few and until 1981 the country had no prospects for mineral or oil production so agriculture has been the lynch pin of its internal economic transformation.

The agricultural sector is significant for two main reasons namely : 80% of population were dependent on agriculture for their livelihood in 1968 and, secondly, agriculture produced about 33% of the GDP in the same year. These proportions have been declining with the growth of other sectors such as construction and transport and communication so that today about 45% of the working labour force are engaged in agriculture and about 20% of the GDP comes from agriculture.

In formulating development plans, the Government's objectives in the agriculture sector have been the following :

(a) To raise the standard of living of rural people by transforming traditional agriculture into a modern form.

(b) To increase rural income by increasing agricultural production.

(c) To improve nutrition nationally by stimulating demand and providing a regular food supply to consumers.

(d) To eliminate regional income inequalities by adopting an income redistribution policy.

The methods chosen to achieve these overall objectives took various forms : (a) Legal form, (b) Restructuring the agricultural sector, (c) Long term investment policies, (d) Short-term prices and taxation

controls and (e) Creation of appropriate social laws and policies for rural areas.

The initial step was in the legal one when the Agrarian Reform Law was first issued (subsequently amended in 1970) whereby all feudal land was confiscated and redistributed. This law laid the basis for public, cooperative and private ownership of cultivable land in the form of State farms, agricultural cooperatives and private plots respectively.

The MAAR was entrusted to supervise agricultural activities primarily through the newly established institutions of State farms, cooperatives and marketing corporations. Irrigation projects dominate its activities so far. This is due to the fact that they represent the basic infrastructure for modern agriculture. The DIME constitute the largest single group of Ministry employees and gets not less than 60% of total investment of the agricultural plan annually. Irrigation schemes have been condensed in the major three wadis : Abyan, Tuban and Hadhramaut but other relevant wadis such as Beihan, Ahwar, Maifa'a and Nisab receive attention as well. Since 72% of cultivated land depends on spate irrigation, 70% of irrigation expenditures go to dams, diverting weirs and the excavation of main and distributary canals. Floods, however, remain hard to control (as was forcibly demonstrated in April 1982 when they devastated large areas of cultivated land and also destroyed dams, roads and settlements). Well-irrigation may be more appealing to farmers but is very expensive to implement on a large scale.

There are seventeen MRS under the supervision and administration of the DIME. Eleven MRS, scattered throughout the country, are well-established and the rest are close to completion. The MRS have incurred heavy losses due to low efficiency and their uneconomical hiring prices so the Government did subsidise them heavily up to 1980 but since then their prices have risen almost threefold as the level of

subsidy is reduced. The lack of adequate training is the main factor responsible for inefficiency in the handling of machinery and other equipment.

Agricultural cooperatives cover about 70% of total cultivable land and depend mainly on spate irrigation - particularly for their cotton, cereal, fodder, nuts and sesame crops. Vegetable and fruit crops more often depend on well irrigation. Cooperatives sell their produce to the PCMVF at farm-gate price set by the relevant authorities which bear the marketing or storage costs. Total production increased sharply in the early 1970's but started to decline in the mid-1970's (particularly in 1975/76 and 1976/77). There were several technical reasons for this but the price system is regarded as the main one. Hence in 1979 farm-gate prices rose and some freedom in marketing was given to cooperatives. However, there remains considerable scope for improvements in yields but untrained manpower and the paucity of the facilities that the cooperatives have to contend with do not enable them to achieve their objectives at present. Nor is this likely to change rapidly as the limited resources of the State can hardly cope with the requirements of the State farms and irrigation schemes.

The number of State farms reached 41 in 1978 and has since been reduced to 32 by the amalgamation of some with others or with cooperatives. State farms provide about 20% of total agricultural output - the rest being mainly provided by the cooperatives. They are established as State enterprises so their entire requirements are met by the State in the initial 2-3 years and they then finance themselves from their production. Unfortunately the majority of State farms throughout the past ten years have proved to be inefficient and unsuccessful. Various reasons account for this, of which the important ones are : low wages of agricultural labourers, low output prices, inefficient management and, above all, shortage of labour. State farms mainly grow vegetables and fruits and

their output is sold to PCMVF at farm-gate prices. Recent output prices and marketing policies for cooperatives also apply to State farms. The State farms, however, have better yields per hectare, per person in crops than cooperatives owing to the level of facilities provided by the Government in terms of well-irrigation, land reclamation and available machinery.

Research and extension services have been the major means of agricultural intensification but they were only operating on a relatively small scale until 1977. However, the second phase of the UNDP/FAO programme (1977-82) saw the expansion of research and extension facilities in quantitative and qualitative terms - no less than 40 fellowships have been granted to qualified staff for further research (this thesis is the result of one of them) - and various practical courses at farm-level have been run regularly. The research and extension services now contribute a lot to the improvement of yields of many crops but especially those of tomatoes, potatoes, cotton and wheat. Furthermore, the Giar extension centre, together with other technical agriculture institutions, has trained personnel in management, bookkeeping and extension work in both plant and livestock production.

Turning to the other important agricultural institutions, the corporations and boards. The PCMVF is regarded as the largest - it markets all vegetables and fruits produced by both State farms and cooperatives at consumer prices which, generally, do not cover its marketing and storage expenditures. It thus receives heavy subsidies from the Government and most of its available facilities were provided by the State. It also imports seeds and insecticides required by State farms and cooperatives to fulfil the production plan. Faced with increasing local demand for vegetables and fruits, the PCMVF has to import supplies and exports any surplus of local production. Abyan and Tuban Development Boards were

established to promote cotton production in both areas. A ginnery is under the control of each Board. Development of irrigation projects in both areas has contributed to the improvement of standards in the technical and administrative capabilities; and the financial performance of both Boards has been satisfactory. The Poultry Corporation is responsible for poultry production and training. Its activities are very much assisted by Cuban technical advisors within a bilateral agreement. Poultry prices are set by the MAAR authorities and were not giving an economic return until recently. Egg prices have now been revised upwards several times to reflect increasing demand and rising input prices. The ADF is an important source of credit for farmers, providing credits at a nominal interest rate of about 2% to cooperatives and no more than 5% to agricultural institutions. The ADF is also responsible for fertiliser imports and of some equipment (such as pumps and tractors) needed by cooperatives. The MMC was part of the MAAR until 1979 when it became attached to the Ministry of Trade of Supply. It is responsible for meat marketing of local production and of imports. Due to the low level of local production for sale, the MMC imports frozen and live-weight meat from Australia, France Holland and Ethiopia.

Investment policies, at central level, have been very rational in essence. The agriculture sector maintained the lion's share throughout the past fifteen years. Within the agricultural sector, the Government has adopted a balanced growth strategy with horizontal expansion in each field but recently the Government has started to concentrate on the vertical integration of the sector. This, however, required more resources qualitatively rather than quantitatively.

The pricing policies were very sticky for just over eight years which resulted in the decline of the agricultural sector in terms of both labour and productivity. However, price changes have now been implemented

as a result of the perceived need to deal with farmers' incentives, increasing agricultural wages and the reduction of subsidies. The tax system in agriculture only applies to State farms and cooperatives and not to private farmers since the latter do not get substantial Government help. The taxes collected from the sector falls short of the heavy subsidies provided by the Government.

A new approach adopted by the State to tackle the problem of rural development was the integrated rural development programme which started in 1973 with the Bedouin Settlement project and continued in the agricultural sector throughout the 1970's and early 1980's. Wadi Hadhramaut development project and Wadi Tuban development project are being implemented in their respective areas with an integration of rural activities and the farming sector.

6.1 CONCLUSIONS

In conclusion, resource and manpower limitations make it difficult for PDRY to achieve its economic, social and defensive aims smoothly and rapidly.

Capital shortage has been the most important limitation in the economy. PDRY has not drawn upon its mineral or oil wealth until 1982 when its potential was discovered in the Hadhramout and Al-Mahara Governorates. The country's resources were very limited compared to its ambitious national objectives. The physical structure of the country requires huge investments to provide services and transport products and to build a sound agricultural and rural infrastructure. Further, natural limitations in the sector, such as water shortages and soil salinity needed much more capital (in terms of money and equipment) than was originally thought. The social philosophy of the country, however, implied a central control over production which, in turn, required heavy capital resources to create

appropriate agricultural institutions such as marketing agencies, MRS, State farms and agricultural corporations.

Labour shortage, as well, has been a persistent general problem since independence. The population (then one million and a half) could not meet both the demands of defence and of expanding service and production sectors. Development plans have always been vulnerable to labour shortages in all sectors of the economy. In some growing sectors such as construction, the problem is sometimes temporarily solved but usually at the expense of agriculture which has poor working conditions and pay.

These general limitations have had greater impact on specific issues in agriculture. For instance, Management, throughout the sector was not of adequate standard during the period. Most agricultural institutions such as State farms and cooperatives have been of sophisticated nature and millions of dinars were involved in them but they have had insufficient management capabilities. Up to 1978 only six State farms were managed by agricultural graduates and although they were fully informed on agricultural practices, they were not trained in management. Often agricultural projects involving two million dinars and above, are managed by a secondary-school leaver who had only five years' experience. In extreme situations, projects involving 5-10 million dinars can be managed by young enthusiastic graduates. The MRS, technical institutions and other agricultural institutions also suffer from the low efficiency of management.

Another problematic aspect is productivity in the agricultural sector of both crop and labour. Crop productivity improved sharply in the early stages of development but started to increase at a declining rate until it became stagnant towards the end of the 1970's. The low marginal efficiency of labour, land and capital combined, held back any further

improvement in yield in the late 1970's.

The most important factor that has helped the State to achieve a great deal of its objectives was its good organisation established by the British occupation and preserved today. The coherence of political, planning and administrative structures of the country minimised the adverse effects of the limitations noted above. The shared responsibility for a specific construction in a region by the Governor, the director of the agricultural department of the region, the Planning director in the region and the project (or State farm or cooperative or MRS) manager on the spot saves time and effort - even sometimes saving any central authorities involvement. The decentralisation of daily and routine functions represents a further step in the integration of planning, political and administration functions. This positive factor upgraded rural cooperation and eliminated tribal frictions in the agricultural sector.

The Government adopted a horizontal pattern strategy for national development since independence. The Trennial plan concentrated, primarily, on communications to link all parts of the country but then all sectors received equal attention in investment. Social services got almost the same share as agriculture which was supposed to be the leading sector. It was an inevitable policy the rural development objective. This general strategy reflected itself on the agricultural sector whereby agricultural policies were formulated to fit national objectives. The agricultural sector performance could be assessed by the performance of the production plan in which all agricultural policies are reflected.

At the start of the experience, the production plan's performance was far from satisfactory for many technical reasons (e.g. unreliable data, bad demand-projections). However, after several years, the fulfilment of the production plan reached an average of 60-65%. It is worth

noting that 90% of Government's investments go to Irrigation Schemes, State farms and research and extension. While the cooperatives which supply 70% or more of agricultural output hardly receive any direct investments in their production processes. No doubt irrigation scheme are undertaken primarily to serve cooperatives but only after their completion will the cooperatives have any substantial benefit. This gap between the production and the investment plans has been reviewed by MAAR authorities in 1980 when attention is given to economic assessment of any agricultural activity in terms of production and return.

Both investment and production plans have succeeded in creating agricultural facilities in cultivable areas but have failed to motivate farmers to increase production and, on many occasions, even failed to keep agricultural labourers in the sector or in their areas. Investment plans created competitive projects in other sectors and, together with the effects of the pricing policies, many agricultural labourers moved out of agriculture to other sectors. In recent years, the pressures on agricultural production created by these policies became more widely appreciated; hence there has been some relaxation of late. Producer's prices, for instance, were pushed up and marketing processes became decentralised within a certain limit; State farms shrunk in number either by amalgamation or elimination of small ones. Such changes, though, had a short time to be assessed, but have had a positive impact so far and still more to come.

6.2 RECOMMENDATIONS

The evidence presented in this thesis suggests that within the existing political situation, the best strategy for the agricultural sector in PDRY is a vertical one with a minimum of State control for a time. This can be achieved without losing sight of the goals of national self-sufficiency

in food, improving rural incomes and improving levels of nutrition in the following manner:-

The State should adopt a policy of concentration on those areas with most agricultural potential represented by the three main wadis : Abyan, Tuban and Hadhramout. All efforts and available resources should be directed to these areas within the framework of carefully prepared integrated rural programmes. In all other areas agriculture should be stimulated by a removal of controls (but also removal of subsidies). The Production Plan should take into account production of the major wadis . Only after the completion of the infrastructure of the main three wadis (about 10-20 years) can the State start on development programmes for other areas.

More specifically, each aspect of agriculture should be integrated with the others in the main wadis, as follows:-

(a) Irrigation

It is recommended that irrigation activities in Abyan, Tuban and Hadhramout be more heavily supported than before. Irrigation schemes in other wadis take not less than 40% of irrigation investment. If these investments were directed to the main wadis, they would have more impact than on a scattered set of projects.

In Tuban area, the Yemeni-Russian programmes need further consolidation in terms of good manpower and better supervision and management. This programme also needs some additional schemes in the upper area of the wadi around Musaimeer.

In Abyan area, recent floods destroyed existing irrigation schemes as they were unable to withstand a strong flood. All the years of investment were swept away within a few hours - during this great flood.

The area now needs an extensive hydrological and topographic study on which a sound infrastructure project can be implemented.

In Hadhramout, the problem is even greater because of a much larger area being involved. It will be very difficult to create a full agricultural infrastructure in the near future, but the State should initially concentrate its efforts on specific strategic positions in major tributaries for defensive purposes and controlling the spate. The wadi badly needs well-irrigation activities, particularly in cooperatives. Well-drilling, however, must be in parallel with electric-power expansion in the wadi.

(b) State Farms

It is recommended that the Government must first reduce the number and then control those State farms in the main wadis only. With 5-6 State farms in each wadi, the Government will be able to improve the management standard in the few effective ones. The State farms must be viewed as a special form of production-enterprise and unless they are made to be successful, they give a bad image to public enterprise.

(c) Cooperatives

Cooperatives are also recommended to be confined to these major wadis where irrigation and other agricultural practices are being improved. It is also recommended to keep type I cooperatives predominant for some time and to encourage, but never impose type II. In other subsidiary wadis, cooperation can be encouraged in the more densely-populated areas (e.g. in Wadi-Beihan areas and Nisab) but if it fails, it need not be persisted with. These other areas must be under continuous review by MAAR authorities to assess their performance under free-market conditions. It must be stated that there will be difficulty in controlling data

in uncontrollable sectors but efforts should be given to this aspect.

(d) Research and Extension

The research and extension department in MAAR must be supported to a great extent, both centrally and regionally. It recently managed to create a good team in Wadi-Hadhramout and already has two sound centres : one for research and one for extension in the Abyan area. It needs to create a qualified team or sub-station in the Tuban area. Its nurseries, so far, are just of average standard in other areas and so there is scope for further development in future.

(e) Agricultural Corporations

Due to the significance of the cotton crop in Abyan and Tuban areas, both Abyan and Tuban Development Boards should remain and could be more effective with contraction of their administrative structure and expenditure. The management of both Boards is poor and the standard should be upgraded to allow closer links with cooperative farmers.

The PCMVF badly needs greater integration; with its existing facilities and resources it can only cope with marketing output of the three main wadis and that needs better management. This limitation in its function would save a lot of resources in unnecessary transport. Maybe in highland areas and during summer, the PCMVF needs to be involved in marketing certain summer crops such as : tomatoes, potatoes and peaches for main towns and Aden City, but, in general, the marketing operation must be decentralised since it is too small to cope with such a large area. Imported items, however, can be supplied to main towns under PCMVF's control but to other areas through private shop keepers who can arrange delivery in the sameway as they do for other basic items (rice, tea...etc.).

(f) Investment Policies

The State is recommended to give priority to the main wadis in irrigation schemes and plant and livestock production. It will still need to provide some allocations to other areas for land levelling, well-drilling and cleaning for farmers, providing seasonally some fertilisers and insecticides to small farmers, but this should not represent more than 20% of all investments. Foreign assistance, particularly from international organisations such as IFAD, could be of great benefit in producing loans for small farmers activities : World Bank and other substantial funds can be involved in more concen - trated rural projects in major wadis.

(g) Other Agricultural Policies

It is further recommended that price control on agricultural output be confined to the main wadi areas, while in other wadis, the State must put a ceiling on consumer prices (which is likely to be higher than consumer prices controlled by the State in the three main wadis) and then leave consumer prices to fluctuate up to this ceiling with respect to supply and demand law.

The levels of taxation and subsidies will depend on the per- formance of the controlled and the free sectors in agriculture. However, taxes, as they are, could only apply to the output of the three main wadis, while in other areas taxation is not recommended since the farmer will face some risks in marketing his output and is deprived of many Government inputs enjoyed by the other farmers. In general, subsidies will be reduced under this policy but will still be needed in MRS in major wadis, particularly if fuel prices are not reduced and on imported items such as chillies, potatoes and garlic.

(h) Rural Integrated Projects

Assuming the expansion of social services in rural areas will continue at the same rate witnessed in the 1970's; the recommended agricultural strategy will provide an ideal atmosphere for supporting integrated projects - particularly in major areas. Even in the other areas it will be expected that farmers' incomes will increase due to self-motiv ation.

Oil wealth in the future will undoubtedly have a positive effect in the agricultural sector if it is used rationally, primarily to sustain agriculture and only secondarily to other sectors. Agricultural performance will depend, therefore, on the scale of investment allowed by oil revenue and the balance of national objectives and the moderate agricultural policies for cooperatives and small farmers at large.

PDRY: COUNTRY DATA

AREA	POPULATION	DENSITY
337,800 sq. km	1.7 million (mid-1977) Rate of Growth: 2.6% (from 1973 to 1977)	5.1 per sq. km

POPULATION CHARACTERISTICS (1977)	
Crude Birth Rate (per 1,000)	49.6
Crude Death Rate (per 1,000)	20.6

HEALTH (1977)	
Population per physician	8,100
Population per hospital bed	810

ACCESS TO PIPED WATER (1977)	
Occupied dwellings without piped water (%)	77

ACCESS TO ELECTRICITY (1975)	
% of Population - total	22
- rural	1.6

NUTRITION (1977)	
Calorie intake as % of requirements	90
Per capita protein intake (grams/day)	58

EDUCATION (1976)	
Adult literacy rate (%)	32
Primary school enrollment (%)	89

GNP PER CAPITA IN 1977: 1/ $320

NATIONAL ACCOUNTS

	1976 2/ US$ million	1976 2/ %
GNP at Market Prices	470	100
Gross Domestic Investment	148	31
Gross National Savings	52	11
Exports of Goods, NFS	92	20
Imports of Goods, NFS	283	60

GROSS DOMESTIC PRODUCT IN 1976 (market prices)

	1976 US$ million	1976 %	Annual Growth (%) (1973 prices) 1970/72	1973/76
GDP at factor cost	326	100	—	7
of which				
Agriculture & fishing	71	22	—	4
Industry 3/	27	8	-10	-2 4/
Trade, Transport, Finance	117	36	-6	7
Other Services	111	34	5	5

GOVERNMENT FINANCE

	1974/75 5/	1975	1976	Prelim. Est. 1977
	in Millions Yemeni Dinars			
Total receipts 6/	24	17	32	40
Current expenditures	28	25	39	45
Revenue deficit	-4	-8	-7	-5
Development expenditures	21	19	39	57
Overall deficit	-25	-27	-46	-62
Borrowing from Banking System	12	10	17	18
Other Assets and Accounts 7/		2	1	1
External financing	13	15	28	43

MONEY, CREDIT AND PRICES

	1973	1974	1975	1976	1977
	(million Y.D. Outstanding end Period)				
Money and quasi-money	49	55	67	98	140
Bank credit to government	17	24	37	62	73
Bank credit to non-Gov't. sector 8/	10	19	24	31	49

1/ The per capita GNP estimate calculated by the same conversion technique as the World Bank Atlas. All other conversions to dollars in the table are at the average exchange prevailing during the period covered.
2/ Rough estimate.
3/ Includes petroleum refining.
4/ The overall negligible growth of the industrial sector is due to the decline in Aden Refinery production from 6.2 million tons in 1969 to 2.8 million tons in 1973 and 1.6 million tons in 1976--the non-petroleum industrial sector grew at an estimated rate of about 15 percent per annum between 1973-76.
5/ The fiscal year was April 1-March 31 until March 31, 1975 when it became April 1-Dec. 31, 1975 and thereafter is on a calendar year basis.
6/ Includes current and development revenues and self-financing of public enterprises.
7/ Net operations of special funds (Price Stabilization fund, etc.).
8/ Includes public sector agencies.

STATE FARMS	COOPERATIVES
ADEN GOVERNORATE	
1. Peoples' farm	
LAHEJ GOVERNORATE	
1. Al Imad	1. 13 August
2. AlHusseini	2. 26 September
3. 26 September	3. 11 October
4. Muqahid (Al-Thowrah)	4. 5 November
5. 6th Congress	5. Al Washa
6. Assalam	6. Upper Wadi
7. 22 June	7. Tuban
8. 14th October	8. Al Milah
9. The Pilot Farm	9. Tur Al Baha
10. Abr-Yacoob	10. Halmin
11. Jawala	11. Al Hadd
	12. Hateeb
	13. Dhi Nakhib
ABYAN GOVERNORATE	
1. Lenin	1. Gian
2. 27 August	2. Zingubar
3. 7 October	3. Al Makhzan
4. 4th Congress	4. Batais
5. Al Mustaqbal	5. Yaramis
6. At Tariyah	6. Ahwar
7. Al Qawz	7. Hanad
8. Al Assal	8. Mukairas
	9. aishan
	10. Damman
	11. Rusd
	12. Al Khubar
	13. Al Hussn

SHABWAH

1.	Tumnah	1. 3 May
2.	Usailan	2. 9 July
3.	Lasaleeb	3. 10 July
4.	Al Wuhud	4. 11 July
5.	Naqab Al Hagr	5. 4 September
		6. 5 September
		7. Red Flag
		8. Revolution march
		9. Irmah

HADHRAMOUT

1.	Mayfa' Hagr	1. Mayfa' Hagr
2.	Bour	2. Fawah
3.	Guaima	3. Ash Shihr
4.	Baalal	4. Sah
5.	Ar Rudood	5. Seiyun
6.	Al Qatn	6. Tarim
7.	Ghail Bin Yamin	7. Shibam
		8. Al Ghail
		9. Al Qatn

Animal Husbandry Farms

1.	Bir Ahmed	Aden Governorate
2.	Ga'awala	Lahej "
3.	Al-Fiyush	" "
4.	Calves Fattening	" "
5.	Al-Kod	Abyan "
6.	Lenin	" "

Area & Production of Crops on State Farms : 1975-85

: '000 feddans
d: Tonnes/feddan
uction: '000 tonnes

	ACTUAL						PLANNED				
	1975	1976	1977	1978	1979	1980	1981	1982	1982	1984	1985
heat											
rea	0.6	1.0	1.3	0.9	1.0	1.0	1.3	1.6	1.8	1.9	2.2
ield	0.81	0.78	0.73	0.55	0.70	0.69	0.64	0.69	0.75	0.82	0.90
roduction	0.5	0.8	0.9	0.5	0.7	0.7	0.8	1.1	1.3	1.6	1.9
ther Cereals & Legumes											
rea	-	-	-	-	0.1	0.1	0.4	0.5	0.7	0.9	1.0
ield	-	-	-	-	-	-	0.20	0.21	0.22	0.23	0.24
roduction	-	-	-	-	-	-	0.1	0.1	0.2	0.2	0.2
ong Staple Cotton											
rea	1.3	2.6	0.6	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2
eld	0.48	0.28	0.46	0.63	0.53	0.35	0.40	0.50	0.54	0.56	0.59
roduction	0.6	0.7	0.3	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1
edium Staple Cotton											
rea	-	-	-	-	0.1	0.1	0.6	0.7	0.7	0.8	0.8
eld	-	-	-	-	0.43	0.40	0.49	0.55	0.57	0.60	0.63
roduction	-	-	-	-	0.0	0.0	0.3	0.4	0.4	0.5	0.5
bacco											
ea	0.0	0.1	0.0	0.0	0.0	0.o	0.1	0.1	0.2	0.2	0.6
eld	0.50	0.40	0.67	1.00	1.00	1.00	1.08	1.08	1.09	1.10	0.27
oduction	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3

ource: Department of Planning and Statistics MAAR.

Cont..

	ACTUAL						PLANNED				
	1975	1976	1977	1978	1979	1980 (Est.)	1981	1982	1983	1984	1985
Tomatoes											
Area	2.4	3.2	3.3	1.9	1.3	1.3	0.9	1.0	1.1	1.2	1.3
Yield	3.58	2.93	2.41	3.39	3.98	5.36	5.78	5.98	6.25	6.54	6.92
Production	7.4	9.3	5.5	6.6	5.4	7.2	5.3	6.1	6.9	7.8	8.9
Other Vegetables											
Area	0.7	0.7	1.0	0.8	0.8	0.8	0.8	1.1	1.3	1.6	1.9
Yield	3.04	2.13	1.69	1.75	1.78	3.12	3.50	3.80	4.10	4.50	4.90
Production	2.1	1.5	1.7	1.5	1.4	2.5	2.8	4.1	5.4	7.2	9.2
Dates											
Area	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yield	-	-	0.25	1.25	1.50	1.75	1.20	1.36	1.55	1.77	2.05
Production	-	-	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Bananas											
Area	1.4	1.4	1.0	1.2	1.2	1.2	1.2	1.3	1.4	1.5	1.6
Yield	5.90	6.26	8.06	6.36	6.85	6.94	7.23	7.61	8.02	8.45	8.90
Production	8.5	8.8	8.0	7.7	7.9	8.0	8.7	9.9	11.2	12.7	14.2

Source : Department of Planning and Statistics. MAAR

Area & Production of Crops in Cooperatives : 1975-85

ea: '000 feddans
eld: Tonnes/feddan
oduction: '000 tonnes

	ACTUAL						PLANNED			
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
eat											
ea	3.2	10.4	10.1	10.0	9.5	9.5	10.2	10.2	9.9	9.9	9.9
eld	1.80	0.65	0.58	0.49	0.63	0.63	0.64	0.69	0.75	0.82	0.90
oduction	5.8	6.7	5.8	4.9	6.0	6.0	6.5	7.1	7.5	8.1	8.9
her Cerals & Legumes											
Cereals											
ea	0.4	0.4	0.2	0.3	0.2	0.2	0.4	0.5	0.6	0.7	0.7
eld	0.43	0.33	0.50	0.26	0.29	0.29	0.33	0.35	0.38	0.44	0.50
oduction	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4
ng Staple Cotton											
ea	20.0	14.3	12.1	11.3	10.0	10.2	14.6	16.1	17.4	19.0	20.5
eld	0.50	0.58	0.38	0.62	0.43	0.43	0.40	0.52	0.54	0.56	0.59
oduction	10.1	8.3	4.6	7.0	4.3	4.3	5.9	8.4	9.4	10.6	12.1
dium Staple Cotton											
ea	-	-	-	6.0	4.8	4.8	5.3	5.7	6.0	6.3	6.7
eld	-	-	-	0.50	0.52	0.52	0.50	0.55	0.57	0.60	0.63
oduction	-	-	-	3.0	2.5	2.5	2.7	3.1	3.4	3.8	4.2
bacco											
ea	0.9	1.0	0.7	0.6	0.6	0.6	1.1	1.2	1.3	1.5	1.8
eld	0.56	1.43	0.96	0.76	1.15	1.00	1.08	1.08	1.08	1.10	1.11
oduction	0.5	1.4	0.7	0.4	0.7	0.6	1.1	1.3	1.5	1.6	2.0
matoes											
ea	1.0	3.7	2.1	2.2	2.3	1.9	2.0	2.1	2.2	2.4	2.6
eld	2.55	1.73	3.89	4.22	4.72	5.16	5.59	5.89	6.27	6.68	7.19
oduction	2.7	6.3	8.1	9.2	10.7	9.8	11.3	12.5	14.0	15.0	18.6
her Vegetables											
ea	3.0	1.9	3.3	2.5	2.8	2.8	3.0	3.5	3.6	3.9	4.2
eld	2.18	4.65	2.75	3.07	3.56	3.12	3.50	3.80	4.10	4.50	4.90
oduction	6.5	8.9	9.1	7.8	10.0	8.7	10.5	13.1	15.0	17.6	20.7
tes											
ea	9.3	10.0	8.2	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
eld	0.63	1.35	1.92	0.75	0.75	0.95	1.20	1.36	1.55	1.77	2.05
oduction	5.9	13.6	15.8	5.2	5.2	6.6	8.3	9.4	10.8	12.3	14.2
nanas											
ea	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4
eld	5.82	5.30	5.98	8.97	10.97	11.07	8.29	8.53	8.83	9.13	9.45
oduction	2.9	2.6	2.6	2.6	3.3	3.3	2.5	3.4	3.5	3.6	3.8

rce : Department of Planning and Statistics MAAR.

Total Area & Production of Crops : 1975-85

Area: '000 feddans
Yield: Tonnes/feddan
Production: '000 tonnes

	ACTUAL						PLANNED				
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Wheat											
Area	8.9	16.1	14.4	13.7	13.2	13.2	15.0	15.3	15.2	15.4	15.6
Yield	0.99	0.62	0.60	0.49	0.64	0.63	0.64	0.69	0.75	0.82	0.90
Production	8.8	10.0	8.6	6.8	8.4	8.4	9.6	10.5	11.4	12.6	14.0
Other Cereals & Legumes											
Area	0.4	0.4	0.2	0.5	0.4	0.4	1.3	1.7	2.3	2.7	2.9
Yield	0.43	0.3	0.55	0.27	0.24	0.24	0.26	0.27	0.29	0.31	0.33
Production	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.5	0.6	0.8	1.0
Long Stape Cotton											
Area	22.1	17.9	12.6	11.5	10.2	10.44	14.7	16.1	17.5	19.1	20.7
Yield	0.49	0.52	0.38	0.62	0.46	0.43	0.40	0.52	0.54	0.56	0.59
Production	10.8	9.3	4.8	7.1	4.7	4.4	5.9	8.4	9.5	10.7	12.2
Medium Staple Cotton											
Area	-	-	-	6.0	4.9	4.9	5.9	6.3	6.7	7.1	7.5
Yield	-	-	-	0.50	0.52	0.52	0.50	0.55	0.57	0.60	0.63
Production	-	-	-	3.0	2.5	2.5	3.0	3.5	3.8	4.2	4.7
Tobacco											
Area	1.5	1.6	1.3	0.7	0.8	0.8	1.4	1.6	1.7	1.9	2.2
Yield	0.84	1.40	1.01	0.76	1.41	1.00	1.08	1.08	1.09	1.10	1.11
Production	1.3	2.2	1.3	0.5	1.1	0.8	1.5	1.7	1.9	2.1	2.5
Tomatoes											
Area	3.5	6.9	4.4	4.5	4.0	3.6	3.1	3.3	3.5	3.8	4.0
Yield	3.26	2.28	3.12	3.86	4.48	5.22	5.63	6.09	6.26	6.63	7.09
Production	11.1	15.6	13.6	17.5	17.7	18.8	17.5	19.6	22.0	24.9	28.7
Other Vegetables											
Area	5.0	4.0	5.6	3.9	4.2	4.1	4.3	5.1	5.5	6.0	6.6
Yield	2.49	3.63	2.90	2.78	3.22	3.12	3.50	3.80	4.10	4.50	4.90
Production	12.4	14.4	16.2	10.8	13.4	12.9	15.2	19.3	22.6	27.2	32.5
Dates											
Area	17.0	17.8	16.0	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9
Yield	1.17	1.27	1.54	0.75	0.74	0.95	1.00	1.36	1.55	1.77	2.05
Production	19.9	22.6	24.5	8.9	8.8	11.3	11.9	16.2	18.4	21.2	24.4
Bananas											
Area	1.9	1.9	1.4	1.6	1.5	1.5	1.6	1.8	1.9	2.0	2.1
Yield	5.88	6.01	7.54	7.96	7.85	7.93	7.42	7.81	8.19	8.59	9.00
Production	11.4	11.4	10.5	10.9	12.0	12.1	11.9	14.1	15.6	17.2	18.9

Source : Department of Planning and Statistics MAAR.

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