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A. W. SHEPHERD AND ASHA MUSTAPHA EL NEIMA

POPULAR PARTICIPATION IN DECENTRALISED WATER SUPPLY PLANNING

A Case Study in the Western District of Northern Kordofan Province Sudan

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POPULAR PARTICIPATION IN
DECENTRALISED WATER SUPPLY
PLANNING:

A Case Study in the Western
District of Northern Kordofan Province, Sudan.

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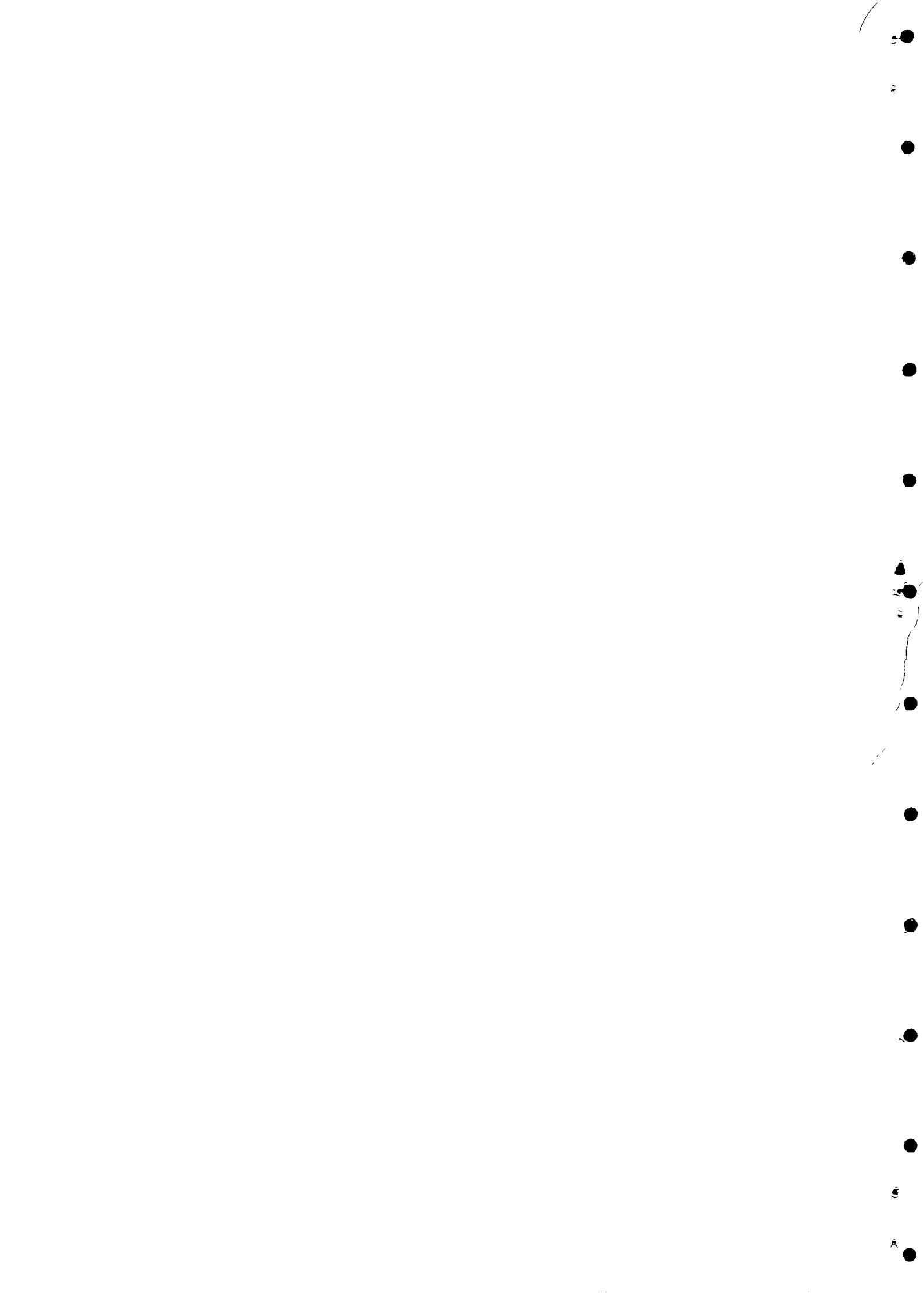
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Preface

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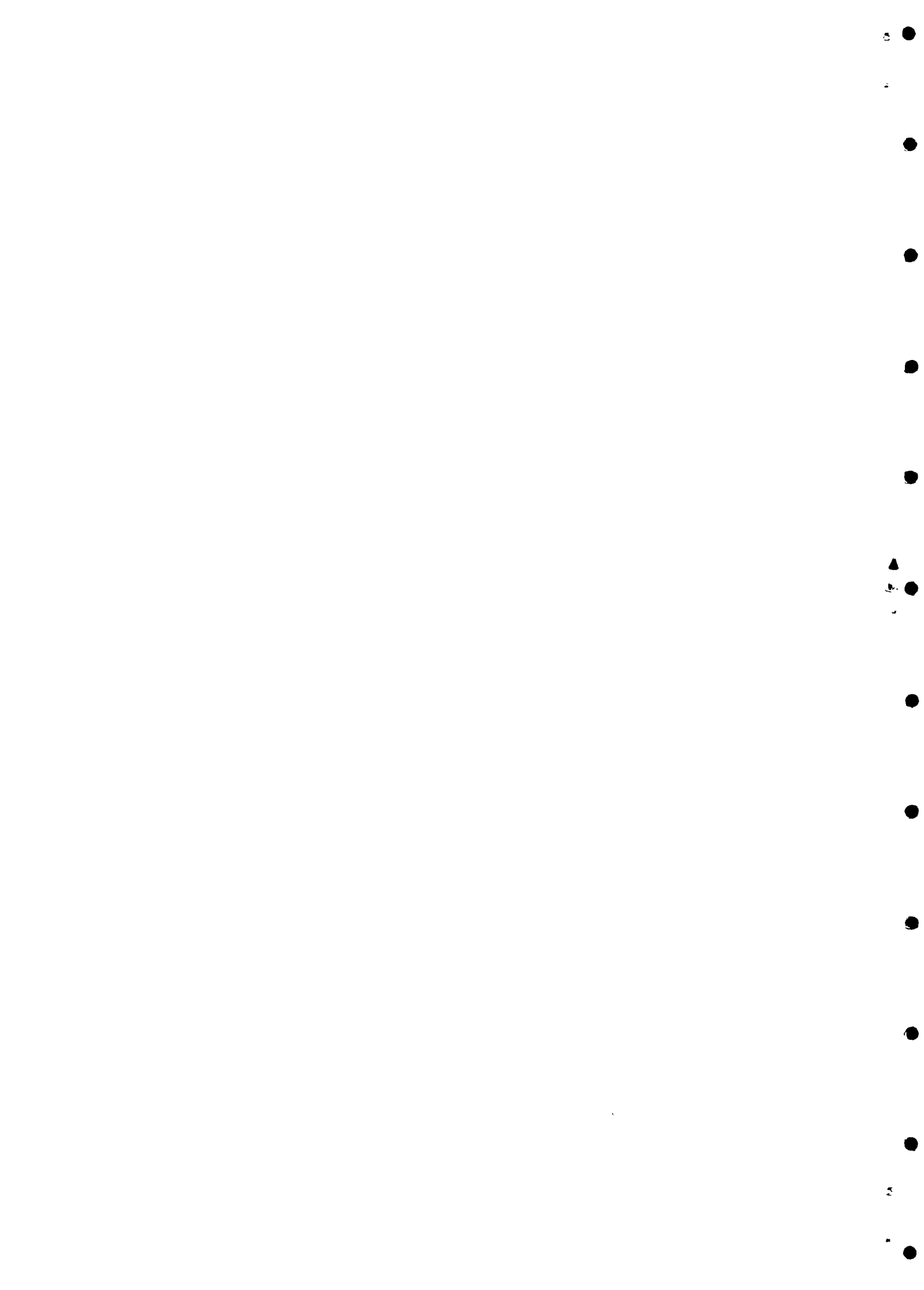
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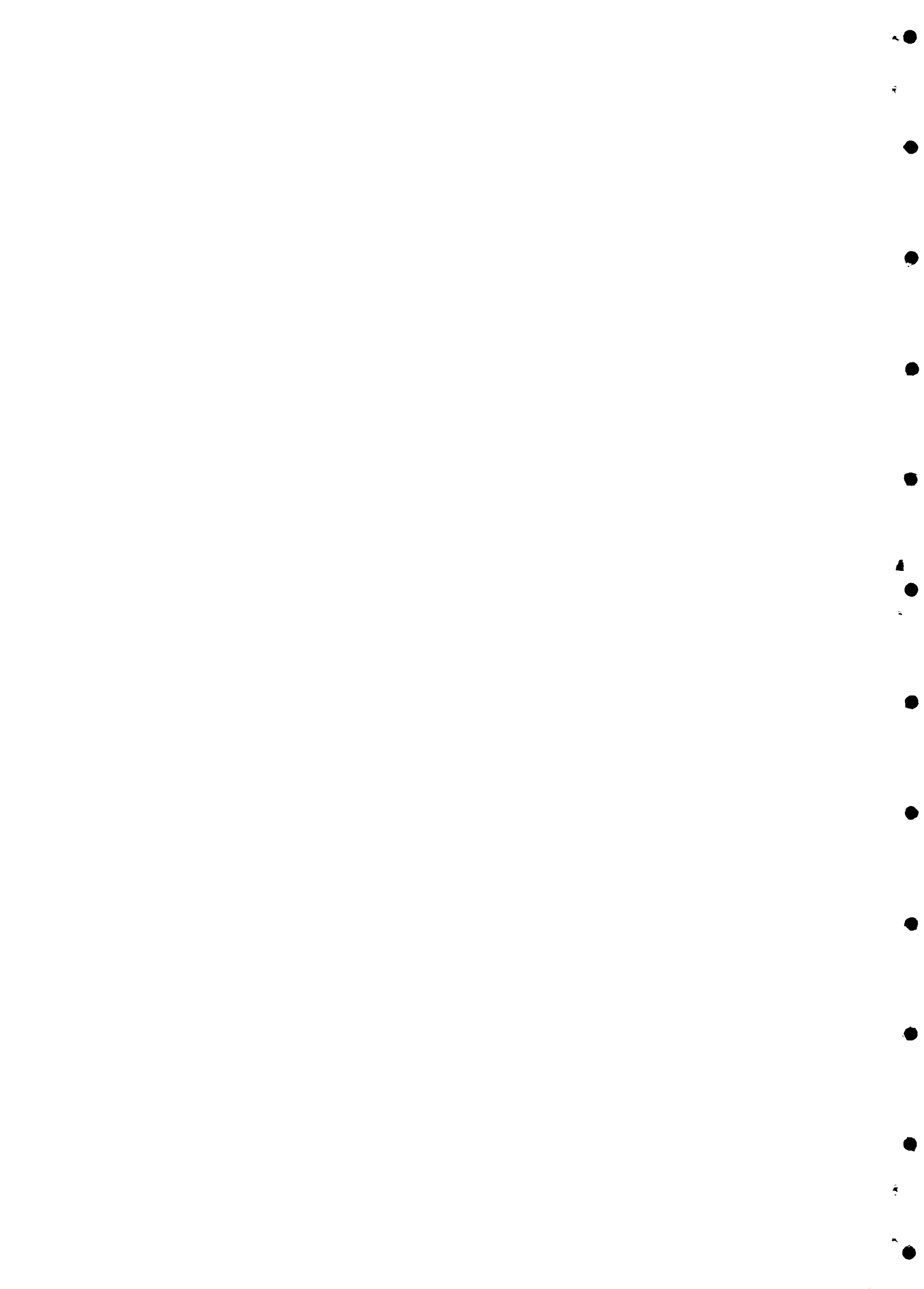
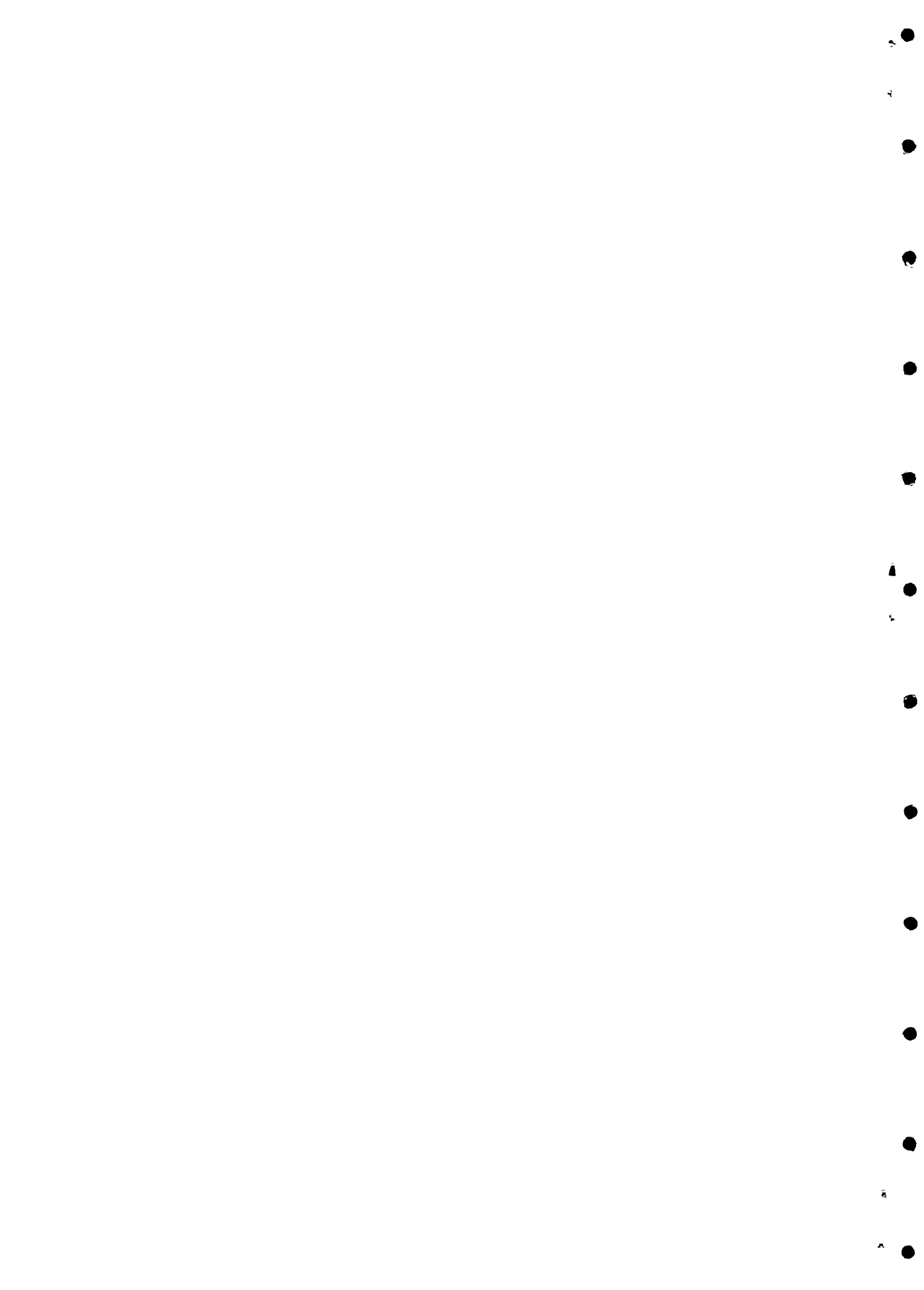


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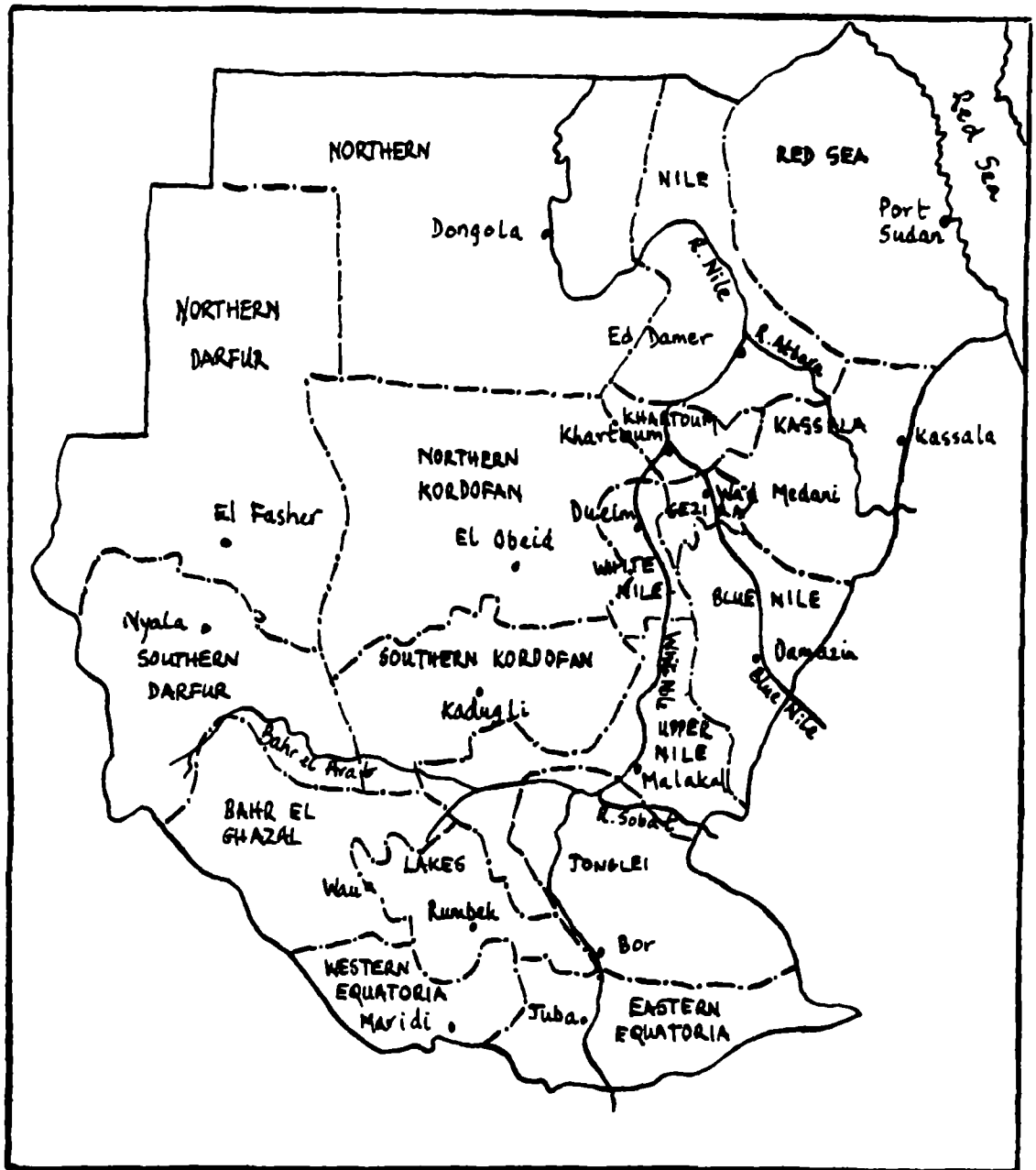


Figure 1: SUDAN

Showing post-1976 Province
Boundaries



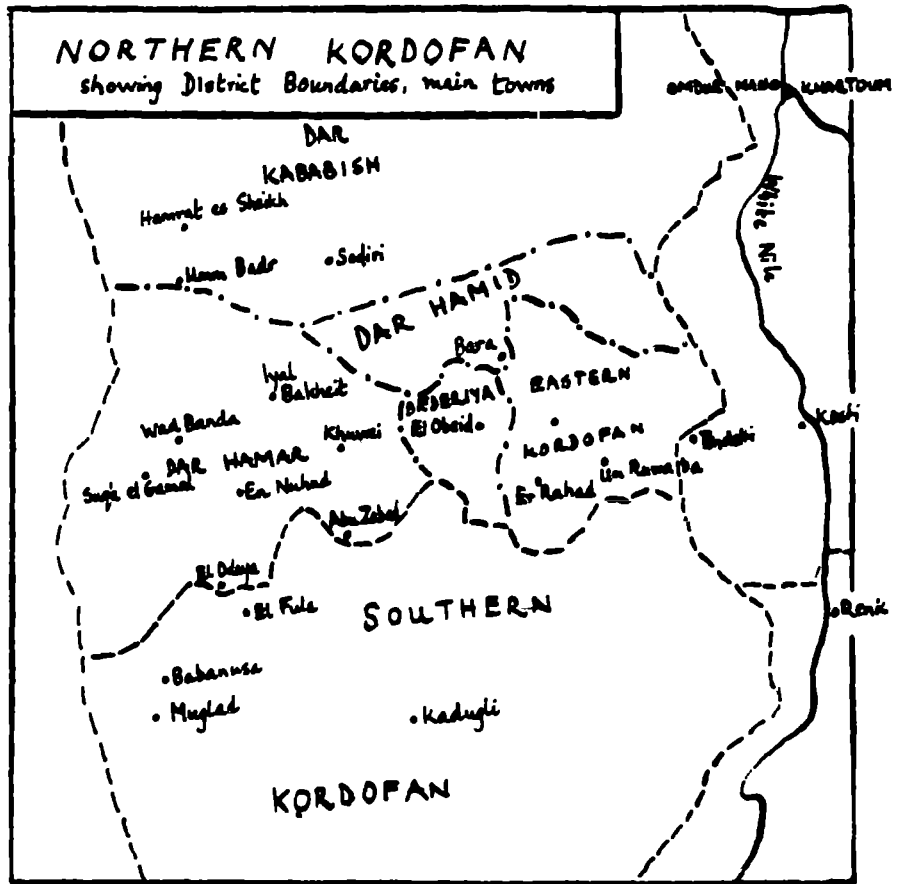
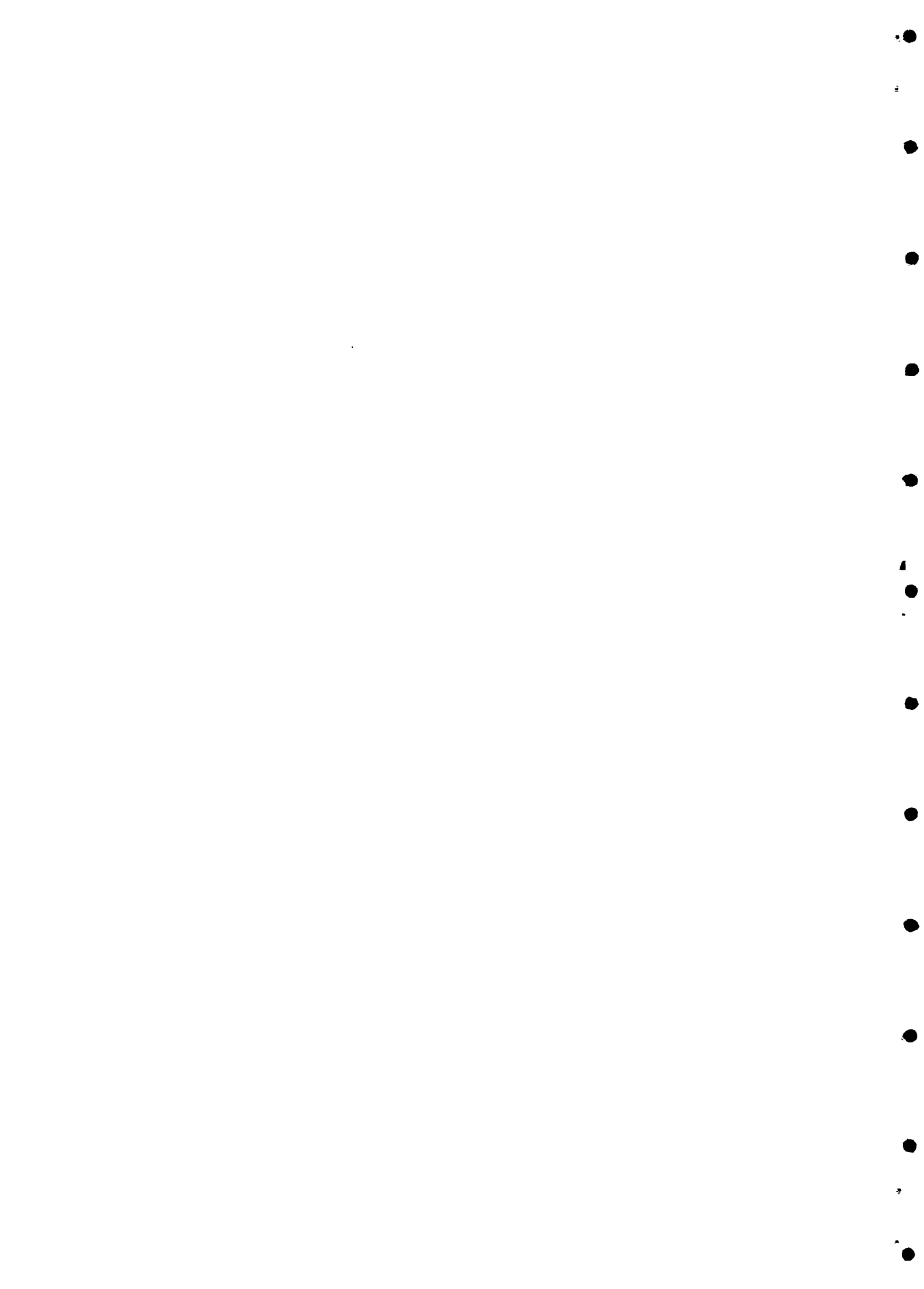


Figure 2



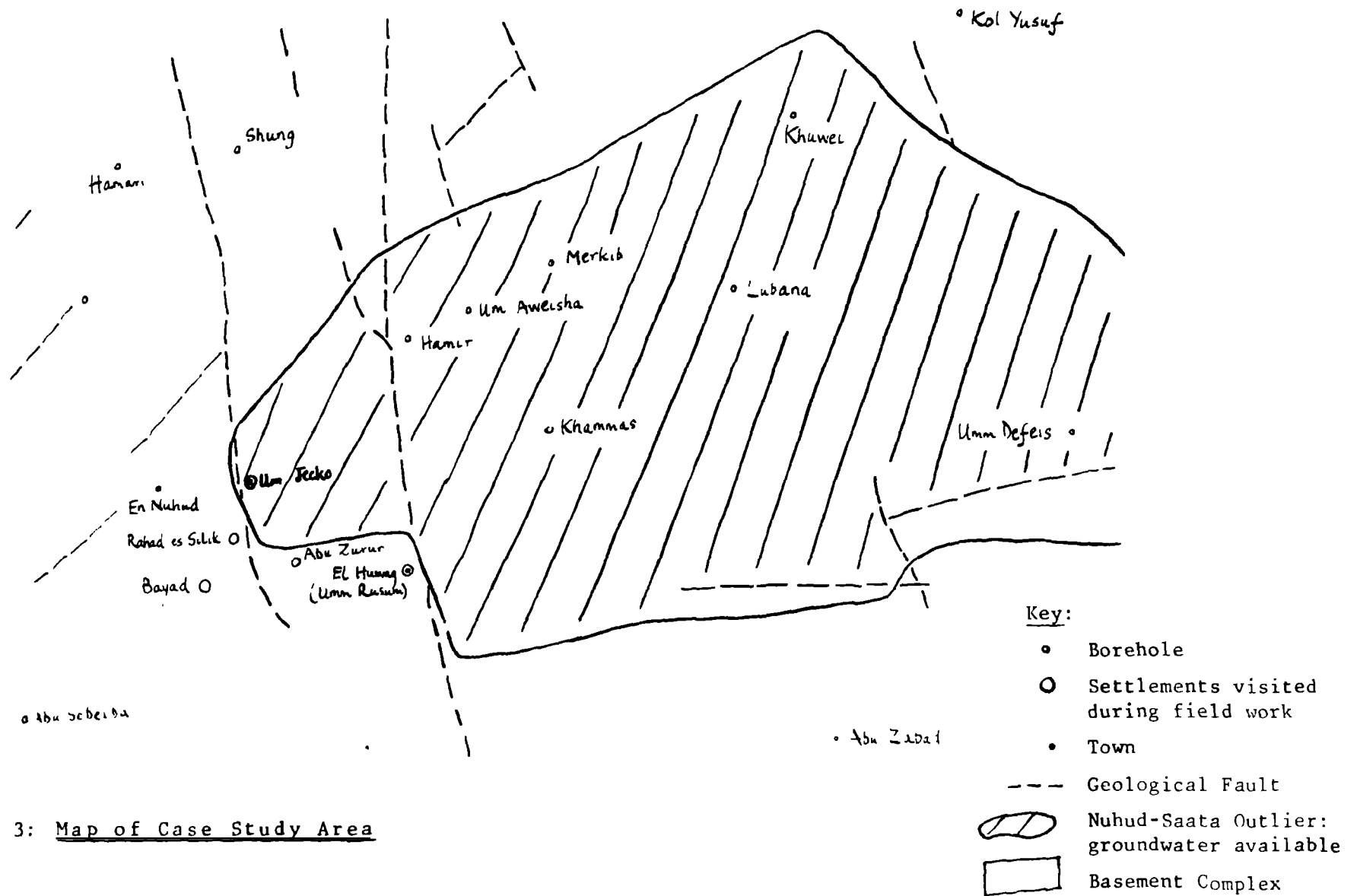
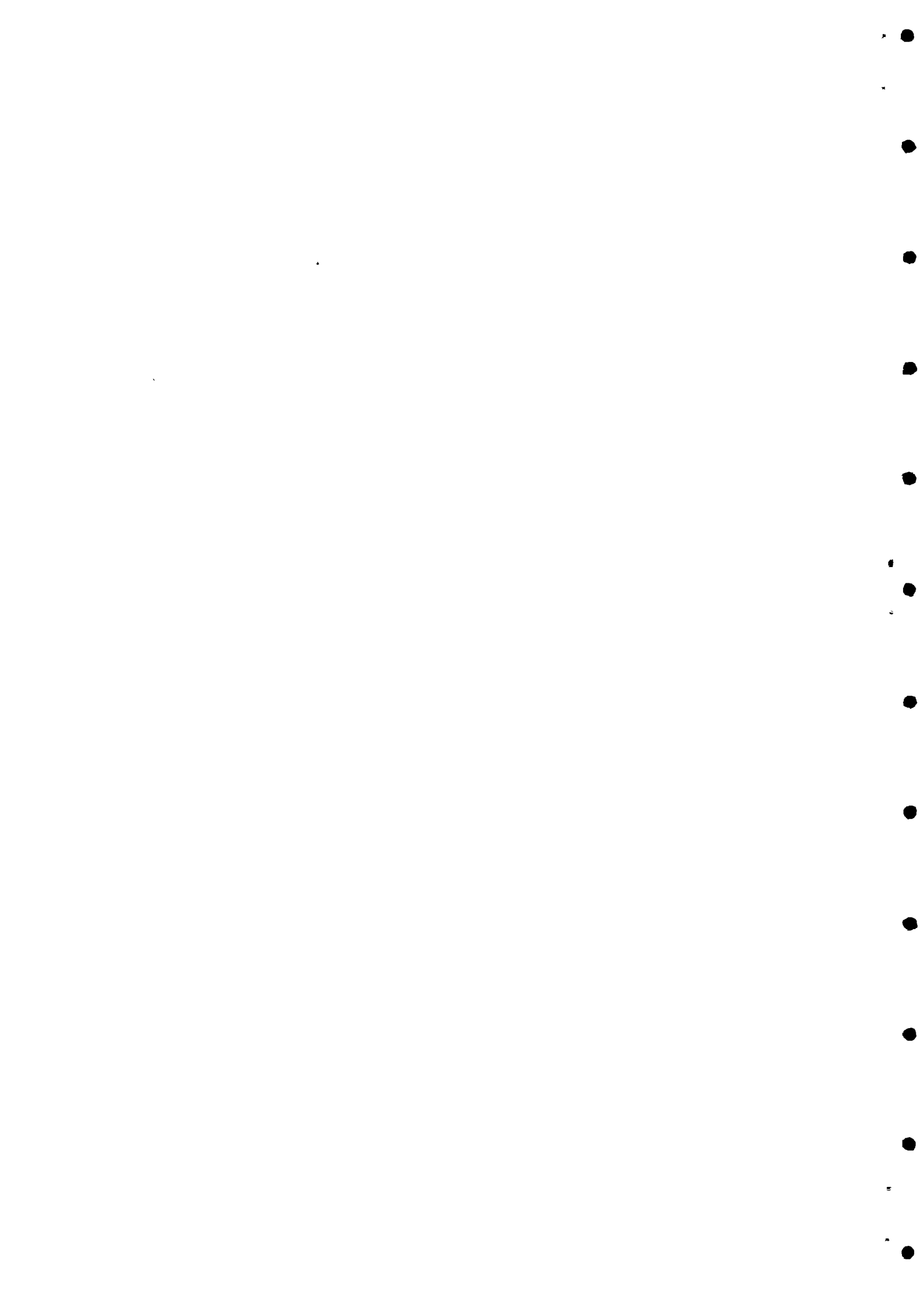


Figure 3: Map of Case Study Area



Introduction

1.1. The Study

The purpose of the study which follows is to show, using the results of a case study, how decentralised planning may have an impact on the achievement of basic needs. The study focusses on the mechanisms and nature of popular participation in planning as well as its effects in terms of the distribution of water supplies and the achievement of a basic need. The broader economic, political and ecological impact will also be assessed insofar as this is possible.

A case study in the Western District (Dar Hamar) of Northern Kordofan¹ provides an interesting opportunity to examine these questions since (a) it is an area where water is scarce, and therefore a very basic need, and (b) the Sudan has had since the 1960s a working decentralised system of planning and management of rural water supplies. It is possible therefore to explore the impact of a decentralised planning system on the achievement of a basic need in this context.

Methods

The field work was carried out during February and March 1981, that is to say during the mid-dry season. Interviews were held in El Obeid, the provincial capital, in En Nuhud, the District administrative headquarters, and in several villages within a 20 mile radius to the south and east of En Nuhud. Geologically these villages were situated on the borders of a water-scarce Basement Complex

1 Northern Kordofan was merged with Southern Kordofan soon after the fieldwork to form Kordofan Region, as part of the 1981 reorganisation of local government in the Sudan. See Figures 1 and 2.

area to the west and a water-bearing aquifer to the east (See Figure 3). This area was selected partly because its geology and morphology meant that a variety of water sources had to be developed, and partly because of its familiarity to one of the researchers, which saved a long process of establishing necessary rapport and preliminary contacts.

The procedure adopted was relatively simple, as it had to be, given the acute time constraints and difficulties of fieldwork. In all the villages visited, informal public group discussions were held either at a waterpoint, or at a central place in the village, or both. Discussions were structured in advance by the researchers, but a free flow was encouraged during the meetings. It would have been desirable to complement this approach with more selective private interviews with key villagers to discuss matters which could not fully be aired but this proved difficult to arrange within the time available.

Village discussions in five villages were complemented by interviews with officials and politicians in En Nuhud and El Obeid. The report attempts to reflect both the villagers' and the officials' perceptions of the issues and to balance these with the researchers' own broader perspective on the political economy of development in the Sudan. Although some interviews were made with local politicians it proved difficult to pursue such interviews systematically. This has led to an undoubted deficiency in what follows - the absence of a strong local political perspective. Unfortunately there were no secondary sources which could be relied on to fill the gap.

1 2. Decentralised planning in the Sudan

Between 1971 and 1981 a structure of decentralised government known as the "People's Local Government System" has operated in the Sudan. In political terms the system was designed to widen the basis of participation in politics, especially

in those areas of the countryside dominated by native administration. A shift of local power was envisaged from native administration families, commonly perceived by the national elite as conservative, to teachers and other supposedly more progressive elements of rural society. The system was also a platform for the Sudan Socialist Union which attempted to embrace these "progressive" groups.

In administrative and executive terms the Act has promoted a major shift of authority away from Khartoum to the provincial headquarters, when the Province Executive Council was the main decision-making body and the only budgetary unit outside central government. However, decentralisation of authority below the province level has not progressed very far, with certain exception in the richest parts of the country (e.g. Gedaref).² Lower level councils have been set up, but in many cases have few functions beyond distribution of certain "essential commodities" and law and order. Financial stringency has undoubtedly been the major cause of this.

In terms of the planning of services, on the other hand, both the lower councils and the Province Councils have played a major role. The "May Revolution" of 1969 and the 1972 Local Government System generated considerable expectations and aspirations among the population. One of the functions of the 1971 system was to foster self-help efforts, in which government and people would contribute to the costs of an investment on an equal share basis. This philosophy has given considerable scope for initiative to local communities, and as a result many schools, clinics, and wells have been built. Financial stringency has meant that these investments have not always been well operated (as in other self-help

2 See J. Howell, 'The reform of local government 1971' in J. Howell (ed.) Local Government and Politics in the Sudan, Khartoum University Press, 1974; and G.W. Glentworth and M.S. Idris (eds.) Local Government and Development: the case of Southern Darfur, Vols. I and II, DAG, University of Birmingham 1976.

efforts, such as Kenya's Harambee schools), in terms of staffing and supplies. Nevertheless, when they do work, the benefits are clearly appreciated.

There has perhaps almost always been scope for local communities to influence government investment patterns in certain activities and not in others. The 1971 system widened the range of activities officially subject to local influence, and formalised the procedures by which such influence should be exerted. These procedures will be discussed in detail in this study in relation to investments in water supplies, most of which are too large to have been made through self-help, but which have nevertheless been the subject of considerable popular influence and debate.

Nominally all central government departments established in a province were responsible to the Provincial Commissioner, the PEC and through the PC to their parent central ministry. In practice, however, many major central government activities carried out through Public Corporations have remained outside the scope of formal provincial influence. And in practice, provincial politicians have taken greater interest in certain activities - especially those with a distributional and service character. The specialised committees of the PEC reflect the real powers and the interests of provincial politicians.

It is significant that with rare exceptions, economic development functions, in which local government should have increasingly participated according to the 1971 Act, have only rarely been undertaken by Provincial Councils.³

3 Mohamed Osman Khalifa 'Application of the People's Local Government Act 1972 in the Sudan', in M.W. Norris and A.K. Pickering (eds.) Report of Proceedings of Joint Study Seminar for Senior Local Government Inspectors, DAG, University of Birmingham, and Institute of Public Administration, Khartoum, 1980.

Decentralised planning has in general been carried out in relation to the annual budgetting process. There has been little formal planning as such, although priorities have been established with greater rigour in some sectors, such as water, than others. However, planning at provincial, as at national level remains sectoral. Only through the budgetting process are one sector's plans placed alongside another's. As yet the relationships between sectoral plans have not been formalised through a regional planning effort, although there has been much talk about this. Indeed, it has been argued elsewhere⁴ that conflicts between government agencies at provincial level may be so fundamental and acute as to make very difficult any attempt at co-ordination.

The planning of rural water supplies and participation in this process are a relatively well developed aspect of decentralised planning. Subsequent chapters will examine the politics of water, participation in the management of water supplies in general, and in the planning process in particular. Before passing to these matters of detail, this introductory chapter ends with an account of the political economy of water - background information essential to an understanding of the decentralised planning process.

1.3. The role of water in Western Sudan

The discovery of perennial water sources in the savannahs and semi-arid areas of Western Sudan has always been the major pre-condition of settled life as well as economic development. This is especially true in the more water-scarce areas of Northern Kordofan and Darfur.⁵

4 A.W. Shepherd, 'Local Government and Economic Development in N. Kordofan', DAG mimeo, 1978.

5 Y.A. Mohamed: 'Impact of improved rural water supplies on settlement distribution in Western Sudan', in J.A. Mabbutt (ed.): Proceedings of the Khartoum Workshop on Arid Lands Management, UN University 1979; Y.A. Mohamed: 'Some spatial aspects of rural change in Western Sudan', Ph.D., University of Liverpool, 1975.

The western district of Northern Kordofan (Dar Hamar) was reputedly only settled because shallow wells could be dug in certain areas, principally En Nuhud. The growth of En Nuhud as the area's major town owes much to the existence of shallow groundwater. The process of indigenous discovery of shallow groundwater continues to this day to influence settlement patterns, for example, wells were first dug in Rahad es Silik in the 1930s by settlers from Nuhud: Rahad es Silik has since developed into a 'central village'. At Abu Surur shallow wells were being dug by local villagers for the first time in 1980/81 in the dry khore (seasonal stream) bed. In February it was not known whether the supply of water would last through to the rains in July; if it did people said Abu Surur would see a concentration of population around it. Without permanent water supplies an area is only capable of supporting either a nomadic and seasonal population or a settled population which moves elsewhere when seasonal water sources dry up ('transhumant').⁶ There remain many examples of transhumant communities in W. Sudan, including many in the water-scarce areas of the Western District.

Traditionally water supplies in Dar Hamar have been managed according to the customary legal system of the area. In this system the basic assets - land, water and pasture are collectively owned by the tribe. Access is open to all and free of charge. Regulation of water supplies has traditionally been the province of the native administrator or village headman. He has relied on a basic consensus among water users about the rules and on his hereditary right to interpret those rules. Consensus derived (a) from the harsh environment of Dar Hamar in which co-operative action to realise scarce resources has always been necessary and (b) from the manner of settlement of Dar Hamar about 150 years ago. The Hamar and other ethnic groups who settled in the area fought to stake out their territory with

6 See e.g. A. Graham: 'Adaptation to water shortage: a case study from the Sudan', Savannah, Vol. 2 No. 2 1973, for a discussion of similar situations in E. Sudan

the Kababish nomads to the north. Unity in struggle provided the basis for relatively peaceful co-existence in Dar Hamar to the present day.

However, native administrators no longer have either the monopoly of authority, nor the law. Central government has increasingly intervened physically and with its own legal system in the management of local resources. Modern Sudanese administration may be finding native administration administratively indispensable, but native administrators are, on the colonial model, subordinate to central government requirements. Nevertheless, traditional courts still form an important resource for local conflict and thus resource management.

The consensus under which resources were managed is breaking down. There are mounting cases of "conflict of laws", as for example over land, which represent conflicts of interests in society.* There is increasing pressure on resources from human and animal population, leading to significant breakdown in law and order. Further, there has been an uneasy relationship between the modernising national elite and the native administrators, who no longer have from the government the degree of support they had from the colonial powers.

Since the 1940s government of the Sudan have been engaged in providing large-scale sources of water in rural areas. These have been of three basic types: (a) deep borewells (donki), (b) hafirs (small reservoirs dug into the earth depending on channeling rainfall from a catchment area) and dams, and (c) improved shallow wells, producing much smaller quantities of water than borewells or hafirs.

* Land is communally owned according to customary law; but unregistered land is owned by the state according to the Unregistered Land Act 1974. This Act is being used in W. Sudan to extend private ownership rights in land benefitting the urban middle classes, as well as for large development schemes.

The introduction of modern water supplies has removed the management of a basic resource from native administrators. It has also reinforced the tendency for water to be sold rather than free to all. Borehole water is sold to consumers, and the drilling of large numbers of boreholes where there is groundwater has supplied merchants with water to sell off lorries in water-scarce areas. (See page 24 and Appendix A2).

In Dar Hamar villages there was a clear perception of the benefits of improved water supplies largely in economic terms - the possibility of keeping more livestock and combining this more satisfactorily with expanded crop cultivation, where previously choices had to be made between allocating household labour to migrate with livestock or remaining behind to harvest crops and tap gum arabic (hashab) during the dry season: all this leading to increased cash incomes, less reliance on moneylenders and the system known as sheil (crop mortgages). Health benefits were less frequently mentioned or given emphasis in our discussions with villagers. This may be because the health benefits are not always as obvious as might appear at first sight, and are often mitigated by other factors.⁷

Those remaining people who lead a nomadic life with their stock also appreciate the installation of permanent water supplies, since it allows them to graze their animals more widely and since they have a greater range of choice where as to where they camp during the hot dry summer months (dammer). Nomadic

7 For interesting discussions of the health aspect see S. el Din I. Bannaga and J. Pickford: 'Water-Health relationships in El Obeid' in J.A. Mabbutt (ed.) op. cit.; R. Feacham et al: Water Health and Development, Tri-Med Books, 1978, G. White et al: Drawers of Water, University of Chicago Press, 1972. The Assistant Commissioner for Health, Northern Kordofan realised that ill-health could more often be attributed to inadequate quantities of water available rather than its poor quality. This is supported by Bannaga and Pickford's evidence from El Obeid. The Assistant Commissioner attributed the absence of cholera outbreaks in W. Kordofan in recent years to the vast expansion in the number of borewells in that area.

and transhumant stock movements, indeed, are made in relation to permanent sources of water and seasonal pastures and water points. Since the early 1960s many more permanent water points have been opened and stock movements have diversified. In addition to increased probability of getting his stock through the trying summer months, the stockman has been able to keep more stock, the limit being determined not only by how much of a breeding herd he can accumulate, but also by how large a herd he can manage at the dammering centre. Provision of permanent water has undoubtedly helped especially those with large herds able to move to exploit remote pastures,⁸ and has increased national output of meat.

⁸ See J M. Hales: 'The pastoral system of the Meidob', Ph.D., University of Cambridge, n.d.

CHAPTER TWO

The politics of water

The provision of permanent water supplies in Western Sudan clearly has benefits for the people in general. Against these should be set both (a) the financial costs and (b) the structural consequences, in both socio-economic, political and ecological terms.

2.1. Finance

The financial costs are difficult to calculate. In 1978 an "average" borewell cost about £S 20,000 in terms of materials alone, according to the Rural Water Corporation. Charges were then made at £S 0.002 per tin of water (4 gallons), which was estimated to give a revenue of £2000 per year. This, however would hardly cover the salary costs of guard (ghafir), clerk (katib) and mechanic, plus fuel and maintenance charges, let alone contribute to repay the original capital. In 1980 an "average" hafir of 40,000 m³ cost about £S 100,000 to build. No charges are made for hafir water, even to cover the salary cost of the ghafir. So, on the surface, water supplies are heavily subsidised, and are seen more as a welfare measure by government officers and politicians than as a tool for development. The Anti-Thirst Campaigns of the late 1960s and early 1970s emphasised this aspect: it is considered the right of every Sudanese person to have reasonable access to a permanent supply of water. The apparent subsidies are even greater since the above figures do not include administrative overheads. The latter are large, and as central investment resources have diminished and administrators', professionals' and workers' labour productivity has decreased overheads have increased as a proportion of

total costs. Hence the ludicrous position of many provinces in the Sudan, paying 70% or more of their total budget on salaries, and having little or nothing left over even for operation and maintenance of existing services, let alone investment in new services or development projects - both of which they are supposed to do according to the 1971 Act.

However, this subsidy needs to be placed in perspective by broadening the scope of analysis to examine contributions made by peasant farmers and livestock keepers to general government revenue and to foreign exchange earnings. The World Bank has recently calculated that export agriculture is taxed to the tune of 27% through effective crop producer pricing policy.⁹ By 1978 the share of exported crops produced in the West had increased to about 33% of the total.¹⁰ Almost all this is produced by small farmers, and has undoubtedly increased since 1978 as production on the central irrigation schemes has declined. Similarly, animal production contributes to both exports and government revenue, central and local. By contrast there has been little state productive investment in the rural West, with the exception of the Nuba Mts. area where smallholder mechanisation has been encouraged in a limited way.¹¹ In most of the rural West permanent water supplies have been the major investments, though much has recently also been invested in village primary schools and district hospitals. The following average annual rates of successful installations of water are probably not excessive therefore:

9 S.N. Acharya: Incentives for Resource Allocation: a case study of the Sudan, World Bank Staff Working Paper No. 367, 1979.

10 A.W. Shepherd op. cit.,

11 Large scale mechanisation has also been initiated, but to little benefit of rural Westerners. See A.W. Shepherd: 'Capitalist agriculture in the Sudan: the Mechanised Crop Production Schemes', forthcoming

Table 1. Average Annual Rates of Construction of boreholes and hafirs, W. Sudan

Source	Dates	Annual Average	Worth ⁺ (£S)
Boreholes:	1956 - 1979:	50 or 77*	1,000,000
<u>Hafirs:</u>	1947/8 - 1977/8:	14	1,400,000

* Depending on which estimate of the number of boreholes in existence is used.

+ 1978 prices for a boreholes, 1981 for hafir.

Sources: Tables 2 and 3.

2.2. Economy and Ecology

Beyond finance, the provision of water is part of a larger process of the penetration of the market into the heart of rural Sudan. The state is unable to control land use outside the irrigated sector. There are two serious consequences, in terms of water provision. Permanent water supplies have enhanced the existing trend of differentiation in rural society, such that in many areas wealth has become quite concentrated. This has been done by opening up new grazing and cultivation areas which are most easily made use of by big livestock owners, cultivators, and gum garden owners.

Secondly, provision of water has led to concentration of settlement and livestock around water points, and to severe localised over-grazing, desertification and reduced land fertility. The problem is recognised in government and a partial solution is known - provide more dispersed and smaller sources of water, but as we shall see in the following section, there are technical, organisational and political obstacles in its way.

In any case, the effects of improved water supplies are here again only a part of a larger process. Water supplies are one essential element of infrastructure which support a growing population and a growing livestock

population. Declining rural - urban and international terms of trade mean that a growing population in W. Sudan has to produce more to retain the same living standards: in the absence of yield-increasing measures this means expanding the area cultivated or grazed. But, because of population and livestock pressure on land fallow periods have also been reduced, and the beneficial hashab fallow in particular. This has contributed to a decline in crop yields. For example, in the fragile sandy-clay soils of Northern Kordofan, the cultivated area increased from 1.5 million feddans* in 1961 to 5 million in 1977, which yields declined significantly, except in the case of groundnuts. The declining yield trend is confirmed by impressions and talking to farmers.

2.3. Water and Politics

This is the context within which water plays a significant role in politics. Water supply provision in Western Sudan is the major opportunity for the exercise of patronage by governments, and for the re-inforcement or challenging of the distribution of power.

The close association of politics with water supply is deep-rooted in semi-arid Africa. Social anthropologists have reported complex systems of privileges, rights and obligations surrounding the ownership and use of water in many societies.¹² In a minor way, the ownership of a well gave a household a degree of power over other households, and opportunities to patronise them in the quest for local pre-eminence, although this did not occur in Dar Hamar.

* One feddan is approximately equivalent to 1 acre.

12 For a Sudanese example see L. Holy: Neighbours and Kinsmen: A Study of the Berti People of Darfur, Hurst, London 1974, p.106-9.

Similarly, tribes have struggled over rights to use or control water supplies. Rights to water are the key to grazing and cultivation rights. Disputes there have always been: between individuals, between households, and between tribal groups. In different epochs there have evolved, or been imposed, a variety of mechanisms for their solution. However, as Karam has pointed out, the recent escalation of tribal disputes in Western Sudan is a symptom of, among other things, an increasing strain on natural resources, as well as the demise of native administration.¹³

Through the provision of water the government can maintain the legitimacy of the West's incorporation in the nation. However, the recent very low rate of water supply provision and the poor record of maintenance suggest that the terms on which the West is incorporated may be declining. Undoubtedly, frustrated expectations have contributed to the growth of regionalistic feelings and actions within the West, one of the factors which lies behind the 1981 Regionalisation of Government.

Public infrastructural and development investments have in general been concentrated in central and eastern Sudan, the main arena of operation of Sudan's dominant classes and political groups and state corporations. Technocrats would argue that it is not the class structure which determines investment distribution but the distribution of natural resources: of course the two are historically inter-dependent. But the point is that there are natural resources outside the central growth area which have not been developed because the political impetus was repressed. Regional biases in the Sudan date largely from the early British colonial era when amongst other things the Gezira scheme was established in the centre to reward supporters of the British re-conquest with irrigated land. The existence of massive pasture resources and huge herds of animals in the West and

13 Karam Mohamed Karam: Dispute Settlement Amongst Nomadic Societies: the case of the Sudan, M.Soc.Sc., University of Birmingham, 1981
Another equally important and more immediate cause is the breakdown of dispute settlement.

East went largely unnoticed except as security problems by a government concerned to promote a stable support group of yeoman farmers.

In terms of the distribution of water, the coming of national politics to the Sudan has favoured the central area of the country - an area already favoured by its rivers. Table 2 shows a clear decline in the share of Western Provinces in the proportion of hafirs constructed over time, among the Northern Provinces.

Table 2

Hafir construction 1947-77

<u>Region</u>	1947-56	(%)	1956-65	(%)	1965-77/8	(%)	1947/8-77/8	(%)
East	33	(14)	41	(17)	57	(21)	131	(18)
Central	49	(20)	49	(21)	79	(29)	177	(24)
West	161	(66)	146	(62)	132	(49)	439	(59)
	Darfur Kordofan		Darfur Kordofan					
	44	177	36	110				
	48		6					
	<hr/>		<hr/>		<hr/>		<hr/>	
	291		242		268		747	

* In M.K. Shawki: Rural Water and Development Corporation Book No. 3: Introducing Rural Water and Development in Sudan, Khartoum, 1968.
% refer to the northern provinces only. The South's political position was not comparable after 1956.

Table 3 shows a similar decline in the proportion of wateryards^{**} built in the West.

** A wateryard consists of one or more boreholes and a system of storing and delivering water for collection.

Table 3

Numerical and % distribution of wateryards* by region, 1966 and 1978

<u>Region</u>	1966	%	1978	%	% change
North	6	5	78	4	-1
East	7	6	97	5	+1
Central	30	27	952	49	+22
West	69	61	827	42	-21
	<u>112</u>		<u>1954</u>		

Source: In M.K. Shawki: Rural Water and Development Corporation Book No. 3:
Introducing Rural Water and Development in Sudan, Khartoum, 1968

Table 4 shows that decline to have been mainly born by the two semi-arid and arid provinces, Northern Kordofan and Northern Darfur, with Southern Darfur taking a share of decline. Only Southern Kordofan, where agricultural development in the West is concentrated, has seen an increase in its share.

* A wateryard consists of one or more boreholes and a system of storing and delivering water for collection.

Table 4

Distribution of Wateryards by Province

	1966	%	1978	%	% change	Alternative RWC figures - 1979
Northern Nile	6	5	15	1	-1	57
Red Sea	7	6	1	0	-1	1
Kassala			96	5		96
Khartoum	10	9	156	8	-1	162
Gezira	16	14	401	20	+19	411
Blue Nile			254	13		254
White Nile	4	4	141	7	+3	141
N. Kordofan	29	26	366	18	-8	336
S. Kordofan	6	5	113	6	+1	113
N. Darfur	16	14	116	6	-8	116
S. Darfur	18	16	232	12	-4	232
	<u>112</u>		<u>1990</u>			<u>1984</u>

Source: Ibid.

The picture is not all bleak however. Tables 5 and 6 show that the West as a whole has its fair share of water provision, measured against population figures as a crude indicator of need. If an indicator were constructed to reflect real needs it is likely that the West would be seen as seriously under-supplied. For example, a recent study by the Department of Geography, University of Khartoum¹⁴ showed that average family consumption in E. Kordofan was 9 gallons/day. In rural Khartoum Province the range of consumption was 20 to 66 gallons/family/day. Families in Khartoum were not significantly bigger.

14 Y.A. Mohamed and H. Abu Sinn: Social and Managerial aspects of domestic water supply in rural Sudan, Interim Report to IDRC, Department of Geography, University of Khartoum, 1981.

Table 5

% Distribution of Population and Boreholes by Region

Region	% share of:					
	Urban Population	Urban B/holes	Rural Population	Rural B/holes	Total Population	Total B/holes
N	7	6	8	6	8	5
E	17	14	12	5	13	10
C	56	52	39	42	43	48
W	19	28	41	47	36	37

Table 6

% Distribution of Population and Hafirs by Region

Region	% share of.		
	Rural Population	Hafirs	Total Population
N	8	-	8
E	12	18	13
C	39	24	43
W	41	59	36

Source: See Table 3 and 1973 population census.

As far as inter-regional distribution of investment is concerned we can say: (a) urban areas have been favoured relative to rural, even in the west. (It should not be forgotten that it is through the urban centres of the west that the west is incorporated into the national political economy; these urban centres, El Obeid, Um Ruwaba, En Nuhud, Nyala, El Fasher are dominated politically and in some cases numerically by immigrant merchant families from the Nile valley). (b) The original bias in favour of investment in the west during the colonial period, perceived as the most needy area, as it still is commonly perceived, has been scaled down, arguably because of the political dominance of the central area of the country during the post-colonial era when the Sudanese class structure has been the prime influence on investment decision-making.

On the other hand, decisions about the precise location of investment in water supplies have been largely left up to popular representatives in the District and Provincial Councils. The central government has not during the last 10 years had a very direct say in where wells or hafirs should be put. Its role has largely been confined to rationing the resources available for investment. Priorities on the other hand have been fought over at decentralised levels. Competition for investment in water is in one sense the very essence of local politics. Promises to improve the situation are the currency of any political campaign. Any aspirant councillor must listen to villagers expressing problems over water supply. However, it is also often alleged that far more important to success in politics, at least as far as election is concerned, is the sheer possession of money to feast electors, pay for transport to polling stations and for campaigning and so on.

The concern of politicians to be seen to be adequately representing the interests of their areas can be seen in the careful balancing of the important committees at Provincial and District level with councillors from different areas. It can also

be seen in the general view that a politician who reaches an important position will use it to benefit his own constituents, if he has it at all to further any but his own interests.

The figures in Table 7 and 8 confirm that a rough balance has been maintained between competing Districts of N. Kordofan, where the % share of each District of the Province population is taken into account, as well as the technical constraints on water supplies which operate in some areas.

Table 7

Water Provision in N. Kordofan by District 1968/9 and late 1970s.

	HAFIRS		BOREWELLS		Shallow wells/ well centres (privately dug)	Single Shallow wells dug by RWC
	1968/9	1981	1968/9	1981		
Kababish	18	35	17	40	13	80
E. Kordofan	-	16	97	144	89	83
Dar Hamid	4	27	18	77	48	70
Bederiya	15		4	60	22	90
Dar Hamar	3	7	108	175	6	40
	<u>40</u>	<u>85</u>	<u>197</u>	<u>496</u>	<u>189</u>	<u>363</u>

Sources: RWC officials (1981), Ministry of Co-operation and Rural Development Survey (1968/9).

Table 8

Table 7 as %s.

	Hafirs			Borewells			% share of population
	1968/9	1981	% change	1968/9	1981	% change	
Kababish	45	41	-4	8	8	0	19
E. Kordofan	0	19	+19	43	29	-14	30
Dar Hamid	10	32	+22	8	16	+8	14
Bederiya	38	-	-38	2	12	+10	9
Dar Hamar	8	8	0	41	35	-6	28

Source: Table 7 and 1973 Population Census.

Note: Shallow wells are excluded because of their incomparability

The history of government investment in water supplies in rural Sudan is marked by two distinct phases, more or less corresponding with colonial and post-colonial periods. The 1940s and early 1950s were characterised by a limited programme of hafir construction by the Soil Conservation Board (1947-57) and Soil Conservation Section (1947-56) of the Department of Agriculture. The construction programme was guided by environmental aims: hafirs were dug to relieve pressure of stock and population around existing water points; and their capacity (volume) was supposed to be in line with the carrying capacity of surrounding land. The extent to which these aims were achieved is not known. To begin with the process of decision-making about hafirs must have been very technocratic and authoritarian. However, with the formation of local councils from 1952, the tradition of communities requesting that government provide a permanent source of water began. Water was a needed resource people knew government could provide: so they asked for it.

In the post-independence era there were a number of significant organisational changes. Firstly, in 1956 the Land Use and Rural Water Development Board was established in the Ministry of Agriculture, but answerable to the National Planning

Committee, and with an executive department underneath it. In 1957 LURWDB absorbed the Drilling Division of the Ministry of Works, bringing the construction of borewells under its wing. (Hydrogeological Survey remained in the Ministry of Mineral Resources in and out of which it has oscillated ever since.) The Department had three divisions: Drilling, Surface Water Supplies and Land Use. Its increased size reflected the importance placed on its operations by the newly elected Parliamentarians and the post-independence government of Azhari. Water was quickly latched onto by politicians anxious to reward their constituents for putting them in power. Organisational expansion was thus matched by the expression for the first time of national political interest in water.

Thirdly, civil engineers were recruited into the Surface Water Division for the first time from the late 1950s onwards. Soil conservationists were soon faced with a competing professional ideology within the organisation. Engineers were interested not in the complex and unpredictable relationship between water, environment and human activities, but in providing as much water as needed and as economically as possible. Politicians were also interested less in ecological balance than in prestige-giving investments: the more water the better. This combination of forces has proved unstoppable: to the present day the land use planners have a difficult and frustrating job.

Fourthly, the coming of independence led to the diversification of sources of aid and trade. This was especially important as far as borewell machinery, including the pumps was concerned, since very large sums of money were involved in the imports of these items. A great diversity of equipment is now installed, aggravating the problems of maintenance, both from the point of view of the supply of spare parts and of technical know-how. This is of course a very common story. Attempts to restrict new intake to one or two sources have been made, but there are good strategic reasons why this should be difficult as well as the corrupt influences of international machinery peddlars at work.

It is this combination of forces which has set the technological pattern of investments. Over the years hafirs have (a) increased in size considerably: the typical hafir is now 40,000 m³ compared with perhaps 25,000 in the late 1950s. (b) They have improved in design: draw off wells, filters and twinning have improved the quality, security, and quantity of the supply, and its ease of maintenance. The present policy of twinning - building a new hafir next to an old one which has become silted up, may be impossible to clean and certainly half as expensive to build anew - is especially significant, since the volume of water available may more than double.

Meanwhile, boreholes have been extensively drilled in areas without the clay soils needed for a hafir. A similar trend towards larger capacity boreholes is also evident. In the late 1960s the average yield was 1000 gallons/hour.¹⁴ In the late 1970s the average capacity of the pumps in use was 2095 gallons/hour.¹⁵ At the same time, the land use planners are quite clear that the larger the supply, the greater the dangers of environmental disturbance through human and stock concentration.

Hafirs and boreholes have been the main form of government investment. Shallow wells have also been dug, since the 1950s. This has been done mainly on a local basis by local councils, although the Rural Water Corporation also has a Shallow Wells Section. This has dug by hand wells of 40 to 328 ft in Kordofan and lined them where necessary with concrete. Only 363 such wells had been dug by 1980 in Northern Kordofan, according to the RWC. Their capacity is typically about 200 gallons/day. Apart from this, the government has left 'traditional' or indigenous sources of water alone. Thus only a small attempt is made to improve the vast numbers of shallow wells dug and re-dug each year. (See Appendix A1).

14 Hamid Abu Zeid, A brief note on Water Provision in the Sudan, Rural Water and Development Corporation. n.d.

15 Information provided by RWC

One other form of provision by government, designed to serve areas with absolutely no water in the dry season, is the water tanker. Merchants have long supplied such areas with water at extortionate prices, transported by lorry in 44-gallon barrels. A limited number of 1000-gallon tankers were bought by the government, in the 'socialistic' early years of the May Regime, as a means of supplying deprived areas and competing with the merchants to reduce their rate of profit. This was yet another aspect of the government's attempt to supply all areas with water, responding to continued popular pressure. (See Appendix A2, where the limited success of this measure is assessed).

The continued increase in the political importance of water supply provision can be seen from the further organisational changes which have taken place during the 1960s and 1970s. In 1965 the Rural Water and Development Corporation (RWDC) was established to carry out the first Anti-Thirst Campaign outside the irrigated and riverain areas of the country. The core of the Corporation was Water Supply, although a separate department was created for Rural Development for the first time. Significantly, under a government dominated by the Umma Party with its support coming mainly from pastoral and semi-pastoral areas of the country (Darfur, Kordofan, Blue Nile Province), the RWDC was placed under the new Ministry of Animal Resources. It was at this time that the methodical planning system described in Chapter 3 was introduced.

In the early 1970s, the first years of the present May Regime, the RWDC was merged with the Co-operatives Department to form the Ministry of Rural Development and Co-operatives, with a view to integrating peripheral areas of the country more fully into the national economy, using an old carrot - water supplies - as well as a new package - rural development. However, ministerial status was clearly threatening to vested interests (e.g. the Ministry of Agriculture operating mostly in the powerful riverain areas of the north, and the Ministry was disbanded in 1974.

In the late 1970s the organisation of rural development and of rural water supplies presented a more dismal picture than at any time since 1965. The central organisation up to the time of this study was the Rural Water Corporation, generally answering to the Under-Secretary, Natural Resources Division, Ministry of Agriculture (though it did have a phase when it was in the Ministry of Mineral Resources in 1979/80). This executive organisation was divorced from the water planning agency, now part of the Soil Conservation, Land Use and Rural Water Programming Administration (SCLURPWA), a part of the same division of the Ministry of Agriculture. Rural Development projects were another section of SCLURPWA, an administration whose budget has been slashed from year to year, such that it can engage in no new work; and whose staff has been reduced drastically since Ministry of Rural Development days.

RWC in Kordofan, however, was known as 'a government within the government', not surprisingly as it controls the major development investment in Western Sudan. Under the re-organisation for regional government in 1981 the RWC has become one of five Ministries in Kordofan. SCLURPWA becomes part of the Regional Ministry of Agriculture, maintaining the institutional and political separation between water supply provision and development, despite the widespread recognition of the importance of the link in reality.¹⁶

16 e.g. in the Government's Desert Encroachment Control and Rehabilitation Programme (DECARP), National Council for Research, Khartoum, 1976.

CHAPTER THREE

Popular Participation in the Planning of Rural Water Supply

3.1. Physical conditions: a major constraint. Physical conditions in Northern Kordofan are difficult, largely because rainfall is limited and unreliable and as a result vegetation is sparse and soils are generally not very fertile. Acquiring and storing water is also difficult. Surface rain water storage is possible in certain areas where there are soils with sufficient clay content and amenable catchment areas. Hafirs therefore tend to be concentrated in certain areas. On sandy soils experiments have been tried using polythene as a base, but expense has prevented widespread use of the technique. Another technique has been devised for small hafirs involving the use of plastic sausage bunds, the sausages being filled with earth. This too remains experimental.

Similarly, groundwater is unevenly available. Large areas of Western and indeed all areas of the Sudan are founded on Basement Complex rocks which only yield groundwater from small local water tables. In these areas very detailed hydrogeological survey is required, but thus far not carried out. Geologists in the RWC at El Obeid at present rely on a survey carried out by a Czechoslovakian company in 1976. The survey neglected areas away from the roads, and faults and gradients between surveyed areas were assumed, not investigated. Geophysical equipment needed to complement this work is centralised in Khartoum, scarce and rarely available. Trial and error necessarily remains the geologists' method of work in such areas. Groundwater basins in the Nubian Sandstone and Um Ruwaba Formations are larger, more consistent and therefore much easier to exploit.

These constraints are also constraints in the way of an effective system of participation in the planning of water supplies. While people can generally appreciate the soil characteristics required for a hafir, people do not understand

hydrogeological formations, and drilling failures or an inadequate yield leading to borehole closure may be interpreted as malevolence on the part of the RWC.

The difficulties of drilling in certain areas and of surface storage in others tends to pre-empt planning decisions about the location of water and consequent human and stock concentrations. Water points are located where they can be: the planners are therefore in a weak position to guide regional development patterns according to other criteria.

3.2. Organisations involved. The division of labour in provision of water points is as shown in Figure 4.

Figure 4 Organisations responsible for various aspects of water supply provision

Type of Water Supply	Planning	Execution	Operation	Maintenance	Finance		
					Construction/ Provision	Operation	Maintenance
1. Hafir	Local Government	RWC	Local Government	RWC	RWC	Local Government	RWC
2. Borehole	RWC SCLURWPA Informal channels	RWC	Local Government and RWC	RWC and Local initiative	RWC	Village Local Government	Village/ RWC
3. Shallow wells	Local Government RWC	RWC and hired labour	Village	Local initiative RWC and hired labour	RWC/Village		RWC
4. Shallow wells	Local Government	Local Government and self-help labour	Village	Local initiative Local Government	Local Government/ Village		Village/Local Government
5. Tankers	SCLURWPA	SCLURWPA	SCLURWPA	SCLURWPA	Gum Arabic Co.	SCLURWPA	SCLURWPA
6. Tankers	Local Government	Local Government	Local Government	Local Government	Local Government	Local Government and beneficiaries	Local Government
7. Indigenous shallow wells	Village Council	Families Specialists	Families	Families and Specialists	Family	Family	Family

Other non-permanent sources of water: tebeldi trees, pools, khors (seasonal streams), merchants' lorries, horses and carts etc.

3.3. Popular involvement in water supply provision: a typology

Several distinct types of popular involvement can be distinguished:

- (a) Participation in decision-making, through the local government system and 'informal' channels.
- (b) (1) Self-help construction of open wells by families (genuine self-help);
(2) Contribution of 50% of construction costs of improved shallow well (the government's definition of self-help).
- (c) Management of installed supplies by families (b1) or by village institutions (b2).
- (d) Financial contributions to operating, maintenance and other costs. ("Popular contributions", according to government, to free itself of the obligation of meeting half the cost which it would have to under the rules of "self-help").

Discussion in this chapter focusses on (a), and in Chapter 4 on (c).

3.4. Initiation of investment

Figure 5 shows that in the three communities studied with government water supplies, village and rural council played the major role in initiating government investment in water.¹⁷ (The fourth village, Bayad had no water supply of its own, but was a shallow well centre in the vicinity of Rahad es Silik.)

17 These are in fact groups of villages which form village councils and which are served by one central water point. So, for example, El Huwag borewell served 36 villages each with about 50 households i.e. a total population of 9000.

Figure 5

Case studies in Western District: Locus of initiation of government-supplied water points

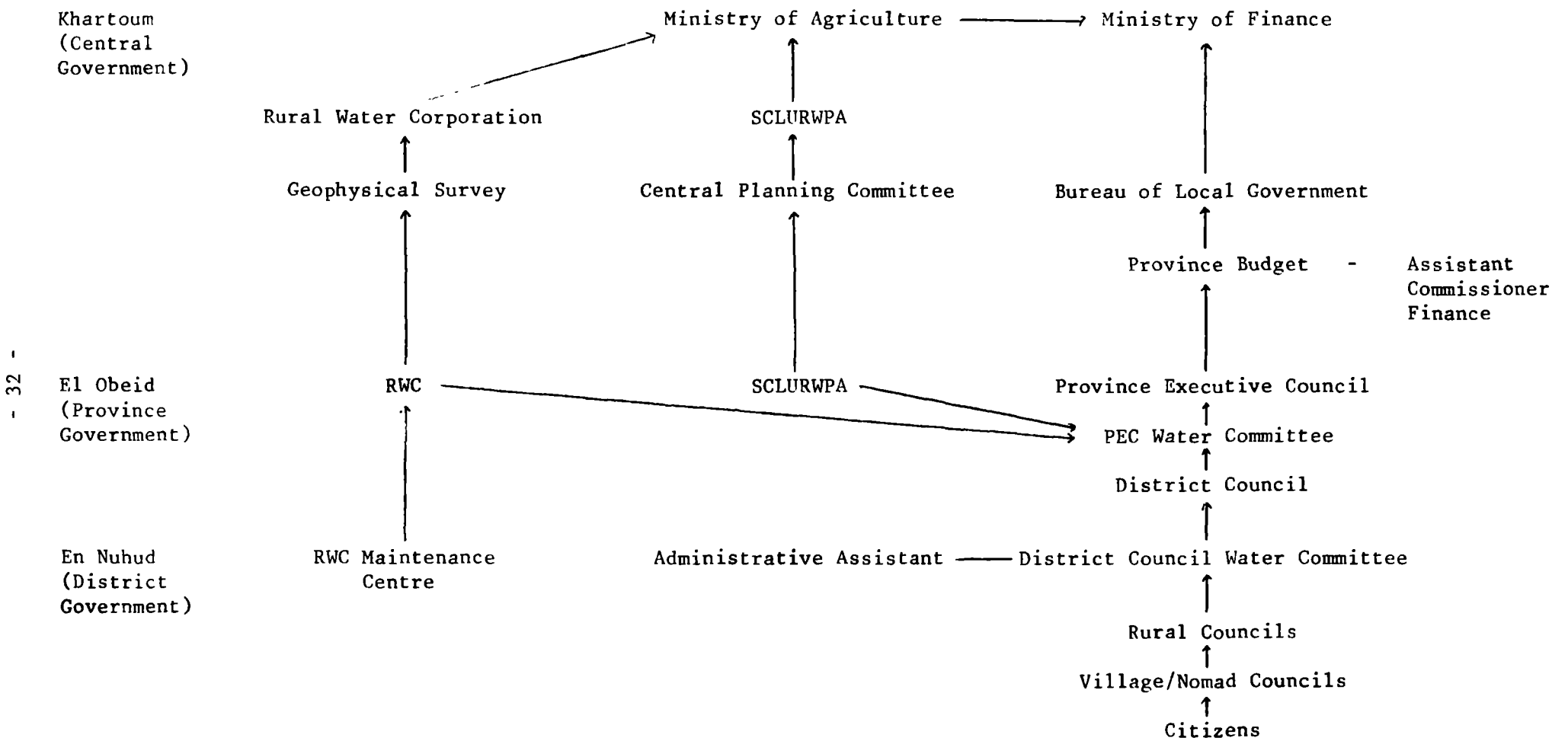
Cases:	Date Initiation by:
1. Rahad es Silik	
(1) Shallow well	Village
(2) First Hafir	1951/2 Village (Native Administration)
(3) Second Hafir	1958 Rural Council
(4) Third Hafir (not yet built)	1980 RWC (Village requested de-silting of existing hafir).
2. El Huwag	
Borewell	1977 Village
3. Um Jecko	
(1) First Borewell	1956 Village/Rural Council
(2) Second Borewell	1956 Installed as result of 1953 Survey.
(3) Third Borewell	1973 Department Range Management - to supply Omdurman cattle route.

In all cases where the village initiated, the request passed through the local government system until it reached the point at which a decision could be taken. The cases where central government agencies had a strong hand in initiation demonstrate two points: (a) the cases where a government agency takes the initiative have little to do with local consumption of water: they concern water for long distance stock routes or for urban centres. Elsewhere agricultural development projects may bring investment in water. Apart from such cases, investment in water occurs as a response to local demand. (b) Government agencies determine what type of water supply should be installed, as in the Rahad es Silik example where the village council requested hafir de-silting as one of a number of service improvements in the village, but the RWC prefers twinning to de-silting,

and apparently considered it would be very difficult to de-silt this hafir as it never dries out.¹⁸ In 1981 the proposal was drawing clear support from the livestock keepers of the area. Our impression was that the rest of the village was skeptical because they would lose their existing shallow wells and were not confident in the RWC's capacity consistently to provide them with clean (i.e. treated) hafir water. Boreholes and hafirs can be initiated by a government agency; shallow wells on the other hand, where 50% of the finance comes from the village whether the well is dug by RWC or the District council, have to be initiated by the village. Figure 6 shows the composition of each body and its scope of decision-making in relation to investment in water.

18 Wet de-silting is considered possible by UNICEF, working in S. Kordofan.

Figure 6 Structure of rural water planning, Northern Kordofan 1980/81 (arrows show the channels through which requests have to pass)



3.5. The planning system

Figure 6 shows the organisations involved in the planning process and the channels through which requests must pass before a final decision is taken. It can be seen that decisions about water get embroiled in the general budgeting process once the PEC has played its part.

Figure 7 shows the composition of each body and the scope of its decision-making in relation to investment in water.

Figure 7 Composition and function of decision-making bodies

Body	Composition	Scope of decision
Village Council or Nomad Council	Directly elected members from group of villages plus school headmaster and borehole clerk.	Approval of request initiation
Rural Council	Members delegated from each village council (Mostly village merchants.), Executive Officer	Amalgamate requests
District Council	Members delegated from each Rural and Town Council (Mostly merchants) and District Officials ex officio.	Priorities established by District Water Committee approved/amended by council.
District Water Committee	District Assistant Commissioner, RWC Maintenance Engineer, District Administrative Assistant and 5 Council members	Revises priority list prepared by District Administrative Assistant.
Provincial Executive Council	Members delegated from Rural and Town Councils (Mostly merchants); Provincial officials ex-officio.	Approves/amends priority lists prepared by Provincial Water Committee, Discusses and approves Provincial Budget containing estimates for approved investment.
Province Water Committee	RWC Director (Chairman), A/C SCLURWPA, A/C Range Management and 1 elected PEC member from each District	Committee approves/amends priority list drawn up from District lists, taking into consideration survey of potential.
Bureau of Local Government Affairs	Department of Presidential Office.	Passes on provincial budgets to Ministry of Finance.
Ministry of Finance	-	Establishes and apportions provincial expenditure, in practice invariably making severe cuts.
SCLURWPA Central Planning Committee	Heads of all SCLURWPA Sections, D/G SCLURWPA	Establishes expenditure priorities between provinces as input to Ministry of Finance deliberations.
National Assembly	Elected MPS	Approves/amends budget.

There is an annual planning cycle. One priority list is drawn up at each level and the two water committees (District and Provincial) meet once a year to establish priorities.

The crucial allocational decisions are taken at District, Provincial and Central levels. Many requests come into the District Administrative Assistant from Rural Councils, with no priorities established. (It is said that the number of requests is kept as large as possible to exclude the possibility of non-plan development.) He draws up a priority list according to the following criteria:

- distance from any existing water source (using maps)
- information from the village sheikh concerning population and animal numbers
- the same information supplied by sheikh's tax collectors
- officers' opinions.

The list may be revised a little by the Water Committee in the knowledge that only the top 2-3 locations are likely to be supplied next financial year due to PEC and Ministry of Finance budget cuts; and that the rest will gradually move up the priority list in subsequent years. The Council usually rubber-stamps the committee's decision and enters expenditure estimates into the budget.¹⁹

At Provincial level the PEC Water Committee is faced with the task of establishing a Province-wide priority list. This is done on the basis of technical advice provided by SCLURWPA and RWC concerning need, development potential, and site feasibility. Priorities are allocated by SCLURWPA on a points system as follows:

19 The process by which locational decisions are translated into cost estimates is not yet clear to us, especially at this stage where no technical appraisal has been made.

Population (minimum should be 2500)	40%
Livestock numbers (minimum should be 3000 livestock units)	30%
Nearness of existing water supply (10 km or more gets full 10 points)	10%
Development Potential (including state of natural resources)	10%
Year of study (the longer ago, the more points given)	10%

Priorities are established by means of site surveys carried out during the dry season in response to requests from the District and co-ordinated by SCLURWPA. Surveys are in theory made by: a land use officer, a socio-economist (both from SCLURWPA), a Range Management Officer (Range Management Administration) and a Forest Officer. Although the RWC Hydrogeologist should accompany the team, in practice he normally prefers to go independently or rely on existing maps at this stage. Quite often Forest and Range officers are not available. The survey techniques used are crude and very dependent on subjective judgement, but are probably the best in the circumstances. Some of them would appear to duplicate work already done by the District Administrative Assistant.

As a rule the distance between water points provided by government should be at least 10 km in the semi-desert, grading down to 2.5 km in the high rainfall savannah - a rule to avoid over-exploitation of the more fragile vegetation to the north, and a minimum which suggests that the more southerly an area the greater density of human and animal population it can or does support. There are criteria available for measuring the state of natural resources. Thus the state of the pasture can be measured by the presence or absence of particular grasses, bushes and trees, against a checklist drawn up for a particular region. This method is undoubtedly too crude for a situation of rapid ecological change: a more exact measurement still would refer to changes in natural resources over a period of years, and would estimate the effect of introducing a water point on the ecology. However, it is very much better than none. But it is not clear how often site

natural resources are surveyed at all: quite often a quick visit and a subjective judgment may be all that is possible. The relevant offices of SCLURWPA, Forestry and Range Management Departments are understaffed and starved of finance, means of transport etc. This is only the beginning of a story which further research will investigate: the weakness of land use planning in the process of development. It is a curious story, given the large influence exerted on rural development both internationally and in the Sudan by soil conservation philosophy and given the length of time land use planners have been associated with water supply development in the Sudan.

Although the Provincial Water Committee is responsible for the establishment of priorities, how many of those priorities get written into the budget estimates is another question. Costing of water supplies is apparently left up to the RWC: it is not considered by the committee. The budget estimate for investment in water is therefore prepared by the Assistant Commissioner, Finance, supported by a Ministry of Finance team, the RWC and approved by the Finance committee. Whether any pruning occurs here is not known. Probably pruning is left as far as possible to the central Ministry of Finance.

At the centre, and the Ministry of Finance is in most ways the centre of the Sudanese political economy, provincial budgets, knowingly pitched too high, are slashed. The extent to which inter-provincial rationality informs this cutting process as a result of SCLURWPA Central Planning Committee deliberations is not yet known. Inter-provincial allocation of funds is supposedly based on another set of criteria administered by this committee:

Population size	40%
Livestock numbers	30%
Industry	10%
Social Services	10%
Provincial contribution to GNP	10%

The score for each province is added up and a measure for water points already provided is taken off. Depending on the accuracy of the measures used this may be a fair method of inter-provincial rationing. However the Ministry of Finance does not contribute at all to the rationality of provincial plans by across-the-board cuts. Rationality could only be introduced into this process by allowing provinces to make their own cuts within an agreed total. The detailed budget control which the Ministry of Finance exercises is witness to the limited extent of real decentralisation of power.

3.6. Development versus conservation?

The long term task of conserving the natural pasture and soil fertility of the semi-arid and savannah zone is an important and difficult one - difficult because investment resources are limited and the needs of development are continually pushing against the door. However, the SCLURWPA planners are hampered in dealing with these issues by their colonial and conservationist origins. Their intellectual framework remains a conservationist one, while in reality their role could be much wider viz. (a) to assist in the job of reconciling conflicts of interest, and (b) to work towards a regional development strategy which could provide the basis for both (a) and for conservation of natural resources for the longer term. To some extent the late 1960s and 1970s have seen some role development, as central place theory was grafted on to the conservationist framework. The grafting has, however, created a major unresolved contradiction within the planning process: economic logic apparently suggesting concentration versus ecological logic leaning to dispersion of investment, population and environmental stress. Multiple and conflicting objectives have confounded any possibility of strategic thinking. What is lacking in this debate is a social perspective, which could lead the way out of the contradiction, as we will suggest below.

Chapter 2 has already sketched the organisational politics surrounding rural development in the Sudan. Had the Ministry of Rural Development remained in existence, the possibility of using rural water planning as a key to a more general development effort would undoubtedly have been greater. As it is, organisational proliferation and separation has prevented a frontal and co-ordinated attack in which conflicting objectives could have been resolved. The land use planners have been relegated to the background. The foreground of water supply is occupied by the engineers and the politicians.

The extent to which planners' pre-occupations have actually influenced decision-making will have to be answered by further research into (a) whether waterpoints have indeed been located the regulation distances apart; (b) whether water has indeed been a lead sector, followed by the provision of other services and the establishment of central villages; and (c) whether the regional investment pattern has been biased away from the most fragile ecological areas.

For (a) there was no easily accessible evidence. For (b) Table 9 indicates that until 1971 there was no very significant association between the supply of water and central place-ness (i.e. number of other services provided). No data were available for the following decade.

Table 9

Distribution of boreholes and hafirs by "central place score" - 1971
(Northern Kordofan).

	8	7	6	5	4	3	2	1	0	Total
Municipalities	1			1			1	2		5
9+					1		1	1	1*	4
6-8						1			2*	3
5							1	2		3
4					1		2	1		4
3							2		4	6
2							5	1		6
1							7	2	5	14
0							5	36	6	47
Total	1	0	0	1	2	1	24	45	18	92

Source: Ministry of Rural Development and Co-operation. Survey 1971

For (c) there is little positive evidence. For example, in Eastern Kordofan, an area of high population densities and over-cultivation, there has been a shift during the 1970s from boreholes to hafirs, a form of provision which allows greater environmental control (See Table 7, p.20). This may have occurred as a result of planning controls. The relative share of Dar Kababish, the most northerly and ecologically fragile district hardly changed between 1968/9 and 1981, but its absolute capacity for water generation more than doubled, on the other hand. And Dar Hamid is a more desertified area than Dar Bederiya. Why Hamid should vastly increase its share while Bederiya's share reduced dramatically may be explained technically - in terms of the exploitation of the newly discovered Bara groundwater basin, or perhaps politically in terms of Dar Hamid's greater access to powerful positions in the government. Alternatively, Bederiya was relatively well supplied with water by the 1960s, Dar Hamid was not compared to its population size. So the explanation could be in terms of human needs as interpreted by the planners.

A small reduction in the share of Dar Hamar may be explained either by the high failure rate and therefore greater unit drilling costs in Dar Hamar, due to the predominance of Basement Complex geology, or indeed by its relative remoteness from El Obeid. It was, however, suggested that rural Dar Hamar's representation in both provincial and central politics and in the bureaucracies was relatively weak during this period, with one notable exception.²⁰

Within Dar Hamar Table 10 shows that investment in boreholes has been focussed in the southerly Rural Council areas with the exception of El Odaya, and to the relative neglect of Wad Banda in the northwest, as well as the almost total neglect of the northerly Basement Complex areas.

Table 10

Boreholes constructed in Dar Hamar

Rural Council	before 1969	%	since 1969	%	% change
En Nuhud	2	7	10	10	+3
Wad Banda	5	19	15	14	-5
Es Suga	5	19	21	20	+1
El Odaya	6	22	15	14	-8
Chibeish	9	33	43	41	+8
Total	27		104		

Source: RWC, En Nuhud. These figures exclude Abu Zabad and the eastern part of the District, which came under the El Obeid office of RWC. Hence the discrepancy with Table 7

The degree of influence exercised by the planners over the location of water supplies is therefore uncertain. Much more certain is the influence of geology and topography, as interpreted by the RWC. In relation to hafirs RWC's influence

20 Ibrahim Moneim Mansour, present and ex-Minister of Finance.

is paramount: clearly the soil must be right, but the catchment area must also be able to supply a hafir of an economic size (at least 30,000 m³). Since there is much local variation in topography, the RWC's supposedly "technical" judgment is crucial to a location decision.

In the case of boreholes, the absence of comprehensive geo-physical survey data means that trial and error remains an important part of the decision-making process especially on the Basement Complex where the water table is discontinuous. This in turn allows politicians and even local communities a greater say in initial location decisions. However, the professionals of RWC and the Ministry of Health decide whether the yield of a bore is high enough and of good enough quality to open it to the public. So even here technical criteria apparently independent of politics and land use planning are important.

3 7. The effectiveness of popular participation

On the face of it there are plenty of opportunities for popular delegates to the different levels of government to participate formally in this process. That they do so is witnessed by (a) the discontent commonly shown with politicians and committee decision-making by "the miserable effendi" (civil servant) and (b) by the dominance of considerations of inter-regional equity of supply over all other considerations in the deliberations of committees.

However, participation is limited to a discussion of where? but not what? Technology is left to the 'expert'. He decides what kind of supply is appropriate or feasible. What happens when there is a choice is not clear from this study, since there were no choices in the area studied - at least not if the RWC's definition of range of choice is accepted i.e. deep bore, hafir or concrete open well. In discussing location of investment delegates are probably also constrained

more by the RWC's interpretation of physical conditions than by SCLURWPA's interpretation of desirable growth points, calculated as above. And in difficult areas like the Western District where successful borewell drilling still depends on trial and error the drilling failure rate has been extremely high ($2/3 - 3/4$). In such an area physical conditions are the supreme criteria.

Both participative and technocratic planning are to some extent mitigated by instructions from above: from Ministers or indeed the President himself. At a meeting of the PEC in 1980 the Council declared it would accept no orders from central ministers. The Deputy Provincial Commissioner (the Provincial Commissioner being the appointee of the President) agreed "except when there are orders from the President". Stories are told of instruction to the RWC to drill where wells have previously been dry - to do the impossible. Such stories did seem to be the exception, however. And instructions from above do not always bear fruit, as witnessed by the story of Abu Marega Hajir, on the Western District's Basement Complex, as told us by a member of that village.

"A borewell was approved in Khartoum, and a drilling team arrived in 1975. The well was drilled, but it proved dry. In 1977 the village sheikhs from 17 other neighbouring villages were introduced by their MP to the President in Khartoum. A letter came from the President ordering a survey to be done three times! The spot was surveyed, a suitable site some way from the first one was marked, but when the drilling team came the geologist accused the villagers of having moved the mark back close to the original site".

The fund for drilling was exhausted, and despite the President's letter, an inter-village dispute resulted in no borewell.

The system of popular participation in planning works basically to orchestrate demand. As we have seen, the priority lists produced at District and Provincial levels are far longer than can be satisfied in any one year. And yet

the planners are required to survey sites in response to demands, whether or not demands have any hope of being met. There may be a waiting period of 2-4 years between initiation and construction. Because of the government's increasing inability to execute the system has got thoroughly out of balance.

The provincial SCLURWPA planners' anxiety to respond means that large numbers of site surveys are carried out rather superficially, using resources which could perhaps better be spent improving the quality of survey, and aggregating the results of surveys over time to yield a dynamic picture of the region's economy and natural resources. A rough order of priority could be established as at present by the District Administrative Assistant and District Water Committee; those sites at the top of this list could then be thoroughly surveyed.

A more thorough approach to information is a pre-requisite for an essential improvement to the process of popular participation. At present popular representatives have no policy on water beyond the central government's general commitment to supply water to all. As we have seen, there are strategic questions within that commitment - how much water? what technology? what system of management? where should water be located? - which at present go unanswered politically. If the planners took the initiative in delineating a policy, in collaboration with RWC, this might galvanise representatives into debate about such strategic issues, which are at present left to patronage politics and undiscussed administrative procedures.

In short, representatives are fighting area-based battles without an agreed framework. Annual construction programmes have to be seen to treat each District equally: "if 10 drillings are made in the Western District - then 10 must go to the Eastern". This leads to scarce machinery and manpower being transported from one area to another, and increased overall programme costs. While this

kind of "political interference" annoys the "miserable effendi" the dynamic of dispersal inherent in the politics of competition between areas is in fact one which could be used constructively by the land use planner, seeking to reconcile human and livestock needs for water with environmental capacity. This is the social perspective which was seen to be lacking above.

This would require a political discussion of subjects at present left to the experts, such as choice of technology, capacity of technology, make of machinery, cost of investment and management, land use capability etc. At present, politicians and engineers uphold a consensus that "biggest is best" as far as water supply is concerned: the planner's voice is like a cry in the wilderness.

Were politicians to concern themselves with such important matters of strategic detail they could become public educators and not merely orchestrators of popular demand. The 1971 Local Government system was designed to embroil politicians more in policy issues by giving them a greater executive role. This has been taken largely in the distribution of commodities. It is time to review this aspect and to ask (a) how the political system can be made to produce clearer policies and (b) how remote communities can also be engaged in policy discussions.

Politicians could also act as a feedback mechanism. There is popular experience, for example, of the different available technologies, types and makes of machinery and other technical matters, which are dealt with every day in the villages. This experience is not used systematically in planning new investment. Politicians could act as a channel for such 'upward' communications. A more thorough monitoring system offers similar scope for improvement.

Decisions concerning finance are largely left to the experts. If financial aspects of investment were discussed at the Provincial (and District) Water Committee with a clear notion of availability of finance a more rational decision-making process with fewer redundant and expensive decisions could be the result.

In all these senses the role of the politicians is for one reason or another too narrowly conceived.

A final, and perhaps the most fundamental question mark hanging over the system of formal representation is the nature of that representation. Is it adequate that a rural population composed largely of farmers and pastoralists should be represented at all levels of the political hierarchy mainly by merchants and school teachers?

On the Village Council farmers are well represented. Nomads are rarely represented, and separate Nomad Councils rarely operate. Delegates to the Rural Council are likely to be either a village merchant or a school teacher, or occasionally a member of a native administrator family. The further on up the hierarchy of political levels one travels the more likely a politician is to be a merchant, and an urban-based and large merchant at that. Thus, where the key decisions are made concerning priorities and policy (i.e. at District Council and PEC) there is little representation of the main social groups making use of rural water supplies. Merchants have a clear economic interest in the intermediary role, and it seems many have treated politics as an extension of the economic sphere. This results in corruption and patronage politics and to decisions which distort the public interest.

Many conflicts of interest and policy questions are not brought into the political process because the latter is dominated by one interest group and one style of politics. Investment in water tankers gives a good example. In 1981 three DAF 2000 gallon lorry tankers were bought by the Province. Given the distribution of absolutely water-scarce areas at least two if not three should have gone to Western District. But patronage politics demanded a more equal share-out; Western District was only to get one.

In the Western District itself, the needy areas are clearly not adequately supplied by the existing small fleet of council and SCLURWPA tankers. The high prices of water in these areas is a symptom of the inadequacy. But for a decade no new investment has been made in the fleet. This is undoubtedly because the District Council is dominated by merchants with interests in the sale of water off their own lorries in these areas.

Why have merchants come to so dominate the political process? Mainly because they dominate the local economy. However, many of the merchant representatives in Dar Hamar were Hamari village merchants, and not the wealthier riverain merchants from Nuhud. The local government system has in fact given these village merchants an entree into the system of patronage on which success as a trader is partly based.

Some have argued that there is a marked conflict of interests between these local petits bourgeois and the bigger trading networks dominated by the riverain merchants.²¹ This may indeed be so in terms of the structure of trade.²² In the politics of water it is almost certainly so since the bigger merchants, who

21 Conversations with Abdul Rahman Abakker Ibrahim.

22 Current research work by Abdul Rahman Abakker and Tor-Martin Ingebergson is investigating this.

generally represent urban areas, have little direct interest in procuring water for villages, while the village merchants depend on their political role to legitimise their social and economic position in the village. The predominance of the bigger merchants at provincial level is reflected in the disproportionate share of urban areas in the provision of water: 33% of all borewells in Kordofan compared with 15% of the population were located in towns in 1981.²³

The question which is raised by this discussion is how can the base of political recruitment be broadened? There are constraints: a representative or delegate has to be able to afford political work; he must be known to people; he must be seen to have effective contacts. The advent of the May regime and the SSU broke the tradition whereby native administrators almost invariably played this role in Western Sudan. We conclude this chapter by mentioning some changes which may be needed to further broaden the base of recruitment:

- 1) Financial compensation for political work may be inadequate. Special provision for permanent pastoral representation may be necessary.
- 2) Political parties, whether the SSU or any other, need to make the effort to recruit local leaders from a wider base. The 1971 local government system undoubtedly was a progressive step in widening access to rural government. Access now needs to be further broadened.

²³ RWC and Demographic and Manpower Committee: Population projections for the six-year plan.

- 3) The nature of council work may seem inappropriate or irrelevant to farmers and pastoralists: in part this is because of the important share of council business taken by commodity distribution, an extension of the trading sphere. It is this which has created the image of local government as corrupt. The role which councillors are expected to play in execution may also be less easy for common people than for the merchants with time on their hands. Policy work needs to be emphasised and upgraded at all levels. If commodity distribution were formally privatised merchants might have less encouragement to control the political arena. At present there is no check on the officials' agricultural or other rural policies because rural interest representation is so inadequate. Councillors probably need to be trained to undertake this role.²⁴

- 4) The scope of political recruitment depends on the level of political consciousness. The latter, inherited from the authoritarian - paternalistic colonial regime and perpetuated since independence, is low. Rural inhabitants have remained too willing to defer to the troika of rulers - merchants, professionals and native administrators. Unionisation and occupational selection of representatives are possible routes out of this situation, where there is the political will.

24 These points are pursued in M. Alassam: Popular representation and participation in Sudanese local administration, Development Studies & Research Centre, University of Khartoum, 1979.

CHAPTER FOUR

Participation in the management of rural water supplies

4.1. Execution

Execution is in the hands of the professionals and their construction teams. The only form of popular participation in construction as far as boreholes and hafirs are concerned is as the role of 'housewife': the village cooks for and accommodates the team; may provide occasional transport (as indeed it may do at other times - in particular for maintenance work) and so on. Apart from such efforts, the village can only put a spanner in the works at this stage, as illustrated by the above account of Abu Marega Hajir.

The RWC is solely responsible for execution. This fact, coupled with the fact that it is the RWC which uses the bulk of budgetted expenditure on water puts the organisation in a strong position. This is clearly perceived by the many communities who approach the RWC directly, through a chief, a delegation, a civil servant or other persons of consequence, at some stage in the establishment of a water point. This may be to hurry the organisation along; to persuade it to drill again, where drilling has once proved a failure (and attempted bribery is not unknown in this case) or to persuade it to send a nearby team to drill or dig out of order. The incidence of such occurrences could not be calculated, but the impression was gained that there was not great distortion of programme: most pressure is brought to bear to get the programme completed.

Once construction is complete RWC/Ministry of Health report on the quality of water and, in the case of a borehole, a perimeter fence and pumphouse are put up, and the water point is handed over to local government for operation.

4.2. Operation

Up till 1971 RWC was responsible for operation as well as construction and maintenance. An attempt was being made to return to this position in 1981. In the meantime, Local Government had been responsible for operation and collection of water charges, employing the ghafir (guard) and the effendi (clerk) at each borehole, and a ghafir only at each hafir, no charges being levied for consumption. The RWC has employed a mechanic at each borehole.

Operation of hafirs present few difficulties except that poorly maintained fencing makes it impossible to keep livestock and children out of the wateryard; and it is often necessary for all consumers - human and livestock to go down the hafir bank to collect water because the draw-off well has become silted up. This was the case at Rahad es Silik, where fortunately there were shallow wells providing for human consumption. However, people from surrounding villages walked or rode up to 10 miles to Rahad es Silik to fetch water and did not like to queue for well water, preferring to take the tainted water from the hafir. The only concession to public health²⁴ was to exclude cattle from the hafir, but sheep, goats and camels all watered from it.

Boreholes are more complicated to operate, and because local government (and indeed the public sector in general) has been emasculated and become feeble, there is plenty of scope for popular involvement and effort to do what should be carried out by government, and what is essential to the survival of communities and water users generally.

24 A Public Health Officer in En Nuhud argued that there were no risks from livestock drinking from the same water source as human beings: a perception shared, for example, by people at El Huwag borehole where a number of taps had broken down and animals and humans were taking water from the same troughs. In the case of a hafir, where animals' faecal matter slips into the water it is not known how successful operating draw-off wells are in preventing direct use of the hafir for human consumption.

Local Government was supposed to:

- pay salaries of ghafir and effendi who live at the borehole, but are often outsiders to the village;
- collect charges levied per tin (4 gallons) or per head of animal from the effendi and audit account;
- provide fuel for the operation of the pump.

The payment of salaries has often been delayed, probably especially in "deficit" districts - those where local taxes collected do not even cover the district salary bill, and which therefore rely on provincial subvention.²⁵ Government salaries have also not kept up with private sector incomes. Official dedication to the job may be marred by these considerations.

The second function of local government in operation was to collect charges and audit accounts, for which the effendi is responsible. District Accountants should make regular visits, but visits from En Nuhud could be as much as six months apart, due to lack of cars, fuel etc. Pump metres are often broken down, so an accurate check of water pumped is not possible. Revenue can be checked against gasoline consumed, for which records are kept by the Village Council. The rule is that a tin of gasoline should produce a revenue of £S 25. Any discrepancies are investigated by the Rural Council Executive Officer, its Head Clerk and Head Accountant, who decide on the reason for the discrepancy (embezzlement, technical damage, need for fencing) and on whether the clerk should pay the Council a percentage of the difference as a fine. This is the only come-back villagers (indirectly) have against a clerk who pockets charges. The latter has become a common occurrence as salaries have not kept up with living costs and expectations. As a result there have been many court cases where the village effendi is prosecuted, usually to the Rural Council.

25 See Glentworth and Idris op. cit.

The effendi has a wider significance in village life. He constitutes the most important 'outside' influence next to the school teacher. His status derives from his links to the administration, to urban groups, but especially from his control over water. Relations between village and effendi are a crucial determinant of the success of participation management. A corrupt effendi can negate the efforts of a village to get water. Sales to merchants who may bribe the effendi to be given priority for large quantities of water to resell at great profit, are one example. A corrupt effendi can in turn corrupt a village leadership, such that no complaints are heard. Such phenomena were said by some to be widespread: the number of court cases would support their view.

A village-level official, one might conclude, therefore, needs to be (a) recruited from the village, so that he is less susceptible to outside pressures (though this will be difficult in a faction-ridden village); (b) he should be accountable to and paid by the village. In this particular case one might also question the cost-effectiveness of the job: since he costs more than the revenues which it is his main duty to collect, perhaps water should be made free, access regulated by village councils to beneficial users and the job of effendi abolished.

The provision of fuel by Local Government has become virtually non-existent in the study area and elsewhere as well. So, for example at El Huwag people told us that the Rural Council sends the village about 20 tins (80 gallons) a year, whereas the pump needed about 30 tins (120 gallons) a month. The rest was bought on the black market in En Nuhud or Abu Zabad at about four times the official price by delegates of the village council. Finance was provided by the following system of charges:

Donkey plus 2 goatskins	£S 0.10
Camel	0.04
Cow	0.02
Sheep/goat	0.01

of the £S 0.10 0.05 goes to the Rural Council and is perceived by villagers as a tax rather than a charge. £S 0.05 is kept by the village council in a fund (sanduug) for gasoline and spare parts. The Rural Council's £0.05 is apparently not enough in most cases to pay the salaries of clerk and guard, let alone the cost of fuel, maintenance etc.

At Um Jecko the system was slightly different. It was estimated that the Rural Council provided 50% of fuel requirements in the month prior to our visit: the rest was bought once or twice a month by the village council, financed by a levy at the time of need on those people using the boreholes. There was no regular levy on consumers.

Fuel was available locally, if at high prices. Why the government, with its national monopoly on fuel distribution, was unable to supply boreholes or indeed any service particularly in remote rural areas, is a difficult question to answer, and not one which can be fully answered from the local perspective of this study. The local situation is the result of national black market in certain scarce and high profitable commodities, originating in Port Sudan and Khartoum. Local Government and people in general, but especially those in the rural West and South are the sufferers. The growth of the black market (though it is a very open, recognised market in the Sudan) is a symptom of the creeping privatisation of public sector functions during the late 1970s when the public sector has heavily promoted certain private sector operators without scaling down its own distributive functions.

4.3. Maintenance

As in the case of operation, the main story about maintenance is the decline, or inadequacy of government provision, in this case on the part of the RWC. Again this has created not only the scope but the absolute need for local communities to contribute money and effort to maintaining their boreholes.

The RWC Maintenance Centre in En Nuhud has to look after over a hundred boreholes. It has fifty employees in the Western District. However, the Engineer i/c claimed not even to receive 10% of the spare parts he needs. On the day of our visit 15 requests for spare parts had arrived: only 6 had been satisfied. In El Obeid, the RWC headquarters for Kordofan, one month had passed with no deliveries of spare parts at the beginning of February. £51 m had been allocated for the purchase of spares by the PEC as an emergency measure - the figure in the annual budget having been £S 300,000.

Again, many but not all spare parts are available at a price on the black market. Purchases are made regularly by all communities with boreholes. Either the purchase is made from funds regularly collected as water charges or from an occasional levy, or a contribution of the two. At Huwag loans from individuals were also taken, to be paid back later from the sandug. This style of popular involvement again is recognised but can not officially be encouraged, since the market is still considered to be black.

The mechanic is paid by the RWC, and in about 50% of cases trained at the RWC training school in El Obeid to effect simple repairs. He is the community's main asset in maintenance. His skill level and preparedness to do a 'botch job' in the absence of the correct spare part determines how quickly a breakdown is dealt with. The less a village has to rely on a RWC Maintenance Centre the better, since delays

will occur, and the community will incur additional costs such as transporting an engineer to the site, making visits to town and so on. At Um Jecko there was rarely a breakdown of more than a day or two as a result of popular involvement, a member of the village going straight to Nuhud with the mechanic's instructions on what to buy.

At El Huwag the problems were more severe: the mechanic estimated that the pump had only operated 6 days during the last month. Often it worked for short periods only. This was blamed on the fact that the pump was made in Czechoslovakia and was both inferior to English or Indian Lister pumps and more difficult to find spare parts for. Significantly, the villagers reacted to our suggestion that villages get together to form a spare parts co-operative affirmatively, "provided the government was read" - which it was clearly seen as not being.

In fact, the perception that some equipment was better quality than others and easier to service was widespread, and would therefore justify some participation of villagers at least in the choice of make of equipment. They have information which the technocrats need. It could be that there is in practice little choice of make; this would be true if machinery was imported under bi-lateral aid: but this is surely not invariably the case, nor in the Decade of Water should there be a need so to import, nor should bi-lateral aid be tied in this way.

Furthermore, one could justify participation in the choice, where there is one, between hafir and borehole. Several villagers expressed a preference for hafirs because of their greater reliability, even though quality of water is recognised to be lower as a rule. And livestock owners in particular are known to prefer a hafir, where they can water their animals without charge.

Hafir maintenance is an entirely different game, and one which RWC appears to have given up. In Southern Kordofan where hafirs are much more numerous and more important and where silting has resulted in an aggregate 41% loss of capacity²⁶ it has taken a UNICEF water supplies programme to seriously start tackling the problem of hafir maintenance. RWC in El Obeid has moved over to a twinning policy precisely to avoid the difficulties of maintenance.

26 UNICEF and National Administration for Water, Rural Water Supply Project, South Kordofan Province, Report on Project Implementation June 1978 - June 1980 and Project Proposals.

CHAPTER FIVE

Conclusion

5.1. Significance of popular involvement

The importance of water in daily life can be seen from the wide-ranging and almost universal participation by communities in providing the service. In communities served by shallow well centres (e.g. Bayad or Abu Surur) men are willing to spend days constructing, maintaining and deepening wells, as well as hours drawing water. Women and children ride or walk miles each day for water. In the Iyal Bakheit area people are willing to pay $\frac{1}{2}$ - $\frac{2}{3}$ of their annual cash income on water to merchants bringing water from far away. (See Appendix A2)

The benefits of investment in water are widespread socially. However, the research found suggestions that the well-to-do, particularly those owning large herds of animals, benefit proportionately more from the large capacity of most government supplies. Men may also derive greater benefit than women, who may be as well off with smaller more scattered supplies. Merchants selling water from lorries also benefit from large capacity supplies, since they can easily fill up their lorries. The concentration of large supplies in a limited number of places also means that large areas are left unsupplied; disadvantage is therefore mainly geographically rather than socially distributed. On the other hand a substantial proportion of the wealthier rural families are partially semi-nomadic and therefore able to take advantage of remote supplies. The devolution of power can be expected to continue to support the pattern of investment, so long as local politics is dominated by merchants and school teachers and not by a more representative set of politicians.

At this stage three comments will be made about the general level and nature of participation in water provision. Firstly, water has long been recognised by people in the rural West as one of the few services which government can and will supply. Politicians have encouraged demand for water above all else: it is said cynically that promising water is the quickest way to election, and a number of prominent provincial politicians have indeed come to power on this basis. As in the typical community development programme²⁷ demand has by far outstripped supply. This has happened in relation to other services, especially those for which self-help has been encouraged for the initial construction: doctor-less hospitals, teacher-less schools, drug-less veterinary clinics being the result. This has been interpreted by officials as a failure of the community development or participative approach.

However, it may also be the incapacity of government which is at fault. In a sense, Sudanese rural society is politically and developmentally mobilised but stranded without leadership. It is unable to get governments to respond. The main reason for this is the top-heavy structure of Sudanese society, such that a very large proportion of revenue is absorbed in the consumption of the elite - either directly by paying its salaries or indirectly by subsidising urban living. The PLG system, with its bureaucratic decentralisation has exacerbated the imbalance; and the new Regional Government system (1981) was thought by many to be about to do the same. The growth of bureaucratic, military and political classes is pre-empting investment and even proper operation and maintenance of existing investments.

There are three ways forward, in the long term. One is to recognise top-heaviness and confront it: a very difficult and highly political strategy. A second is to recognise that people are willing to pay more for essential services

27 D. Curtis et al: Popular Participation and Basic Needs, WEP No. 12, ILO 1978, Chapter 5.

than government is charging, and to institute pricing and taxation changes accordingly. However this will only work in the long term if the services are actually delivered and operated satisfactorily. Already charges are perceived as a pure tax. Achieving anything like a self-perpetuating financing system is therefore difficult in these circumstances. A third strategy is to pass certain responsibilities formally to beneficiary communities and to recognise the role played by the private sector in distribution, retrenching the public sector to avoid duplicating functions and to reduce the tax burden.

A third point is that the context for popular participation is one of institutionally created scarcity. The benefits of scarcity are reaped by bureaucrats and merchants who operate the black market, which is big business at national and even international level. Its existence does not depend on local alliances between administrators and merchants to any great degree, although these undoubtedly exist. To some extent popular involvement in water supply management represents the cost of this created scarcity. Undoubtedly, without such involvement, hardship especially during the hot and dry summer months would be much greater.

5.2. Popular participation and planning

Duncan Miller's recent comparative study for OECD²⁸ concluded that popular participation was associated statistically with success in water supply provision in the following areas: initiation, choice of site and especially maintenance.

28 D. Miller: Self-help and popular participation in rural water system, OECD, Paris, 1979.

Success was measured by rate and length of breakdown. Popular participation in project preparation and implementation was not positively associated with success. Here success was seen as more closely related to quality of professional expertise and organisation.

If we take the philosophical leap and suggest that participation in certain areas is causally connected with success a prescription for action can be prepared on this basis. On the basis of Miller's study it might read as follows: "leave the technical aspects to the technicians, with the possible exception of choice of site. Participation should be encouraged for initiation, site choice and maintenance". This is a commonly suggested division of labour.²⁹

Our study would suggest, however:

- 1) Choice of site is only a suitable arena for participation if local knowledge is what is required. Local knowledge of groundwater sources or details of topography need to be complemented by professional expertise.
- 2) There is a fund of technical knowledge in most local communities about available water supply technologies, makes of equipment, and relationship between water and land use which could usefully be consulted by the technicians and professionals. This could be done both at local level and in council gatherings, where experience from wide areas can be drawn together by representatives familiar with their own areas.
- 3) Apparently 'technical' decisions are too strategic to be left to the 'experts'. They involve allocation of resources between areas and activities, as well as tremendous consequences for land use and society. Choice of technology, choice of supply capacity are examples.
- 4) Leaving it to the 'experts' implies that these will present a rational balanced programme. However, the dominance of one profession, engineers, in the field of water supply suggests this may often not be the case.

²⁹ cf. S.G. Hadden 'Controlled decentralisation and policy implementation: the case of rural electrification in Rajasthan' in M. Grindle (ed.) Politics and Policy Implementation in the Third World.

- 5) Participation in maintenance and operation may reflect the imbalance in the executing agency between provision for capital works and current expenditure, an often noted phenomenon. Institutionalising participation in maintenance especially will reinforce this trend: this may be desirable where technologies are simple and/or maintenance requires only locally available skills and materials. But where technologies are complex (borewells, filtration plants etc.) participation can be no substitute for an effective engineering contribution.

This study suggests that there are several ways in which the apparent constraints on participation posed by the scarcity of technical knowledge need to be transcended. If this is to be done, however, the relationship between administrators/professionals and political representatives needs changing. Councillors need to be trained in technical and policy issues and given political support to combat excessive influence of the technocrats. In general recruitment to political and civil service offices needs to be carefully monitored, as suggested elsewhere in the text.

5.3. Popular participation and basic needs

The case of water provision in rural Sudan is of interest to a basic needs strategy which aims to provide the masses of people with basic services. What can be learned from this case study?

Firstly, the production of a service requires that certain political and management tasks be carried out. The question is: how are these tasks to be organised? What are the roles of the professionals, of direct labour, of self-help labour, of popular influence and representatives etcetera? At present there is a fashion in international development circles for participative arrangements. In the Sudan it is the widening of the political arena and now increasing governmental incapacity which has given the provision of services such a participative look.

Less participation in operation and maintenance of boreholes would be the result of a more efficient service. The question: "how much popular participation?" should therefore be answered according to tasks and circumstances, with a careful analysis of each.

Secondly, the question of "how much participation?" has tended to obscure vital questions concerning the content of participation. What subjects should popular representatives address? We have seen that there is a variety of strategic questions which are left to the professionals. It is vital that many of these questions be addressed by the public. The potential educative impact of democracy is often ignored. When the provision of services is so closely related to long term problems such as desert creep and drought-proneness, public education is an important but neglected aspect of participation. Too strict limits are often placed, either by bureaucrats or by representatives themselves, on the contents of participatory democracy.

The third lesson concerns recruitment of representatives. It is not enough to abolish the colonial rural leadership's formal political position. Nor is it enough to institute formal local politics on a more or less European model. In an inegalitarian peasant society it is difficult to ensure the genuine representativeness of members elected to local bodies. Economic power can so easily be translated into political. And central political patronage can so easily determine local political supremacy. Structures, procedures and rules need to be devised to broaden the base of political recruitment.

Fourthly, participation in the formal processes of government does mean that it is seen as legitimate for villagers to press the bureaucracies to deliver. Keeping up the pressure on government is an essential part of the achievement of

basic needs, since without it the bureaucrats would have less incentive to deliver, having very different economic and political interests from their public and in this case 'different social backgrounds'.

However, fifthly, the lack of attention paid by central government to the rural West means that participation has also led to tremendous frustration and to questioning the legitimacy of central government's pressure in the West in its current form. The decentralisation of decision-making powers while resource transfers are restricted by central government is a common situation which renders decentralised planning a more wasteful and less effective service than it could be.

Finally, it is perhaps vital for the future of the economy and society in the semi-arid and savannah areas of Western Sudan that water supplies should be planned in accordance with environmental capacity while realising, insofar as possible, the human and developmental potential of the area. Because the bureaucracies are relatively inflexible (e.g. in their approach to technology) popular representatives have always largely played the role of putting pressure on government. For participation to lead to more meaningful results in terms of long term development rather than the achievement of short term basic needs, a more open dialogue between government and people is necessary. In this sense one might argue that the fruits of participation cannot be grasped fully unless confrontation can be transcended.

APPENDIX A

Minor forms of water provision by government in N. Kordofan

A.1. Improved Shallow Wells

Improved shallow well construction since 1975 has been invariably initiated by the community which has to collect 50% of the cost before the RWC will dig. This amounted to £S 2000, and would increase to £S 2250 depending on the depth.³⁰

The same planning strictures are not applied, presumably since the yield is low. Whether or not construction is undertaken depends (a) on the recommendation of the RWC geologist, and (b) on the availability of funds. Once again geological considerations are paramount, even in this case leading to the cessation of shallow well digging in the Western District in 1961, apparently because of the high failure rate:

Table 11

Shallow wells dug 1950-80

	Dates	No. dug	No. unsuccessful	% Failure rate
Kababish	1950-80	80	15	19
E. Kordofan	1950-80	83	10	12
Dar Hamid	1950-80	70	10	14
Bederiya	1950-80	90	21	23
Dar Hamar	1950-60	40	13	33

Availability of funds is in this case determined by the content and competition for the Provincial Commissioner's discretionary self-help fund, which totalled £S 90,000 during 1980/81.

The Shallow Wells Department had constructed or was constructing nine wells at the time of visit, absorbing about £S 19,000 of that fund. Schools, dispensaries and veterinary clinics were the other main consumers of the fund. Equality of provision between the Districts, except for the Western District is what is most quickly remarked from Table 11.

The RWC is responsible for construction, and hires casual labour, often locally, to complete this task manually. Although villages' free labour is not generally used, the village will be expected to contribute food and accommodation to the team for the duration of construction, which may be as long as 8 months.

The wells are free for all to use. Maintenance is generally carried out by the village, although where this is not possible RWC maintenance teams will carry out repairs, charging the total cost to the village.

A.2. Tankers

The Western District Council owned 5 1000-gallon tankers, operated under the control of the District Administrative Assistant. Investment in the tankers was an attempt to compete with merchants' supplies of water to remote communities. The investment was made in the early, populist days of the PLG system. Since then there has been no expansion in the service, despite obvious need. Merchants' prices have been affected only marginally, if at all; and indeed lax control over the service has allowed effendis, tanker drivers and their mates to sell water themselves. The absence of expansion of the fleet and laxity of supervision may be explained by the vigour of the merchant class in local politics since the abolition of native authority. Merchants in a sense have an interest in maintaining some scarcity of water. This has been achieved through politics. Their profits are also based

on supplies from government water points, where relations with the effendi el donki are crucial to successful commercial operation. Presumably water is distributed to areas where profit is highest. Many areas of low consumer purchasing power must be neglected.

In contrast, the day-to-day allocation of government's tankers in the dry season is decided by the Administrative Assistant in response to community requests. Apart from this there are a number of settlements with schools or other services and without a permanent water supply regularly serviced. Little information was collected to evaluate this service, beyond the anecdotal. What was available suggested that there were probably severe difficulties facing the services and its beneficiaries, of which the most important were:

- (a) the slowness of government response to a request;
- (b) the need for bribery to get a request approved;
- (c) sale of water off schedule.

A similar or greater degree of financial involvement to running and maintaining a borehole was required of the beneficiary communities: they had to pay self-help levies at the borehole (often Um Jecko) where the tanker filled up. In addition to this beneficiaries paid the cost of fuel for transport to and from their village,

Another four tankers were owned and operated by SCLURWPA, filling up at Khuwei and travelling to two distribution centres, Kol Yusuf and Abu Sari, where SCLURWPA's concrete storage tanks were filled to supply these water-deficit areas.

APPENDIX B

Glossary of Terms and Abbreviations Used

<u>dammer</u>	-	nomads' summer camp
<u>donki</u>	-	deep borewell
<u>effendi</u>	-	official
<u>feddan</u>	-	<u>roughly</u> one acre
<u>ghafir</u>	-	guard
<u>hafir</u>	-	small dam
<u>hashab</u>	-	gum arabic
<u>katib</u>	-	clerk
<u>khor</u>	-	seasonal stream
LURWDB	-	Land Use and Rural Water Development Board
PC	-	Provincial Commissioner
PEC	-	Province Executive Council
RWC	-	Rural Water Corporation
RWDC	-	Rural Water and Development Corporation
<u>sanduug</u>	-	box/fund
SCLURWPA	-	Soil Conservation, Land Use and Rural Water Programming Administration
<u>sheikh</u>	-	chief
<u>sheil</u>	-	crop mortgage
SSU	-	Sudan Socialist Union
wateryard	-	a borehole plus enclosure