

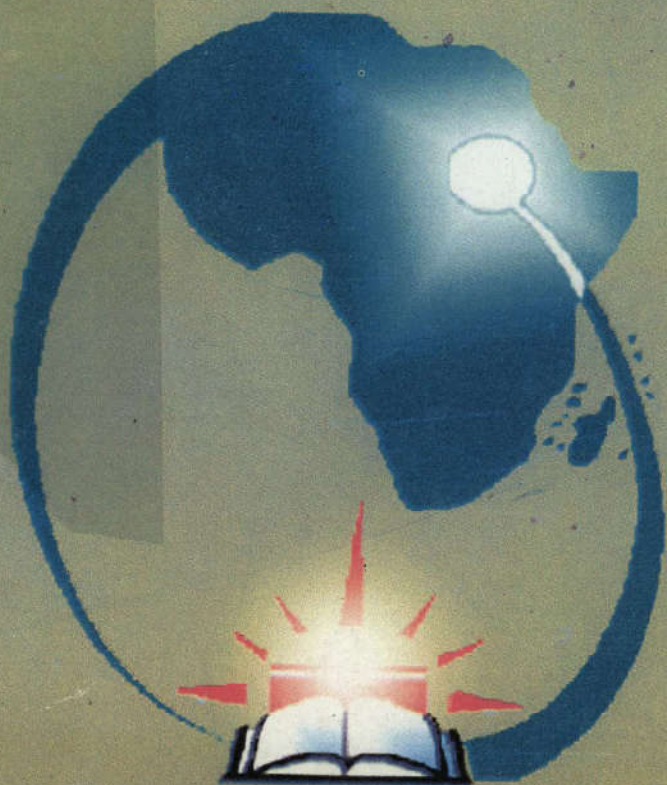
**INTERNATIONAL UNIVERSITY OF AFRICA
KHARTOUM - SUDAN**



AFRICAN UNIVERSITIES CONGRESS

**INTERACTION AND INTERRELATION
IN AFRICA**

ACADEMIC CONFERENCE RESEARCH PAPERS



KHARTOUM - JANUARY 2006

**INTERNATIONAL UNIVERSITY OF AFRICA
Khartoum – Sudan**

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(3)

Khartoum-January 2006

The congress of interaction and interrelation in Africa

The pages of this file include the papers presented to the congress of African universities. It aims at boosting the inter relation linkages between African Universities exemplified in: administration, teaching staffs, as well as students. These linkages may contribute in out cropping spiritual, intellectual, political as well as social interrelation flow, beside raising the awareness by Africa's actuality. Exchanging experts is needed for Africans in order to find out preliminary common visions for solving out the continent's problems.

This actually leads to acquaintance, and sinter-retention between African universities. And these and universities can discover out the most favourite methods for Africanizing the universities. Until they act as continents' tongue. The conference also aims at unifying Africans intellect so as to find out common joint. Springing form African-African debates and African African operation besides opening inter communicational channels between the Africans.

This Third file includes the researches that are received in the fixed date of receiver, for what enabled and facilitated the process of translating and printing them out in this file. Finally we hope all researches appeared in this conference are to be filed out.

Thanks,
Conference administration

Transportation and Communications key for Cultural inter-Communication between The peoples and states of the Nile Basin: Study case of Egypt and Sudan

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The theme of this study is centered in an important axis, that is the cultural communication between some parts of the region of the horn of Africa that extends in a triangular shape parallel to the western coast of the Red Sea, until it joins the Indian Ocean, in a large and wide surface of five million square kilometers approximately. Their area includes the states Egypt Sudan, Eritrea, Ethiopia, Somalia, Kenya, Uganda and Tanzania.

This old, medium and modern cultural communication took different ways across the valleys rivers and seas, then the roads, railways and air transport.

This cultural communication took place in two axis:

The first, from the Arabian peninsula to the region of the horn of Africa, or the north-east of the African continent.

The second, inside this north-east part of the African continent.

The first part was accomplished through the old emigrations from the west of the Asian continent to the north-east of Africa across the Red Sea and Bab el Mandab and the Sinae peninsula. These emigrations (Semitic and Hamitic) carried with them new bloods and in-coming cultures from Asia and Africa and these were mixed together with those bloods and cultures already existing in this African region (mostly Negroid bloods and cultures).

In the other part the communication was from within the region itself, where the Negroid bloods mixed with the semitic and Hamitic bloods to constitute new human elements in the bloods and culture, and so a new element was joined to the two abovementioned origins.

In this general picture appears some important details as follows :

- 1- some African communities confined themselves in isolated places (rocky mountains or forests) preserving to a large extent, their original identities.
- 2- Most of the African communities intermingled with the in-coming elements and mixed with them through intermarriage and culture and, thus, gained new characteristics.
- 3- Some big African elements set back towards the west, away from the civilisation incoming from the east and the north, and kept some or move of them characteristics .

The great importance of this incoming culture became clear when the cultural patterns began to change and the Arabic language and Islam was prevailing as an integrated system which attracted many of the African communities. Therefore most of these communities began to boast of their northern or north eastern origins, and by that they meant their affiliation to Arabism and to Islam.

The transport roads and the new communications consolidated this humanistic cultural communication. The arrival of horses and camels from the Asian continent to Africa was a sort of revolution in the means of transportation and communication which helped in an intensive effort in creating homogeneity of peoples and cultures in the region of north east Africa, and this was followed by the building of roads and extending the railways; and by using the river Nile and its tributaries in the transport and communications. This was also the case with the Red Sea and the Indian Ocean. And Last was the air transport.

The final output and the natural result for all this was big humanistic and cultural intermingle, notably in the eternal human relations between Egypt and Sudan, and between Sudan and the eight other African states neighbouring to it, and also the states overlooking the entrance of the Red Sea and the high lands of the Nile.

These communicative relations were the corner-stone in any cooperation among the state of this region of geo-strategic importance and therefore it is important to build strategic relations among these states to protect their interests in the waters and other riches mineral, agricultural, animal and wood resources, and thus achieve durable development to raise the standard of living of its peoples and satisfy their desires in free and decent life.

In this study we are going to focus on the importance of transportation and communications in the process of cultural communication in its widest meaning on the region of the African horn in particular, mainly between Egypt and Sudan. Transport and communication are the best factors to reinforce communication between the peoples of any region, having. The duty of transporting the goods and individuals and ideas from one region to the other, from one people to another.

For this reason different studies were concerned with this process in many scientific fields, especially the cultural diffusion. These means witnessed a big development throughout the recent centuries, specially in the twenty century where the communication turned from dependence on animals and carrier pigeons in old times to depend on cars, railways, aeroplane and vessels, and also to depend in communication on satellites instead of telephones and telegraphs which were the best available means before the discovery of the use of the fax and E-mails etc.

There is no doubt that whatever progress in this field of inventions puts its impact on the expediency of total development in all fields. Those nations who still use remote and old means will definitely be deprived of the benefits of progress and durable development, and will be left behind. These new means of communication led to the fact that the world had become a "small village" as a result of the rapidity of the communication and the bwst of the informatique.

In spite of the slowness of the rhysm of transportation and communication in between the states of the Nile Basin and

inside each of these states, it is still hoped that a real progress will take place during the coming decades of the twenty first century; and that cannot be achieved unless through holding the reins of modernization in these fields, especially in the field of technical education which became a necessity for whoever wants to keep pace with the modern world.

Although many different natural and humanistic obstacles faced this region that made it fail to keep pace fully with modernity, the concentration of the states of the governments of the Nile basin on that field, and the concerns of individuals and the private sector may lead after all to an approach with the progressive world.

It is also useful to have a sort of cooperation in this field between the states of the Nile Basin because this will lead after all to the common benefit for all these states. That is because the progress in this field will have its impact on the facilities related to transport and communication, and the latter will have impact again on the transport of goods and individuals, and facilitates the commercial transaction and the financial and economic business in general. This is linked together with the cultural diffusion between these states and hence the rapprochement and intermingling of ideas and thoughts between the peoples, that leads after all to the prevalence of the culture of cooperation and integration in the different fields of water, culture and economy of these states of the Nile Basin, and leads after all to the political, economical cooperation and integration.

It is worth mentioning that beside these natural obstacles manifested in the vast surfaces and long distances in these states, and between one another, and the diversity of the topographic reliefs such as high lands, hills and plains, and differences in the plant cover where there exist vast desert, thick forests and rich savanna , and also with the diversity of races languages and cultures, and the differences in the standards of living between the people, and individuals, of the region, together with the presence of same political and

economical and sometimes military problem between the states of this region nevertheless there are some points of agreement and participation in many and different ways for bringing the peoples and states of the region together in one sphere:-

- 1- The huge geographical solid extension across the African main land, comprising Egypt Sudan, Ethiopia, Eritrea, Uganda, Kenya, Tanzania, Somalia, Djibouti together with Ruanda and Burundi, this solid geographical bulk, standing firm and connected together.
- 2- The rapprochement of the culture of the peoples of these eleven states as a result of many elements the most important of which is the continuous communication and the supremacy of the impacts of the arabo- Islamic culture to a larger scale in this region. The cocasion emigrations (Semitic and Hametic) coming form the Arabian peninsula passing through Egypt and Sudan and the Ethiopian hills (Ethiopia and Eritrea) and Somalia; and through Sudan and east Africa these influences reached Uganda, Kenya, Tanzania Ruanda and Burundi in addition to the (big) Somalia and Ethiopia they were directly connected with the Arabian peninsula across the Red Sea and Bab ElMandab.
- 3- The concurrence of pains and hopes through which passed the peoples of the region where they were all suffering form colonialism which pressed them all, the British in Egypt, Sudan, Uganda, Kenya, Tanzania and British Somalia, the Italians in Ethiopia and Italian Somalia, the French in French Somalia (Djibuti) and the Germans in Rwanda and Burundi. These regions continued struggling with the colonial nightmare until they obtained their independence hoping for a future full of hope and decent life.
- 4- Participation of these states to work for maintaining progress and development in the different fields of life,

each according to its humanistic and material potentialities to the interest of the people of the region.

Although this objective seemed to be difficult but realize it could be attained by the common understanding and coordinated endeavors- each in its own capacity that goal may be reached easier than expected, and better than if each state worked alone in the field of development

5- In addition to the common elements previously mentioned comes after- and even before it – the artery of life – the great Rivers Nile which had its sources in the depths of the African continent, and it had its mouth and outlet in the Mediterranean Sea, crossing both Sudan and Egypt, carrying its waters across more than six thousand kilometres from the states of the tropical great lakes high lands and the seasonal Ethiopian high lands overpassing the mountains and the plains, the deserts, the forests, and the grasses till it reaches Egypt, the state containing the outlet.

This factor- the Nile- is the unifying factor for the peoples of the region to obtain their integration, cooperation, development and progress. So the Nile is considered to be the life-saving for man, animal and plant, and it is a means of transport and communication from latitude 3 south of the equator, up to latitude 32 north approx i.e. about 35 of latitude crossed by this great river.

There are so many diverse projects which could be realized with and around this eternal river, like generation of electricity, the storage and damming of water which could be preserved for future use in agriculture, the elimination of weeds from the main current and its tributaries and branches, the digging of canals to preserve its waters like the Jongley canal and also using the river as a means of transports and communication through the river and its tributaries and braches

That is only a past of the subject which we are now studying. That the river transport is considered as one of the cheapest means of transport inside this big basin. If there are some problems in this respect arising from the dams, cataracts, and strong waterfalls and swamps, then the cooperative efforts of these states and their

integration is a guarantee of solving such problems for the comfort of the peoples and the states of the Nile basin and their welfare and progress.

Transportation, communication, and intercommunication between Egypt and Sudan: applicable example for the communication of the states of the Nile Basin and its peoples

Egypt and Sudan are considered two integrated states where each of them complete the other. Geographically they are integral. Egypt lies in the north-eastern corner of the continent, over looking the two seas, the Mediterranean and the Red Sea, and the Sudan lies to the South of Egypt overlooking the Red Sea. Egypt is in the forward position and the Sudan is the special hinterland for it. If Egypt is a maritime country the Sudan is the land extension to it.

Accordingly, this vast land extension from latitude 32 north where the northern coasts of Egypt, to the depths of the African continent where begins the boundaries of Sudan at latitude 3.30 north of the equator . So there is an extension of 28.30 latitude existing north of the equator.

This vast land extension comprises a variety of geological, diversification, different weather and rich plant cover and these all have their impact on the diversity of economic recourses such as agricultural, animal and mineral resources, and added to that are the shiheries and touristic resources.

Besides, these is diversity in human resources, especially in Sudan where also communities live in the north, east and middle of the Sudan together with the communities of Negroid and nilotic origins (Hamitic and Negro) in southern part in general. This human diversity in Sudan was supposed to constitute a weakening factor, and that it must be reconciled with the political and administrative system, nevertheless this variety constitutes an effective point in creating economic cooperation between Egypt and Sudan.

Also , the population factor constitutes an important factor in this cooperation, Egypt with its seventy million population and Sudan with its thirty millions, this big number of about 100 millions, creates

a weighty market for their economy as far as consumption is concerned- although the purchasing power does not comply with this big number.

Also as a producer where the working manpower, potential or real, is very big. We notice that the work market does not imbibe all these numbers at the present time, which leads to the phenomenon of unemployment in its different forms in both Egypt and Sudan.

One of the positive elements in what concerns the integration and the economic cooperation between Egypt and Sudan is the fact that if Egypt is having different strategic, political and economical orientations-in general- in the mediterranean, middle eastern and afro-Asiatic, the Sudan by its location and orientation, represents the bridge that linked Arabism and Islam in the Islamic Arab world, with the African continent. This is considered, alone, as an economic, cultural and civilizational window towards the south the question raised now is how is it possible to institute economic relations between Egypt and Sudan, the basic approach to this objective is transportation, communications and intercommunication.

Transportation and Communications between Egypt and Sudan

Transportation and communications are considered as the lively and vital artery for any economic development or economic integration inside the one country or between a group of countries. It transports the produced goods from the regions of production to the places of consumption inside and outside or between two or more states.

The relations between Egypt and Sudan were open since long times through the following axis.

- 1- The Nile axis, where the river navigation with the exception of the rocky regions and the six cataracts, beginning from Dimiat and Rashid in the north up to Juba in the far southern Sudan (about 4000 kilometers) .
- 2- The land roads; either paralleling the Nile or the road of the Red Sea coast and its tributaries to the eastern desert in both Egypt and Sudan. The western desert was also- and still is- a means of communication between the two countries through the oasis that lie between the two

countries. The 'Darb-Al Arbaain' Road is a good example to this effect .

- 3- The sea route, in the Red Sea either in the past or in the present time. The existence of port (El Gassir) in Egypt and Sawakin in Sudan and others, where these used to function to connect Africa to (Hijaz) in Asia (the Hajj road) and link it with the two countries.

The relations between Egypt and Sudan were only through these three axis, but these relations were obvious between the Sudan and the north- west of the African continent through the caravan routes, especially across the desert and the Sudanese geographical domain.

It is worth mentioning that these three axis are important for the movement of the human communities between west asia and Egypt form are side, and Sudan and Africa on the other side. The human emigration- Semitic and Hamitic- used to move in these three axis and through these means was accomplished the rehabilitation and development of each of north, east and west Africa.

The relation between the transportation and communication and the economic development in Egypt and Sudan

No doubt the relation between transportation, communication and the economic development is very pertinent; and as had been mentioned by LOGARD (development can be abbreviated in one word-transport).

If the "Ecumene" in Egypt is confined to a great extent to the Nile and the delta in particular, with some tiny branches on the coasts of the mediterrainian and the Red Seas, the ecumene in Sudan is built on the crossing of the Nile axis and on the agricultural and pastoral axis in the middle of the Sudan (the embryotic heart of which lies in the gezira projects and its extension) Abdul Aziz Kamel and Hasan AL Kholi)

What concerns us aside from the present situation of the ecumene in each of the two countries, the probabilities of development and the creation of new axis to the future ecumene.

In Egypt it is possible to intensify the axis of the ecumene on the coast of the two seas, the mediteranian and the Red Sea, and also

the north eastern and the south eastern parts of the peninsula of Sinai-Same could be done to the western desert Oasis.

But in Sudan it is possible to extend the axis of the ecumene and to be enlarged along the present ecumene axis on the two rivers, the blue Nile and its two tributaries (Rahad and Dinder), an the white Nile. Also it is possible to enlarge the area of the ecumene in western Sudan, north and south so as to contain all the middle belt and the southern belt of Kordufan and Darfor.

Also it is possible to enlarge the ecumene axis in the two regions of kassla and Gadarif and along Atbara river until it joins the ecumens Nile axis in Northern Sudan.

Added to that we can talk about enlarging the two ecumme axis in southern sudan(the iron Hills in the Zandi area, together with the enlargement of the ecumene axis on the Red Sea coast.

The enlargement of the axis of the ecumene as abovementioned in both Egypt and Sudan needs the construction of new roads for transport in both Egypt and Sudan, and in between them at the same time, either roads or railways or river and Sea navigation as well as air transport. All this is added to the transport through pipe-lines and other means of communication. It is known that there is a forward relation between the transportation, communications, and intercommunication, and the enlargement or intensification of the ecumene in any region, especially if these means are in Egypt, and particularly in Sudan did not reach the appropriate degree- in quantity and in quality- to preserve the present ecumene in each of the two countries, in addition to the enlargement and the intensification.

So we are concerned with projecting light on the present situation of transport communication and intercommunication in the two countries first, and specially in Sudan, being the state open for investment in the traditional economic fields, including agriculture, mining animal and wood resources.

The Status-quo in transport, communications and intercommunication in Sudan:

According to the statistics we find clear inconsistency of transport, communication and intercommunication with the following :

- 1- Establishment of economic cooperational relations between Egypt and Sudan.
- 2- Covering the requirements of the present economic situation in Sudan
- 3- Possibility of intensifying the existing eucomene or its enlargement in Sudan.

* This deficiency in transport, communication and intercommunication appears- in quality and quantity in roads in its different categories, railways, sea and river and air navigation, added to the traditional and modern means of intercommunication like the ordinary telephone, the mobile telephone, the broadcasting and television stations the internet ant the fax service etc. Here with we mention a C.V. for each.

(1) Roads :

The natural and economic circumstances play a direct role in the situation of roads in Sudan. The elevations and an adulations, together with the weather conditions and the plant cover all have an effective role in this respect.

The topographic reliefs and elevations such as mountains and hills hamper or make it difficult for roads in the area, and increase the cost of constructions.. In the Sudan we find rough un uneven Red sea Hills in eastern Sudan, the elevations of Darfor and the Nuba mountains in the west, in addition to the elevations of the south (the iron hills) and the south- east (head-lands and extension of the Ethiopian plateau).

As to the effects of weather conditions, it becomes obvious because the rains are semi-permanent in the southern part and the seasonal rain in the middle, whereas drought prevails in the northern part. Also the sand storms constitute an obstacle to an transport and

communication. Also forests and swamps play their role in obstructing the extension of roads in the southern part of Sudan.

Although Sudan is still largely dependant on railways for transport operations and communication the competition began with roads since 1980, and although there are discrepancies in the statistics in the figures of how long are the roads into Sudan, we can state the fact that roads generally, are insufficient for the transfer of goods or individuals.

The statistics show that Sudan is poor in this respect with regards to the number of population. The length of the roads in 1995 was 11,610 km with 4,203 km only asphalted. In addition to 45,000 tracks where most of it is unfit for usage during the rainy season.

The proportion of the roads to the population is 0.4 (one thousand Kilometre of roads to one million people) in Sudan. compared to 8.5 in South Africa (1995), 2.6 for Somalia, 2.4 for Sierra-Leone, 3.7 for Senegal, 1.7 for Senegal, 1.7 for Moriches, 3.8 for Liberia, 2.2 for Mali, 7.00 for equatorial Guinea, 1.8 of Comoro, 2.3 Burundi, 2.4 for Africa South of the desert.

The asphalted roads as mentioned are limited. In Sudan it is %36.3 compared to %41.5 in South Africa (1995)

The Recommendations

There is no highway linking Egypt and Sudan except the Egyptian Red Sea road and this road has its dangers and ordinary hazards, and it can not afford to bear the land transport movement of the two countries specially after the increase of the standard of cooperation and development in the two countries. As for the road paralleling the Nile with its (agricultural) nature and its (deserts) nature in Egypt, there is a gap represented by (Nasir Lake) which divides between the roads of the two countries, and efforts are being exerted in planning and executing the road between Abu-Simbil and Wadi Halfa. The two desert roads, the western and the Eastern, are not yet extended to reach Aswan. Therefore what is required now is:

- 1- the completion of the construction of the road at the red sea coast inside Sudan until it meets the two ports, port Sudan and Sawakin, so as to meet with the net of the new roads in Sudan.

- 2- The completion of the two desert roads in Egypt on the two side of lake Nasir up to the boundaries of Egypt and Sudan to join with the line- Halfa Atbara- and then with the net of the Sudan roads. Sixty million Egyptian pounds were approved to finance the road from (Gastal) to Halfa so as to complete the Cairo - Khartoum road.
- 3- The pavement of the important dust roads, which will be joined to the net of the asphalted roads in Egypt and Sudan, particularly in the north-east of Sudan up to Abu Hamad to meet with the road Halfa- Abu Hamad. Also the 'darbo Omduramn- soudari- Elobied- Elfashir . Again Darb al Arabeen, from Asiot in Egypt across the oasis of the western desert in Egypt and Sudan up to El-obied. Also the road Malakal- Nasir – akobo- Torit – Juba in the South east of Sudan. The pavement of these roads will help opening new regions for investment to the benefit of both Sudan and Egypt.

The Railways:

The construction of the railways in Sudan passed over three stages. The first began before and with the recovery of the Sudan where the Halfa line was extended in 1885 until it reached Karma in 1899, crossing the Atmour desert (368km.) and then reached Halfayat AlMuluk 1899 (on the river bank at Khartoum).

The second stage took place in 1900 from Atbara to port Sudan and finished in 1905.

The third stage began is 1907 between Khartoum and WadMedani in 1909, then to Sennar, then to Elobied to the west. Then Khartoum was linked to Al Gadarif in eastern Sudan, with a connecting piece form Haya (through Atbara-Port Sudan railway) to Kassala, and then to AlGadarif (1924-27) respectively).

Then the line was extended to Sennar. After the second world war an extension piece was extended from Sennar to Rosseris in 1954, and then another piece extended form El-Obied to Niyala to the west, and then another towards the south western part to Wau in Bahr AlGazal province (Saudi-Sudan).

In 1997 the length of the railways which belonged to Sudan Railways corporation (S.R.C) were 4.784km. The main line in the railways was the one which extended from Wadi Halfa on the Egyptian-Sudanese borders up to El-Obied, passing through Khartoum.

These lines from Atbara to Sennar link port Sudan, and there was a link piece from sennar to Damazin on the Blue Nile (227 km) and from Aradeiba up to Niyala on the south western part of Dar for province (680km) and then another link piece of the length of 445km from Babanusa up to wau in Bahr Al Ghazal province.

The Gezira scheme administration was in charge of 1.400km of the railway lines (1994) and this served the cotton plantations in Sudan.

The power and capacity of the Sudanese lines together with the ports which were in function in 1989, directly after the coup d'etat' was as estimated as not more than %20. The shortage in the spare parts and the impact of the control on the imports had its effects on the slow-down of the services in this important domain. Some projects for the development of the railways were declared in 1997 on the purpose of facilitating the export of petrol, and the railways, were specialized in 1991, and this process was declared to be completed in 2001. It was also declared that some loans were obtained for the improvement and the development of the rail-ways and its vans (Africa's. of The Sahara- p.995).

In some other sources the length of the railways reached 5516 km from which 4800km size 1.067 m, 617 km sixes 1.610m, (statesman's year book-p 1471.

As for the transport movement through the rail ways, it was 41.133 ton/km for one million dollars form the total local income 1997, compared to 283 ton/km in the Republic South Africa (1995).

African development indicates 2002-p.254-1995). According to the figures brought through the internet it was mentioned that the length of the railways is 55,995 km from which 55,595 km narrow size (1.067m) + 1.400 km narrower sized 1.600m. For the cotton plantations, taking note that the line size 1.064m extending from Khartoum to port Sudan carries more than two thirds of the movement

of railways in the whole of Sudan. As for the narrower size 1.600 m it serves the cotton plantations in 120 collection stations- (2000).

A lot of problems prevalent in the set of railways, the most important are which:

- 1- The lack of efficient running.
- 2- Low production of workers in repairing the locomotives.
- 3- Low rate of loading and unloading of wagons.
- 4- Slow administration in face of the completion with the roads.
- 5- Delay in times of departure and arrival
- 6- Scarcity and decrease of transported quantity by railway form three million tons in the seventies to two million tons at the end of the decade and this degraded more through the eighties.
- 7- The decrease of operating tools and spare parts.
- 8- Failure of agricultural projects to meet the objectives of production.
- 9- The continuity of the civil war.

But the railways have basic characteristics, the potentiality for transportation to longer distances with less expenses compared to road capability. Railways have the ability of transporting huge commodities and goods of high and medium prices, together with heavy machinery and tools needed for the operations of development in both fields of exports and imports.

Recommendations

- 1- completion of the railway line form west of Nyala up to el-Fashir and to Geneina on the borders with Tchad.
- 2- Extending the line southward form Wau up to Juba, and southwards to the west of Wau up to the Ugandan borders to Maridi and Yambio.

- 3- Extending the line form Damazin up to the Ethiopian borders.
- 4- Extending the line form El-Obied up to Sodari in Northern Kordofan.
- 5- Extending the line form Kosti to Malakal and then with the Nile up to Bor and then to Juba, and by that the southern net will be completed. Due to the marches in this region, it would be better if the line goes adjacent to the Jongley Canal after its completion at the end of the civil war.
- 6- Extending the line form Halaf up to Karima running beside the Nile.

The river Transport:

The river Nile crosses the Sudan from the south to the North, and so with Egypt. This river presents an important means of transportation for the two countries. But there are some natural problems that hamper the navigation, the most important of which is the presence of the rocks and the cataracts on the main river Nile (in the Nubi land) and the shallowness of the water of the white Nile, bends in the river, together with the presence of water weeds which increase rapidly. In addition to that the presence of the swamps and the shallowness of the water currents in Southern Sudan.

As for the man-made problems. and obstacles like the construction of dams and reservoirs on the current of the Nile, especially on the white and Blue rivers. Also the civil war which extended from the south to the middle and to the west, in addition to the lack of capital and technical capabilities and the experience needed for the running of this important navigation service.

Herewith an out line for each sector of the Nil sectors and its tributaries(from south to North).

- 1- The white Nile is considered navigable as a whole up to the city of Juba in the south, with the length of 1650 km, but the problem lies in:-

A- The civil war and the instability and the lack of security.

B- The sudd region with its swamps and the multiplication of water ways.

The Shefron Oil Company worked in dredging the shallow areas in the white Nile to facilitate the transport of the instruments and heavy machinery needed for the digging of petrol fields.

This piece of extension is considered of great important to link southern Sudan with the middle of the Sudan.

- 2- the southern tributaries, the most important of which is the (Jur) which reaches the white Nile from Wau up to Malakal (from July to November). It is one of the most important tributaries of Bahr AlGhazal. But the problem of the “ Nile Hycens” (Roses) and the civil war which obstructed this distance since the serenities. Also form ElNasir (on river Baru the tributary of the Subat river); a navigable distance up to Malakal (255km). But this also stopped because of the civil war. The Jungley Canal was expected to be most important navigable distance in the south, but it was not constructed also because of the civil war in the south.
- 3- The middle belt where we find the blue Nile with its tributaries. There is a navigable distance on the Blue Nile from Khartoum up to Rosseris. (460km) (form mid-June to end of December.
- 4- The Nile region north of Khartoum up to Halfa, where we find navigale distances but he rocks and cataracts obstruct some distances, and the navigation service is concentrated in the distance from Halfa to the third cataract (360km), from Karma to Merawi (between cataracts 3 and 4) about 355 km. Also there is light navigation from Karima to Dungula about 287km, but it

is limited because of the low level of the waters from February to March.

- 5- The lake of the High Dam which extends for about 300km, where 150km lie in Egypt all navigable, but the problem lies in the bad administration and the lack of speedy and modern boats (ships)

It is worth mentioning that the length of the distances of the potential river navigation services reaches up to 3750km(in an another reference 4,048 km navigable, (1723 km navigable during the whole year) but there are some problems manifested in the following :

- 1- The water weeds (Hycens).
- 2- The shallow ness of the water in some regions in the time of the flaw back of the water.
- 3- The lack of available means of loading, unloading and storing in the ports and harbors.
- 4- Shortage in spare-parts and fuel for long periods.
- 5- The low tariff cost of the river transport compared to the running cost for the basic commodities transported.
- 6- The competition of port Sudan to Wadi Halfa in transporting the goods and animals to Egypt and the outside world.

This service was belonging earlier to the River Transport corporation(R.T.C) which tried the modernization and renewal of ships, but the civil war hampered these efforts (specially in the south).

Recommendations

- 1- Recommendations the expedition of completing the construction of the Jongley canal with view of its atmost importance for river navigation and water procurement.
- 2- Removal of water weeds and purification of the navigation channels, specially in the Southern region.

- 3- Introduction of the mechanical system in the means of loading, unloading and storing
- 4- Continuous maintenance of the vessels and ships and introducing modern ones as save to so as effort and money.
- 5- Introduction of new administrative means for the facilitation and running of the navigation services,
- 6- The abolition of the competition between port Sudan and Halfa, by specifying some commodities for each of them, either for the export to Egypt or elsewhere according to the standards of the to the distance involved or the commodity, its volume, price or its liability to loss of quality or damage.
- 7- Coordination between the services on land roads, rail ways and river and sea navigation, with specifying each of then for the transportation of different commodities, and to fulfill a sort of integration between the means, especially in the regions of obstruction (rocks in the river, highlands on the surface or the sea coasts)

Sea Transport:

After the recovery and opening of the Suez canal 1975, Sudanese efforts began for the modernization and enlargement of the abilities of port Sudan, which is the main port. This program began with the aid of the World Bank and the British government in 1978.

The Program leads to the increase of the loading capacity to 13 million tans per year, together with the bearing and drawing the containers.

Added to that was the necessity for more docks in the deep waters. The first stage was completed in 1982, and began the second stage in 1983.

As for the port of Sawakin, it has a capacity of 1.5 million tons per years.

The concern of the sea navigation is very important with view to the position of Sudan as a semi-internal land, and for the

narrowness of the sea front on which Sudan overlooks the Red Sea (853km-530miles) as this front extends from latitude °18 to the north. This will be clear when we compare the length of this front to the whole surface of Sudan. That is 1935 miles from the land surface meets with only one sea mile compared to France where it meets with 106 sea miles, and in Italy 28 miles. This was reflected on the direction of the southern Sudan and also on the road net and on the railway line which was constructed by Britain in the north-east part of Sudan on the purpose of exporting the products of Sudan towards Britain across the Red sea. Abdul Aziz Kamil-p.149).

Therefore the Sudan was still connected to the sea through:

- a- The north from the Nile to the Mediterranean Sea despite the long distance and the rocky waterways and lack of security in specific sites.
- b- Eastward to the Red Sea despite the presence of the rough Red sea hills and the narrow coastal plain and the limited fresh water, in addition to the problem of the chain of coral reefs in the Red Sea. The solution was through the exploitation of the ravines and valleys of eastern Sudan for the construction of ports when fresh water was discovered inside the sites, in addition to the possibility of drainage in the sea that prevented the appearance of the coral barriers in the coast and thus the ports and harbours stood firmly in the mouth of these ravines (kamil-1953-52).

The fact that the Sudan ports are very important is due to their extension to a long distances along the Red Sea from the north to the

South passing y a group of different weather spheres which led to important commercial exchange. More importance resulted from the establishment of the Suez Canal and the exploitation of petrol in the Gulf region and its transportation across the word, in addition to the general cultural development in the countries of the third world in Africa and Asia and the increase of the volume of commercial exchange between these countries.

It is observed that the Sudanese ports borrow their importance form the continental hinterland where different commodities are produced and not from the services and facilities introduced to the crossing ships and vessels like the Suez Canal, albiet this can happen in the future.

The ports came in successions to this region, beginning form the port of (Iezab) in the middle ages, to Swakin in the modern ages as a sea port for the Sudanese geographical belt south of the Sahara, and later was inherited by port Sudan which in a deeper way to the surrounding lands. So the ports here succeeded each other historically and never lived in a contemporary way because the sea entrance to Sudan can not afford the presence of more than one main port at a time (Kamil 154)

Herewith a C.V. of the Sudanese ports.

Port Sudan:

It came to existence in 1909. One of its problems is how to organize the port movement after the increase of the export movement, especially in the cotton affair . With the presence of the coral chain it was a must that the ships take definite courses, and it will be in need of lighthouses and towers for diverting the ships.

The extension of the petrol pipe-line between Khartoum and port Sudan in 1997 with length of 815 km to feed Khartoum with fuel was one of the activities which were added to the occupations of the port, in addition to the burden and loads of the railways, and the roads connected to the port; the coastal plain hinterland being limited and neighbouring directly to the town port which makes it difficult to extend. The capacity of the port is 3.8 thousand tons up to the middle of the seventies, but this quantity decreased in 1985(as a result of the war and the failure of agricultural projects in attaining their production

capacities to come down to only 663 thousand tons for the exports %51 less than the previous year the exports were 2.3 million tons where it dropped also %25 than the previous year. Some efforts were exerted to improve the situation, but it was insufficient being dependant on 15 docks and only a fleet of ten ships.

Port of Sawakin

An old port, rehabilitated and relatively modernized, was opened in 1991. It lies 20km south of port Sudan, with three docks for loading and unloading, including facilitations for the loading and drawing of containers. It is able in dealing with 1.5 million tons every year, and like any other port on the coast of the Red Sea, there arises the problem of the coral barriers.

The harbour of Flameng Bay.

It lies about 4 km to the north of Port Sudan and it is used by the small boat called Sambook for transporting trade on the coast and for the repairing of boats.

The harbor of Tranitat .

It lies about 100 km south of port Sudan on a bay protected from the coral reefs and used also by Sambook owners.

Recommendations :

- 1- modernization of tools and machinery in the sea ports
- 2- modernization of the administration so that the process of loading and unloading becomes more feasible.
- 3- Attraction of ships and boats through the abovementioned facilities and maintaining good stay and abundance of fresh water and necessary provision of alimentation.
- 4- Provision of a stable navigation line (boats) between Egypt and Sudan, and also between Saudi Arabia and Sudan and the rest of the countries that overlook the Red Sea.
- 5- Grant the necessary facilities to travellers specially the pilgrims(Hajj and Omra), either for comers form Sudan

or the land-locked countries like Tchad, Niger, Central Africa, Nigeria etc.

- 6- Encouraging agricultural products in the hinterland in Sudan or in Africa, together with the mineral projects to encourage exports and imports in the two main ports of Sudan(port Sudan Sawakin).
- 7- Modernizing roads by as phalting them and provide them with road marks and signals, and also railways, and by giving them the necessary facilities for the transportation of commodities and individuals, knowing that the two means are important in the sea transportation in port Sudan and Swakin.

Transportation through the pipelines

These pip-lines were constructed in 1976 after the rise of the problems of the refined petrol between port Sudan and Khartoum, to decrease the pressure on the railways. The pumping began in September 1977 in a length of 815 km.

The planned capacity in the time of construction was 600 tons per year but it only reached that capacity in the middle of 1981. Hence efforts began to raise the capacity to one million tons per year. The line carries refined products only to Khartoum. As for the other parts of Sudan these products were carried by railway tankers or by trucks prepared for that purpose.

As for the Sudanese petroleum, the exportation of the crude oil began 1999, and it achieved a commercial super abundance for the first time in the last quarter of 1999. The standard production of petroleum is 220 thousands barrels per day.. 70% exported and the rest of it goes to the refinery and hence used for local consumption. The production of petrol helped in reviving the industry and raised the (GDP) to 5% in 2002.

The air transport

The air transport began in Sudan in 1947 as a governmental activity and then it turned to be commercial during the sixties. The number of planes in 1991 was only 13, flying in local and regional

skies with the exception of Juba and Khartoum airports, the airports are closed in the rainy season for some time. Efforts began in 1991 for asphaltting the runways of the airports. Two other airports were initiated in port Sudan and Wau and some improvement took place in the two airports of Malakal and Juba. These four airports perform half of the local transport by air flights. The total number of air ports is 61 where 12 airports out of these have asphalted runways, 49 air ports are not asphalted. As for the special landing strips they are only useful in some seasons and they have no facilities other than fuel. They are used only for the official services. These are numerous and reached up to 5153 in 2000, and there are airports for the helicopters.

Recommendation

- 1- Make use of the boot system for building new airports and distribute them in the biggest possible distances because of the vast surface of the Sudan and the difficult natural conditions, esp. the rains, the highland regions and the seasons of the floods.
- 2- Modernization of the administrative procedures and the facilities in the airports.
- 3- The modernization of the government air fleet by modern aero-planes and modern tools and services.
- 4- Opening the airspace for foreign companies to function and fly in the air transport inside Sudan and abroad, and this will be linked with the development of agricultural and industrial projects in many parts of Sudan.
- 5- The air transport will complete the circle of the other above mentioned means of transportation, especially in places where it is difficult for the railways and roads or the river navigation to reach or function.

Communications

The local communication in Sudan is limited and its system suffers scarcity and poor maintenance. In 1991 there were only 73,000 telephones, where only one third of it was situated in Khartoum. The telex was present only in Khartoum. There is an artificial satellite

system to which belongs 14 land stations, and this system was provided with a united axis cable (two connections) and microwave net (short wave) and by this it made the linkage between the telephone services and the broadcasting in the country.

Some other radio stations are established comprising the peak (C.M). In eleven towns in Khartoum, Atbra and wad Medani are television stations and broadcasting in stations Arabic for seven hours every night .

There is an estimated number of 6 million radio receivers, 250 thousand television sets in 1991 as for the international communication, it is considered as very progressive and modernized, a satellite station is situated near Khartoum, programmed to work with the international telecommunication satellite corporation(I.T.S.C.).

A second land station is connected with the Arab corporation for telecommunication net (Arab Sat) with Arab unity telecommunication(pan-Arab Com.net work)

Arab Sat net is used in live broadcasting for television and the exchange of news, and for the education programs for the member countries of the league of Arab States in 2000, the number of telephones was raised to 400 thousand telephone lines, 2 million mobile telephones. The mobile service began in 1996.

The broadcasting radio stations the A.M= 12, the F.M = one. The short wave = one (1998). The radio sets are estimated as 7.5 millions (1997). And T.V stations =3 (1997) and the T.V sets as 3.3 millions.

The number of the internet users 56 thousands in (2002)

Recommendations

The telephone net needs maintaniance and modernization and increase of the capacity of the international net especially with Egypt.

Conclusion:

The transportation and communication net between Egypt and Sudan is in need of a powerful push in the direction of :

- 1- Enlargement and diffusion.
- 2- Modernization and renewal.
- 3- More facilities and flexibility

- 4- Issuing laws that decrease the restriction on the transport of commodities and the movement of individuals between the two countries and freedom of entry, of labour movement , of possession , between the two countries. Already the great issue of the four freedoms had been concluded recently between Egypt and Sudan.

The Sudan has great economic potentialities in agriculture, animal resources, woods, minerals etc; but what is lacking is the following :-

- 1- Capital
- 2- Technical experience
- 3- Good planning and administration
- 4- Good transport, communication and intercommunications.

In Egypt there is a big working class, both skilled and unskilled labourers. There is also relatively advanced industries and experience in the agricultural field, in mining and in digging of water wells and constructions.

Therefore the sphere is open for developmental integration in these different domains if the political will is revived and activated towards an economical integration between the two countries, built on the relative characteristics of both countries.

- Transports, communications and intercommunications are considered as the nerves of this economic integration. There is a great need for the activation of this domain by every means, according to the above mentioned recommendations.
- Every project is in need a detained feasibility study in the fields of transport and communication so that it can stand on firm and correct basis.
- The projects of transportation and communication need to function side by side with the proposed economic projects so that they can be integrated in both achievement and initiation.
- Every economic project is in need of a study to know exactly what kind of transportation is most suitable for its- roads, railways, river transport, air transport etc, so

that it can comply with the production and the economics of the project.

- The integration between Egypt and Sudan should be according to a comprehensive Arabic system so as to be a completing part to the big Arabic project and comply with the objectives of the united Arab market.

Appendix :

The ratio of roads population	Dust road	gravel
Asphated		
1000km /I million people		
1996 – 0.4	1430	3700
1600		

Rail ways in kms

Ration of transport of commodities for the local in come ton/km million dollars:
(1997) 41.113

the river transport

5,310 kms the most important distances are found in the white and Blue Niles, the (Nubia Bian river Nile) Bahr El Gabal Bahr el Gazal rivers. The river navigation had nearly stopped because of the civil war. The most important ports. Halfa, Khartoum Medani-Malakal, Kosti, Juba, Nimoli.

The Sea Ports

The most important ports	port Sudan, Sawakin
The number of ships	5, capacity more than one Thousand tons- including two (container other source = 9 ships)

Air transport

No. of airports	
With the as asphalted runways	No of un asphalted
Runways	

with different lengths for the runways

Pipe line transport in kms

Refined petroleum product
815-protsudan-kharoutm

with different lengths for the runways

crude petroleum products
1540 from the production areas to Khartoum- post Sudan.

Intercommunications:

The number of T.V. stations	The broadcasting stations	Satellite station	Main telephone lines	Mobile
3	A.M. = 12	2	400 thousand	20.000
The No. of T.V. sets = 2.4 million	F.M.=1 S.W.= 1	Atlantic+ arab -sat	4 to each 4.000 people	

Computer and internet

One personal computer for Every one thousand people.
2.49(1999)

internet users(in thousands)

5(1999)

Note.

These figures change rapidly as a result of the continuous technical changes and the flow and rapidity of information. Also as a result of the economic development in Sudan on both of the governmental and the individual sides.

Appendix (2)

The net of constructed roads and bridges and those under construction:

The constructed Rods	the roads under construction
Shendi – Atbra- 140 km	Bara – El Obied – 56 km
Medani – AL Mangil 57 km	El Obied –El Khoay 103 km
Omdurman-Algabolab- 310 km	Doka-AL Gallabat – 56 km
Rabak- Al Gabalain – 69 km	Khashm aLgirba-Half el Gadida – 47 km
Hadaya – Um Oudam- 30 km	Shirian Al shimal- 591 km
El obied – El Khoay- 103 km	Al Salam road
El agab – El Badil 26 km	El Jabalin- Ar Rank 97km
	Al Rank-Falag – 340 km
	Al Managil – Al Gurashi 37 km
	El Damar – Atbara – 11 km

Bridge under Construction

- Nahr atbara bridge
- Khor Dalib/ Tariq E salam’Bari – Zalingi – al Ginaina bridge
- Nahr atbara bridge

The Bridges with constructed construction

- Brige Gabalain-abu Hraz – Um Khadra
- El Salam Road
- Bridge Wau- Raja – B.El Gazal Proice,
- Bridge Kaza-entrance of Ginaina town.

Bridges under construction:

- Bridge Nahr atbara- lenth 440 metres.
- Bridge Khar Dalub-El Salam
- Bridge road to zalengi/Ginaina

Projects with complete studies and planned engineering

- 1- port Sudan- (ou sif) road length 218 km
- 2- 24 gurashi- Abu Gibeira 54 km
- 3- Atbara- Haya 275 km
- 4- Zalengi – Al Gineina – Adrs 175 km
- 5- Um rawaba – Al Abbassia Abu Gibaiha 191 km
- 6- Al Khowai – Al Nuhud 103 km
- 7- AlGadarif – Doka 90 km
- 8- Wadi Halfa Dugula- Merawi Atbara
- 9- Al Nuhud- Al Dieain Niyala 436 km
- 10-Al Rank- Malakal 340 km
- 11-Sawakin – Toker 104 km
- 12-Gebel Marra – 200 km
- 13-Al Dalang – Habila 42 km
- 14-Wad Al Huri – Sam sam 77 km
- 15-Al Nuhud – Um Kaddada 221 km
- 16-Wad El Noyal – Algarabin
 - Dungola 55 km bridge – Dongola
 - El Fashir – Al Gineina 318 km
 - Singa – Dinder – AL Khiari 328 km
 - Niyla – Buram 153 km
 - El-Fashir – al Iwenat – Alkafra 990 km
 - Toker – Ageig- Gurara 150.

Bidding for construction through the boot system

- 1- Roads : port Sudan Ouseif 218 km
- 2- Alingaz west section al nuhud- Umkaddah 221 km
- 3- Singa- el Dindir- Elgadarif 20 km

Projects of rehabilitation finance and control by the National corporation for Roads and Bridges

- 1- Roads, Singa – Al Damazin 53 km
- 2- Medani – Sennar for rehabilitation 30 km
- 3- Jebel awlia El Diweim- Rabak (rehabilitated) 90 km
- 4- Niyala – Kas – Zalengi 50 km.
- 5- Dibaibat – Dalang – Kadugli

Projects roads and bridges with completed feasibility study

Road :

- Fadlab-Bourga Mugrat – 200 km
- Al Damazin- Alingasa 90 km
- Bridge : Rufaa – El Hasahisa town.
- The new Hasshisa on Sinnar bridge on the Blue Nile

Roads: Suggested for feasibility study

- Malakal – Bor 400km
- Talody – Alliry – Malakal 246 km
- Khartoum North Kassala (across the Butana) 400 km
- Omdurman- Bara 280 km.
- El Gadarif – AL Fashaga 110 km
- El-Damazin – El Siraio – 110 km
- Medani – El Hosh 100 km
- Al Rank – AL Maban – Alkurmuk 140 km
- Port sudan- Abu Hamad – Dungula 850 km
- Singa – AL Russieris Barda 297 km
- Kasala-Sabdarat – Tassanay 60 km.