

**Project for
combating
Schistosomiasis
& Neglected
tropical disease
in Sudan
(2014-2018)**

March 29

2015

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**Federal ministry of
health-Sudan**

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Project Concept Paper

1. Project Background

Introduction of Sudan and Schistosomiasis

Sudan is a vast country with a population of about 34.4 million (National census, 2010), extends in an area of 1.8 million square kilometers. The country presents a diversity of ecosystems with hundreds of ethnic groups. The climate is dry hot in the north and wet hot in the south west. Agriculture dominates Sudan's economy; it contributes to over 40% of the Growth Domestic Product (GDP). Several dams were built for conservation and supply of water into canalization systems. Large irrigation schemes were established along the three rivers (White , Blue and River Nile). The main irrigation schemes include Gezira, Rahad, Gunaid, Girba, Kenana, Sinnar, New Halfa schemes (Amin and Satti, 1973). The development of such irrigation schemes has led to great modifications in the environment which favour the spread of vector borne diseases including schistosomiasis (Omer *et al.* 1978). Archibald (1933) thought that schistosomiasis in the Sudan started as far back as 2600 B.C. and had been brought by Ancient Egyptian raids and trade missions. Christopherson (1919) stated that bilharziasis is endemic in all provinces of the Sudan except the Red Sea Province. The history of schistosomiasis in the Sudan before 1925 was not well documented and the information available is fragmentary and at times conflicting.

A new era in the history of schistosomiasis in the Sudan began in 1925 with building of the Sinnar Dam on the Blue Nile and opening of the Gezira Irrigation Scheme. The beginning of disease control started in Gezira in early 1950s Sharaf el Din and El Nagar (1955), El Nagar (1958) recommended the use copper sulfate as a molluscicide, and antimony for treatment of infected people. In spite of that, prevalence of schistosomiasis increased steadily and by the 1970s prevalence rates of up to 70% were reported among school children (Amin 1972, Amin and Satti 1973, Amin 1977, Amin and Fenwick 1978, Fenwick et al. 1982).

World Bank Report (1997) estimated the number of infected persons as 5 million and 80% of population is vulnerable to harbor the infection. Schistosomiasis disease present in all states of Sudan, with different endemicity, given a total roughly estimated

prevalence of 18%. Schistosomiasis is the most important health problem among several endemic NTDs.

Previous Efforts of Schistosomiasis Control in Sudan

1) In 1979 the Blue Nile Health Project (BNHP) was established to control malaria, schistosomiasis and diarrheal diseases in Gezira, Managil and Rahad Schemes, adopting a comprehensive integrated plan. The BNHP succeeded in the period between 1979-1990 to reduce the prevalence of schistosomiasis from 53% to less than 6% by using the 4 strategies concomitantly, but unfortunately the project was ended abruptly in 1990s according to its specific mandate.

2) In 2000 a National Control Programme was established at Federal Ministry of Health as a vertical programme. The programme started its work in Khartoum State then extended to the other states by the mid of 2012. A coordinator was appointed to each state to be in charge of the control activities in his/her state.

The activities implemented by the National Programme and states coordinators from 2005 up 2012, in a form of epidemiological surveys followed by chemotherapy, it covered most of the states, but there are some states not yet covered including East, Middle, West Darfur and Red sea states. The prevalence was estimated to be between 3.5% in Khartoum and 70% in North Kordofan state, but within all states, there are some foci with very high prevalence rates, reaching in some states to more than 90%.

3) In 2012 the government of Sudan given a high priority to combat the disease, and the issue of schistosomiasis has been discussed at the council of ministers, and the council endorsed the plan of the programme for the year 2013 with the total budget of 1.5 million dollars, as a preliminary step to eliminate the disease.

4) Egyptian government in 2010 started to donate annual assistance in a form of equipments and drugs to combat the disease, till now covered 3 states (Gazira, Kassala and Sinnar states), these aides assisted in reduction of prevalence in Kassala state from 28 % to 15% and in Gazira from 18% to less than 10%.

5) WHO gave a support to develop a comprehensive 5 years plan by nomination of National expert to work with program team to develop the plan, now the first draft is ready for endorsement.

6) In 2012 we received already 4 million tablets of albendazole 400 mg from SKG

Company through WHO. This year also WHO coordinates a donation of 25 million of praziquantel 600 mg by sending a WHO request form to Merck Medical Company, and now we received 6000000 tablets and now distributed in 5 states (Gezira, Gadarif, North Kordofan, Kassala and Khartoum).

7) The Korean International Cooperation Agency (KOICA), took an initiative for combating schistosomiasis in White Nile state since 2009.

KOICA Project in White Nile State

The KOICA project for combating schistosomiasis in Sudan started after signing an agreement with the Federal Ministry of Health (FMOH) on 20/10/2008. The project has accomplished two-phased programs, which started at Aljabalain locality, by supplying two cars, laboratory equipments, medicines, and health education materials. The first dispatch of Korean experts' team reached Sudan in October 2009 with medical personnel & a Korean manager for the project.

The first phase succeeded in reducing schistosomiasis prevalence from 28.5% to 13.5% in last evaluation survey in Aljabalain locality, plus provision of safe drinking water to one village (Alhidaib village). The project succeeded in raising the awareness of school children in particular, and community populations in general, towards the seriousness of schistosomiasis & its preventive measures and this is the cornerstone in combating the disease. The second phase started in Elsalam locality, in addition to maintain the activities in Aljabalain locality, in this phase KOICA provided a car, health education materials, and Package of equipments & medicines. The activities of the second phase started by conduction of epidemiological surveys to know the prevalence of schistosomiasis in Elsalam locality which followed by mass chemotherapy, clean water supply and health education campaigns with distribution of health education materials to all school children and other populations. The second evaluation surveys were conducted in Aljabalain locality, which showed massive reduction in the prevalence, in some units approached the level of elimination (e.g. Al Jazeera Aba 0.8%), then followed by chemotherapy, and health education campaigns with distribution of health education materials. The prevalence was 34.9% before the project and decreased to 5.6% after chemotherapy.

As a continuation to detect the complication of the disease, ultrasonography has been

conducted by Korean expert to monitor morbidity, select cases, and the diseased persons with complications sent to specialized hospitals. A total of 1,884 students or community people were monitored of the disease morbidity and individual health care by ultrasound scanning. Total 17% and 4.4% of the subjects demonstrated morbidity of the urinary bladder and the liver respectively.

The 2 KOICA projects supplied 3.55 million tablets of praziquantel, treated 190,123 students and 176,988 community people, and educated 237,581 students and 140,214 community people.

At the first phase, 3 persons were invited to Republic of Korea in study tour for 2 weeks, and in the second phases, eight persons from different states including 2 persons from White Nile state, visited Korea for 2 weeks, from 16 -30 June 2012. The education candidates were very impressed about the program, and knowledge they received. Provision of water supply was appointed to five villages in the second phase plus one in the first phase given as a good example for the importance of clean drinking water supply to community population.

Since these efforts have been augmented with collaborative work between government of Sudan and other stakeholders (mainly Korean partner in White Nile state) it will lead to effective reduction of the burden of schistosomiasis in the country more systematically. The capacity building of the Sudanese partners by the first and second KOICA project in White Nile state are summarized as described below.

- 1) Establishing a Schistosomiasis Control Center in White Nile: health education to teachers, community people and school children and running a diagnosis laboratory
- 2) Education of Manpower: health administrators, field workers, laboratory technicians
- 3) Mass Chemotherapy with Praziquantel: schools and communities, reduction of prevalence and morbidity
- 4) National Guideline for Schistosomiasis Control
- 5) Construction and maintenance of clean water system
- 6) Perception of Significance of NTD Control by Community: 1,650 signed petition

Still, Schistosomiasis is Highly Endemic in Sudan.

In Sudan today there are 184 localities. In most of them the main water sources are

rains which collected in large and small hafirs (rain water collections), and these water collections are the main water sources for agricultural schemes. Schistosomiasis is endemic in all villages around these collections of water and *S. haematobium* is the only known species in the state. The results of the survey in four localities showed high prevalence, between 60-92% in 2010.

Schistosomiasis is highly prevalent in Sudan, and 80% of populations are at risk of getting the disease. Although great achievements obtained during last 4 years at White Nile State by KOICA project, it has high possibility of re-infection of schistosoma due to poor environment and sanitation. To consolidate the achievements of the KOICA project, a sustainable control activity in the future should be adopted in White Nile State both, chemotherapy and environmental modification as well as continued health education and propaganda campaign to prevent contaminated water contact. Also the other States have absolutely high prevalence of schistosomiasis. According to the survey results of schistosomiasis, the prevalence of each States were from 3.5% to 92%, (Table 1). Thus, to solve these problems systematically, nation-wide control programs are needed. .

The goal of this project is to contribute to the promotion of maternal and child health through nationwide NTD project in Sudan and to strengthen the capacity building of NTD control.

The project will be composed of three major categories:

- (a) Preventing and curing NTD through integrated approach in Sudan
- (b) Establishing nationwide NTD surveillance and control system in Sudan
- (c) Strengthening the capacity building of NTD control for health sector personnel

Relevant activities will be carried out in the primary schools and villages to ensure the sustainability and ownership of the project. This project will be implemented at White Nile and North Kordofan States for first two years and the expanded into nation-wide program for latter two years.

Table. 1. Summary of schistosomiasis prevalence by State

States	Prevalence	Survey year	Notice
Khartoum	3.50%	2011	In some foci up to 14%
Geziera	11.60%	2011	In some foci up to 46%
Kassala	15%	2011	In some foci up to 38%
River Nile	9%	2011	In some foci up to 50%
North Kordofan	70%	2011	In some foci up to 92%
White Nile	14%	2011	In some foci up to 54%
Gedaref	14%	2013	Some localities not surveyed yet
Blue Nile	36%	2010	Need another survey
West kordofan	30%	2011	In some foci up to 64%
South Kordofan	23%	2009	Need another survey
Sennar	32%	2009	Need another survey
Northern	3%.	?	Need another survey
North Darfur State	15%	?	Only from some foci
South Darfur	26%	?	Partially surveyed
West Darfur	-	-	Not surveyed yet
East Darfur	-	-	Not surveyed yet
Central Darfur	-	-	Not surveyed yet
Red Sea	-	-	Not surveyed yet

2. Project Objective (Short Term and Long Term)

The goal of this project is to contribute to the promotion of maternal and child health through nationwide NTD project in Sudan and to strengthen the capacity building of NTD control.

Short Term Objectives

- 1) Preventing and curing NTD through integrated approach at White Nile and North Kordofan States in Sudan such as mass chemotherapy, establishing the clean water-supply system, health education, and so on.
- 2) Establishing the infrastructure for nationwide NTD surveillance and control system at White Nile State in Sudan such as maintaining the reference laboratory (lab), setting up nationwide NTD survey panel
- 3) Capacity building of health sector personnel for supporting nationwide NTD surveillance and control system

Long Term Objectives

- 1) Strengthening health system of Ministry of Health for empowering the capacity of nationwide NTD surveillance and control.
- 2) Establishing expert association for enabling nationwide survey, analysis and policy formulation (KOINCOS Board and Network).
- 3) Conducting nationwide survey for devising strategic plan combating NTD in Sudan.
- 4) Realization of UN MDGs by the successful implementation of international ODA project.

3. Relevance with the National Development Plan of the Host Country

The National Control Programme of Schistosomiasis and Soil-transmitted Helminthiasis was established by the Federal Ministry of Health as a vertical programme in 2000. The programme started its work in Khartoum State then extended to the other states by the mid of 2012. A coordinator was appointed to each state to be in charge of the control activities in his/her state. The national program was boosted by the KOICA project since 2009. The activities implemented by the National Programme and states coordinators from 2005 up 2012, in a form of epidemiological surveys

followed by chemotherapy, it covered most of the states, but there are some states not yet covered including East, Middle, West Darfur, Blue Nile, South Kordofan and Red sea states.

National Health Sector Strategy, 2012-16

1) **The vision:** Building a nation with healthy individuals, families and communities with emphasis on the health needs of the poor, underserved, disadvantaged and vulnerable populations, and that health is in all policies of the State.

2) **Priorities for national health sector strategy:** Within this broad vision, the health goals are based on the health challenges facing the country and Sudan's existing commitments. The MDGs relating to health is top priority of health policies in Federal Ministry of Health, Sudan. They contain the followings such as MDG 1 (eradicate extreme poverty and hunger), MDG 4 (reduce child mortality), MDG 5 (improve maternal health), MDG 6 (combat HIV/AIDS, malaria and other diseases) and MDG 8 (develop a Global Partnership for Development)

It is necessary to approach the problem solving more systematically. The experience produced by the ongoing KOICA project in White Nile State gave Sudanese authorities confidence how to approach to schistosomiasis control in Sudan. The approach should be comprehensive and sustainable. Also disease status must be correct and updated. There are several overseas cooperation programs for schistosomiasis control and domestic funding of water filtering construction in states. When those programs are combined with the KOICA initiative, the control of schistosomiasis will be synergistic and effective.

National 5 years strategic plan is targeted to reduce the Prevalance of Schistosomiasis to less than 5%.

4. Project Description

- 1) Title: KOICA Initiative for NTD Control in Sudan (KOINCOS)
- 2) Target site (location): 18 states of Sudan
- 3) Target Group:

The project will start its work in 8 States, and then extend to the other states for status survey by Sudanese. At first year, the target groups are primary school children and their villages' residents in White Nile, North Kordofan, Sinnar, Blue Nile, Gezira, kassala and Gedarif. About 13 million school children and related

residents will be benefited by this project.

From 2nd year, the project site will be extended to whole other States in Sudan and will be implemented nationwide survey. So the target groups are basically primary school children for status survey of Scistosomiasis and other NTDs.

4) Outputs:

- Empowered health system of Ministry of Health for nationwide NTD surveillance and control
- Organizing and running expert association for enabling nationwide survey, analysis and policy formulation (KOINCOS Board and Network).
- Nationwide survey reports for devising strategic plan combating NTD in Sudan.
- Building up capacity of MOH officials and experts.
- Publication of key findings and research implications for supporting timely policy formulation.
- Acceleration of NTD elimination in Sudan through evidence-based implementation.
- Realization of UN MDGs by international ODA project.

5) Inputs:

The project will start at White Nile and North Kordofan States first, and then extend to the other whole States for status survey by statistical sampling. KOICA will supply budgets for the whole implementation activities as followings;

- Dispatch of Korean PM and experts.
- Provision of cars, drugs and lab equipments.
- Maintain the lab by hiring manpower.
- Field survey and drug delivery.
- Education and publicity to school children and residents.
- Construction of clean water-supply facility.
- Invitation of Sudanese experts.
- Monitoring and evaluation of the project.
- Operation of KOISCOS Board and Network.
-

5. Estimated Project Cost

The estimated budget for implementation activities, management and evaluation of this project is estimated at \$ 19,292,400 for 4 years totally. The KOICA shall provide the budget aid, and the Sudanese government shall support appropriate amount of budget to cover the counterpart expense required for fulfilling water supply system.

6. Project Sustainability

In highly endemic countries such as Sudan, schistosomiasis control programs require intensive mass treatment campaigns over several years to reduce prevalence and intensity of infection. We suggested some factor for achieving sustainability of schistosomiasis eradication in Sudan as followings:

1) Routine and regular treatment of school-aged children

After this intensive treatment, long-term control of morbidity may be achieved by routine and regular treatment of school-aged children, at intervals determined by prevalence and intensity of infection as determined by regular monitoring. Sustainability will depend on securing resources for implementation to continue uninterrupted for 3-5 years, which has been estimated at US\$0.50 per person to be treated per year. During the maintaining the sustainability, Sudan should then each have in place a Ministry of Health budget and a Ministry of Education budget for diseases of poverty and school health, respectively, utilizing funds from the range of available resources: government budgets, pooled donor contributions (basket of currencies), bilateral and international agencies.

2) Preventive measures focusing on clean water, adequate sanitation and health education

In most endemic areas, in order to achieve long-term sustainable schistosomiasis control, it is necessary to introduce other preventive measures focusing on clean water, adequate sanitation and health education to complement chemotherapy. Governments of individual states have their own program to facilitate clean water facilities in underserved villages, which are supported by their domestic state budget. Those clean water programs may be coordinated with the KOISCOS. The state government should be encouraged to keep their clean water programs.

3) Formulation of a sustainable surveillance and control system

The onset of re-emergence was commonly signaled by the occurrence of acute infections. Therefore, environmental and sociopolitical factors play an important role in re-emergence. To enforce the schistosomiasis surveillance of regional epidemiology, notification of schistosomiasis has been mandatory. This measure is of particular importance as it requires all health facilities (in the state or private sector) to report diagnosed cases of schistosomiasis.

4) Establishment self-operating nationwide schistosomiasis eradication system

The present KOISCOS will organize the national network to do national status surveys and to implement mass chemotherapy. The network is organized by trained experts from all states and plays the central role of the control activity. The network may last and lead the national control program focusing on school children after the KOISCOS ends.

5) Establishment of the KOISCOS Board and Network

To ensure the successful nationwide schistosomiasis control programs, the implementation should be supported by the political authority, secure funding, appropriate knowledge, and well-organized system. The KOISCOS Board is organized by Director of Federal Ministry of Health, Congressmen, WHO experts, Korean experts, and Sudanese experts. The Board should decide basic strategy of KOISCOS program, and prepare its own sustainable roadmap. The Board should run the KOISCOS Network to implement the activity, by organizing the 14 States in Sudan. The Network is an acting system of schistosomiasis control in Sudan by communicating and coordinating State Governments and Federal Ministry of Health.

6) Enact the law or regulations related to parasite control

The KOISCOS program will encourage enacting the law for NTD Eradication Act, which supports the National NTD Control (Eradication) programs and secures domestic funding.

7) Active international cooperation (partnerships)

The international cooperation should be one of the important boosting factors to solve the public health problems in Sudan. The KOISCOS Board and the Sudanese Government should invite foreign countries or international donors such as WHO, UNICEF, World Bank, etc.

7. Project Implementing Organization

1) Name of the organization

Korean side

Korea International Cooperation Agency (KOICA)

Sudanese side

The Federal Ministry of Health of the Republic of Sudan

2) Other organizations which will be involved in the project implementation

: National Control Program for Schistosomiasis & STH, Sudan

State Ministry of Health in,

Sudan Embassy of the Republic of Korea in Sudan

WHO in Sudan

8. Undertakings of the Host Countries

The government of Sudan, in accordance with its domestic laws and regulations, take the following necessary measures for the successful implementation of the Project:

1) Administrative Measures

- Sudan government shall designate the responsible organization and personnel to prepare and coordinate the Project. In particular, the Project Manager who will work in full time for the Project is essential.
- Sudan government shall obtain from the authorities concerned all necessary approvals and consents required by laws and regulations in effect in Sudan and settle all civil complaints, litigations and legal problems arising from, or in connection with implementation of the Project.
- Sudan government shall provide information and documents necessary for implementation of the Project. Such information and documents shall be translated to or written in English.
- Sudan government shall secure and allocate assign an appropriate budget and

staff for self-reliant operation after the completion of the Project

- Sudan government should provide sufficient spaces to the Korean program manager and laboratory (including electricity, water supply) for this project without payment.

A. Measures for Korean Program Manager in Sudan

- One Korean PM for this project will be stay full time at the project area in Sudan from 2014 to 2018.
- Ensure the safety of Korean PM and provide them with medical assistance in cases of emergency.
- Grant them privileges, exemptions and benefits no less favorable than those granted to the experts of other countries performing similar missions.
- Provide exemptions from taxes, duties, levies and other charges imposed under Sudan laws and regulations in respect to the equipment, material, and supplies brought by the Korean PM into the territory of Sudan.
- Issue necessary entry and exit visas, travel documents, etc. required for their stay in Sudan.
- Issue necessary permits and authorizations required for carrying out the Project.
- Protect the Korean PM from any claim against them resulting from, occurring in the course of, or otherwise connected with, the performance of the tasks assigned to them in Sudan except for those arising from the willful misconduct or gross negligence on their part.
- Provide adequate house including electricity, water supply for Korea PM without payment.
- Complete preparatory work, including clean-up of the site and the establishment of infrastructure, before staying in Sudan.

B. Measures for laboratory in Sudan

- Provide sufficient spaces and facilities at the project site (including electricity, water supply, and so on) without payment.
- Complete preparatory work, including clean-up of the site and the establishment of infrastructure, before delivery and installation of equipment and materials to the site.

C. Measures for Provision of Drugs and Equipments

- Provide adequate space and facilities at the Project site for installation and storage of

equipment and materials.

- Complete preparatory work, including clean-up of the site and the establishment of infrastructure, before delivery and installation of equipment and materials to the site.
- Provide prompt customs clearance and exemption from harbor dues, import duties, and other taxes and public charges.
- Ensure proper storage, operation, maintenance, and repair of the provided equipment and materials.
- Bear the costs of storage, operation, maintenance, and repair of the provided equipment and materials.
- Can use the equipment and materials granted by the Korean government exclusively for the Project.

D. Measures for Field Survey and Drug Delivery of the Project Areas

- Provide necessary support required to manage the project areas including field survey, laboratory works and required sampling data in project area, etc.
- provide sufficiently well-trained persons for this project during the field survey and distribution of drug

E. Measures for Education and Publicity to School Children and Residents

- Participate in designing of the education program, selecting trainees, conducting education
- Ensure that the trained health workers will work as speakers during education
- Ensure that all school children can participate in the education session.
- Ensure that the teachers will participate in the training program.
- Provide sufficient information of schistosomiasis in Sudan

F. Measures for clean water-supply facilities in the pilot areas

- Provide sizable land necessary for the construction of the water facilities
- Make necessary arrangements with central government and related agencies to issue permits and authorizations required to carry out the construction work.
- Bear the cost of obtaining all permits and authorizations necessary for the construction work.
- Provide exemption from taxes imposed under the Sudan laws and regulations
- Provide electricity, water supply, sewage, drainage, fence, access to telephone lines and to the internet, as well as other necessary utilities in usable condition, to the

construction site.

- Conduct preparatory work prior to the commencement of construction.
- Provide reference drawings and other relevant documents that may be necessary for the construction work.
- Cooperate in the selection of local contractors for the construction work at the request of KOICA.
- Ensure all administrative procedures, from basic designs to issuance of permits and authorizations that are necessary for the completion of the project.
- Ensure supervision and inspection of this public work.

G. Measures for Korean Experts

- Ensure the safety of Korean Experts and provide them with medical assistance in cases of emergency.
- Grant them privileges, exemptions and benefits no less favorable than those granted to the experts of other countries performing similar missions.
- Provide exemptions from taxes, duties, levies and other charges imposed under Sudan laws and regulations in respect to the equipment, material, and supplies brought by the Korean Experts into the territory of Sudan.
- Provide necessary experts and assistance personnel
- Issue necessary entry and exit visas, travel documents, etc. required for their stay in Sudan.
- Issue necessary permits and authorizations required for carrying out the Project.
- Protect the Korean personnel from any claim against them resulting from, occurring in the course of, or otherwise connected with, the performance of the tasks assigned to them in Sudan except for those arising from the willful misconduct or gross negligence on their part.

H. Measures for Sudan Expert Invitation

- Sudan Government shall nominate, two month in advance of commencement.
- Sudan Government shall ensure that the nominees will be working as staff for the Project, and will be available for employment in connection with the Project after their visiting in Korea.
- Nominees have sufficient knowledge of English and work as full-time staffs at project areas, professional institutions and other relevant organizations or employed in

connection with the Project after their visiting in Korea.

9. Assistance of Other Countries (including NGOs) or International Organizations in the Related fields or sector:

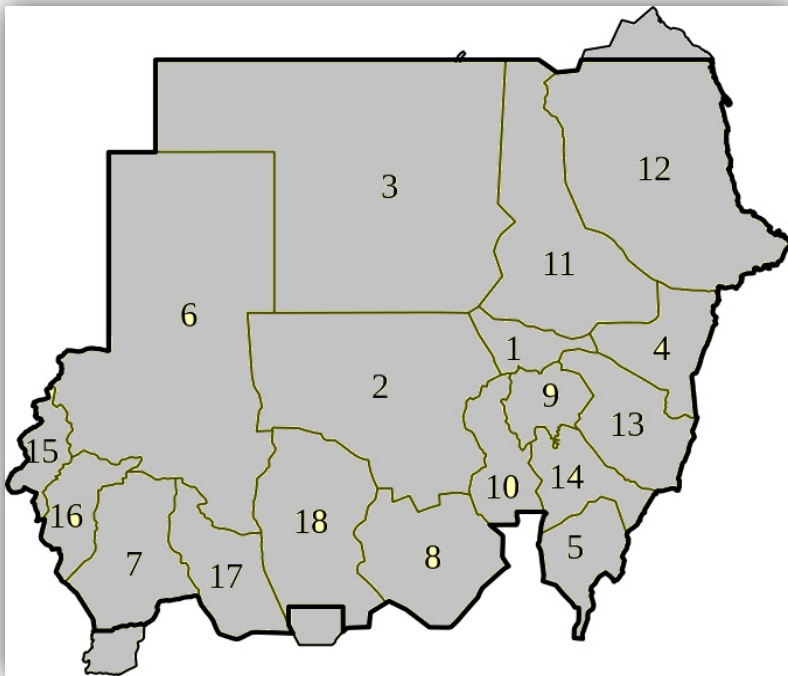
WHO in Sudan : The WHO Representative's Office in Sudan supports the Government and health authorities at central and local level in strengthening health services, addressing public health issues and supporting and promoting research for health.

WHO Sudan is focusing its support to the Government of Sudan through the following main programmes: 1) Communicable disease surveillance and response, 2) Control of neglected tropical diseases, 3) Emergency preparedness and humanitarian action, 4) Expanded Programme on Immunization, 5) Health protection, promotion and community development, 6) Health systems and services development, 7) HIV/AIDS prevention and control 8) Malaria control and elimination, 9) Polio Eradication Initiative, and 10) Stop TB.

Among the WHO programs in Sudan, KOICA team will participate the NTD control program. In Sudan, WHO has been supporting the Federal Ministry of Health in its efforts to fight NTD such as Leishmaniasis, schistosomiasis, onchocerciasis, trachoma, guinea worm disease, lymphatic filariasis and mycetoma.

10. Attachments

1) Project Location Map



Political map of Republic of Sudan showing 18 states

2) Project Work Plan (tentative)

Categories	Items	Description	2015				2016				2017				
			1/4	2/4	3/4	4/4	1/4	2/4	3/4	4/4	1/4	2/4	3/4	4/4	
Preventing and curing NTD through integrated approach	Management of laboratory	Dispatch of expertise													
		Employment of Sudanese staffs													
		Management of the laboratory in White Nile state													
	Provision of materials	Provision of equipment, supplies and drugs													
		Field survey & treatment	Field survey targeting students												
	Treatment with PZQ														
	Health education														
		Health education for students and residents													
		Health education training for teachers													
	Water supply	Construction of clean water-supply facilities													
Establishing nationwide NTD surveillance and control system	Monitoring and evaluation	Dispatch of Korean experts and working level staffs to Sudan													
		Monitoring and evaluation													
	Management	Workshop and meeting													
		KOINCOS Board													
	Others														
Strengthening the capacity building of NTD control	Capacity building	Invitation of Sudanese experts													
		Sudanese and Korean health personnel													