

# **GGW Restoration In Egypt**

**By**

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**Presented to**

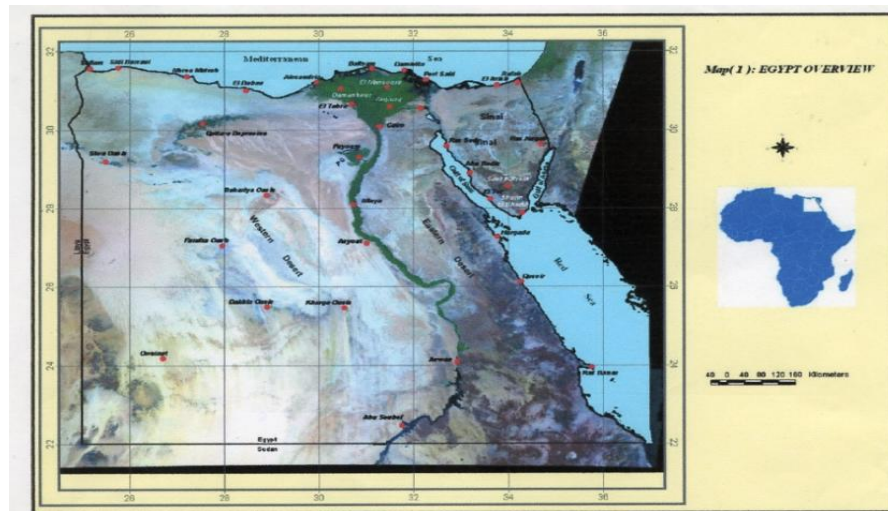
**Technical Great Green Wall & Drylands**  
**Workshop on Restoration**

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## ***I. Background and Justification:***

The Great Green Wall initiative in Africa was endorsed by the African Union Summit to be implemented by Countries from the Sahel and Sahara Region. The Desert Research Center (DRC) was endorsed as representative of Egypt. The preparatory activities were initiated by the First Regional Meeting held at the (AUC) Addis Ababa on September 2011.



(Fig. 1) Distribution of sand formation in Egypt.

Mobile dunes and sand sheets occupy vast areas (About 16%) of the total area of the Western Desert of Egypt. Sand encroachment hazards threaten the cultivated areas at the western fringes of the fertile Nile Valley throughout its extension. Investigations reported that about 1.8 million feddands (acres) were affected by sand encroachment, leading to 25-35% reduction of the average productivity rates of major crops.

## ***II. National Objectives:***

- Combating the adverse impacts of sand encroachment on the cultivated fertile areas of the Nile Valley, using models of mechanical, biological, and multiple tree rows design.
- Secure the active participation of the relevant stakeholders in monitoring, assessment and management of the project activities.
- Combat land degradation losses of productivity of the affected productive lands, enhance the income of stakeholders, create new jobs and contribute to combating poverty.

## ***III. Implemented Activities by the (DRC)***

- An integrated team representing the varied disciplines needed was formulated.
- A Letter of agreement LOA was signed with FAO depicting the needed preparatory activities to be carried out for "Stage One"
- Compilation of a comprehensive base-line data of the chosen sites, processing of previous studies, assessment of potentials and possible constraints.
- Official endorsement of local government authorities at two chosen governorates were obtained.

### *III. Implemented Activities by the (DRC) (followed)*

- Meetings were carried out with relevant stakeholders and socio- economic surveys were carried out, and local contributions secured.
- Satellite imageries of the chosen sites were aquired at varied dates to assess the rates of sand encroachment on productive lands.
- The main characteristics of the chosen sites were assessed including analysis of the available soil and water resources.
- Compilation and processing of relevant climate parameters were carried out over 40 years span.
- Average productivity rates of the prevailing cropping patterns at the chosen sites were compiled from governmental and local sources.
- "Shelter belts" and "wind breaks" designs were formulated taking into consideration; wind speed and directions, prevailing soil properties ,water qualities, and cropping pattern of the areas to be protected.
- Efficient irrigation system of the protection shelter belts were designed for the timely establishment, proper function and survival of the established tree belts



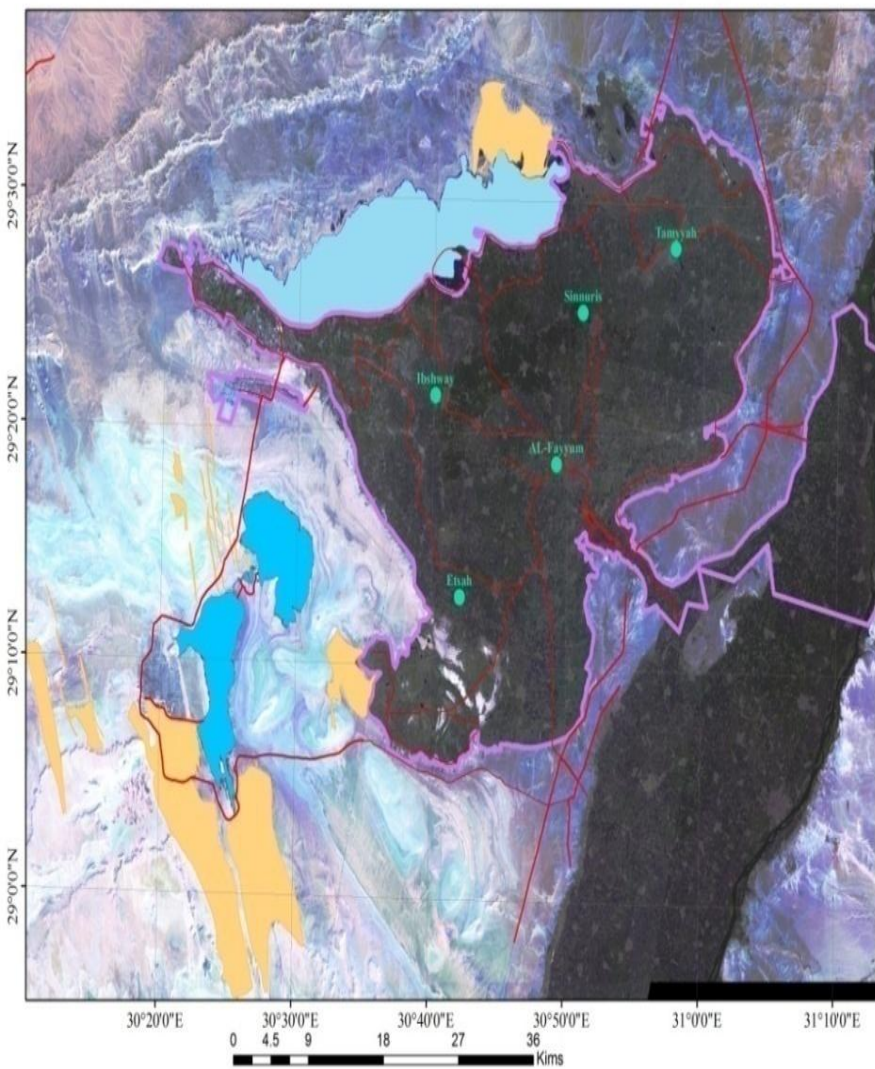
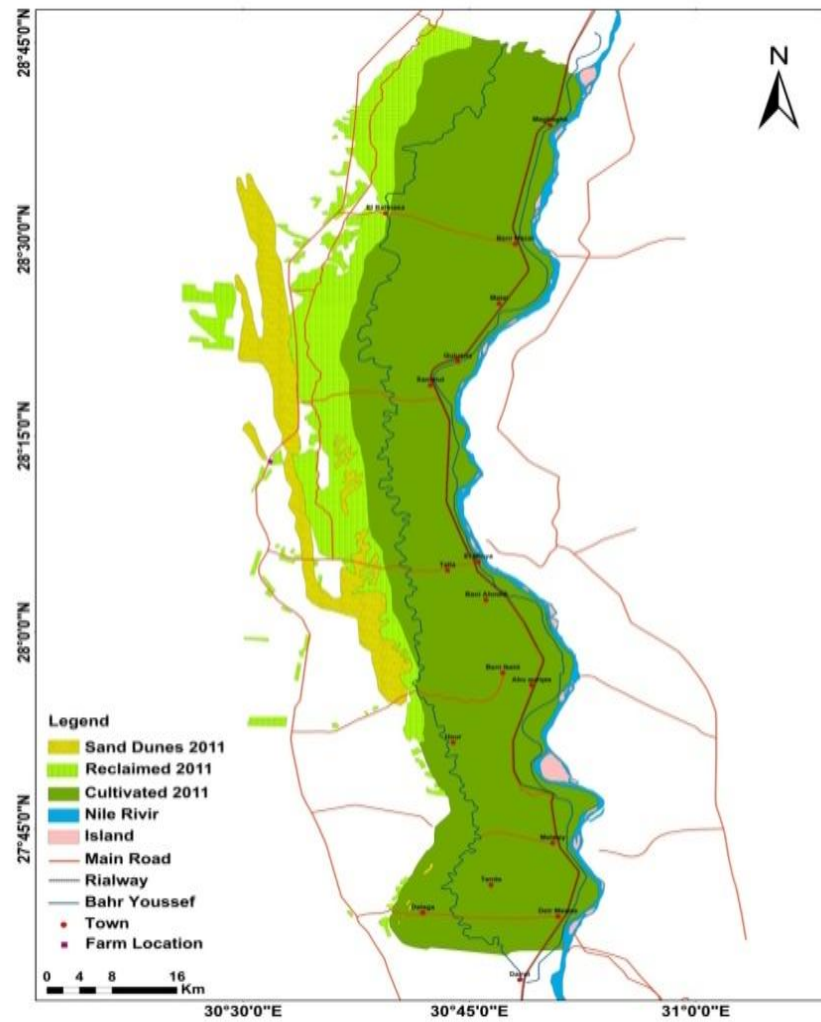


Fig. (2): TM image of El-Fayoum Governorate



(Fig. 3) Sand encroachment in Menya Governorate.

## ***IV. Formulated National Action Plan (NAP) – (Stage One)***

### ***4.1. Installation of the field equipments:***

For measurement and monitoring of sand encroachment parameters, will be carried out. The measured data will be recorded periodically in both sites and documented to assess of the efficiency of the implemented protective systems.

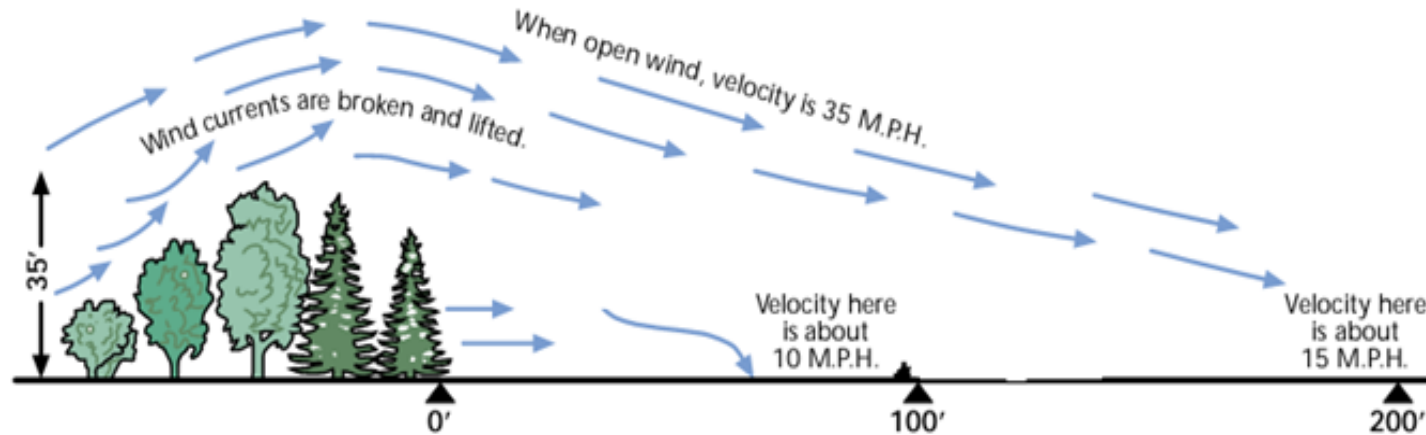
### ***4.2. Protection Systems;***

#### ***4.2.1. Wind Breaks and Shelter Belts Function***

Effective reduction of wind speed results in many benefits for the protected areas including reducing the enhanced rates of evapotranspiration, limit injuries the vegetative parts of the growing plants, curtail serious losses at flowering stage, and reduce liability to plant diseases.

The amount of wind speed reduction of the protected areas depends on the shape, height, density, width and continuity of the shelter belts facing the prevailing wind direction. Shelter belts are composed of more than two rows of trees and shrubs forming a bell-shaped configuration was proven to be the most effective shape affecting the wind profile and enhancing protection distance.

## *IV. Formulated National Action Plan (NAP) – (Stage One) (followed)*



(Fig. 4) Zones of reduced wind velocity downwind of barrier.

### *4.2.2. Efficient Irrigation of Shelter Belts:*

Irrigation is one of the most important factors influencing shelter belts establishment and survival, development vs. time.

A bubblers irrigation system was found to be more appropriate than drip emitters. Frequency of irrigation should be changed at least seasonally and follow the general ET (evapotranspiration) curve at each site.

## ***V. Field Measurements and Monitoring***

The following field measurements will be carried out based on timely and accurate methodologies; - Periodic measurement of encroaching sand materials at the sites including the areas of physical barriers, protective shelter belts and within distances of the protected cultivated areas, as well as, the non protected areas for comparison at both pilot sites. Reduction of wind velocities of the main wind directions will be measured at the established shelter belts. Rates of growth of the components of the shelter belts will be recorded. Crops productivity and its components will be recorded in the varied seasons.

## ***VI. Role of Implementing partners:***

- DRC will Provide the technical know how, equipments, provision of transplants and components of the protection systems, irrigation systems, conditions of the relevant field practices.
- Collaborate with the stakeholders to introduce non- traditional agronomic practices of innovative crops and plants proven successful under arid land and constraints, with added economic values and gains for the relevant stakeholders.
- Management meeting at the pilot sites will be arranged with all relevant partners stressing the participation of stakeholders representatives.



## *VI. Role of Implementing partners: (followed)*

- Execute all activities leading to proper assessment and monitoring of the impacts of the implemented Action Plan in the designated sites. Activities of monitoring and assessment would be carried out in collaboration, particularly, with the stakeholders and the other relevant partners.
- DRC will carry out socio-economic surveys of the status of the stakeholders by the end of each year of implemented activities to assess achieved changes.
- Compile all records, varied results, lessons learned and outcomes of the different applied activities of GGWSSI in the two pilot sites pertinent to combating land degradation.
- Prepare for training visits and programs for specialists from the other Governorates and environmental sectors suffering from sand encroachment in the varied desert locations in Egypt.
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**Thank You**

