Promoting Sustainable Desert Development as a means for reducing effects of global warming in regions suffering from scarcity in water & food production

By

Adli Bishay

Introduction

Egypt is part of Africa and the Arab world. It is expected to suffer from scarcity in water and food production resulting from population increase.

Dealing with these resource stresses, as well as expected climate changes in Egypt can be applied to other parts of Africa and the Arab world such as the Horn of Africa and the Arabian Peninsula.

Water Resources in Egypt

(billion meters cube / year)

Source	2002 /2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009
Share from Nile water	55.5	55.5	55.5	55.5	55.5	55.5	55.5
Ground Water	5	5	5.5	5.9	6.2	6.6	6.6
Treated agricultural waste	4.4	4.8	5.1	5.3	5.9	6.7	7.8
Treated municipal waste	0.7	0.8	0.9	1.1	1.3	1.55	1.8
Rain & Floods	1	1.1	1.1	1.1	1.3	1.3	1.3
Sea Water desalination	0	0	0	0.06	0.06	0.06	0.06
Total	66.6	67.2	68.1	68.96	70.26	71.71	73.06

Water Consumption

(billion meters cube / year)

Sector	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009
Agriculture	57.8	58.1	58.5	59	59.3	60	60.5
Evaporation losses	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Drinking &Domestic Uses	5.4	5.7	6.05	6.5	7.5	8.2	9
Industry	1.1	1.1	1.15	1.15	1.15	1.2	1.25
River Navigation	0.2	0.2	0.3	0.2	0.2	0.2	0.2
Total	66.6	67.2	68.1	68.95	70.25	71.7	73.05

Average Individual's share of water (past, present & future)

Year	Average Individual's share of water (m^3/year)	Change in Individual's share(%)compared to 1947
1947	2604 (plentiful water)	--
1960	1893	-27.3
1970	1713 (water sufficiency)	-34.2
1986	1138	-56.3
1996	936 (water scarcity)	-64.1
2003	860	-67
2025 (expected)	582 (water poverty)	-77.6

Food Production
Population Increase and Share of Agricultural Land

Year	Population (millions)	Area of agricultural land(m. feddans)	Individuals share (feddans)
1897	9.7	4.9	0.5
1966	33.2	6.0	0.18
1970	38.2	6.12	0.16
1990	55.0	7.20	0.13
2004	71.0	7.80	0.11
2008	78.6	8.432	0.107
2009	80.0	8.5	0.10

Bio-fuel / Ethanol

The decrease in petroleum availability in the world and its increasing prices, has prompted some countries to convert certain nutritional seeds to bio-fuel or ethanol which would result in a decrease in the export of these seeds, thus causing major problems for countries not enjoying self sufficiency.

Climate Change

As a result of the tremendous increase in burning fossil fuels, large amounts of carbon dioxide evolve to the atmosphere, which is considered one of the main causes for the climate change phenomena.

Global Warming

One of the expected results of global warming in Egypt is the sinking of parts of the Nile Delta bordering the Mediterranean, which will result in the loss of agricultural lands, as well as homes, local and industrial facilities. Accordingly, those living, planting or working on these lands have to migrate to new areas.

Potential impact of sea level rise: Nile Delta

Population: 3 800 000
Cropland (Km²): 1 800

Population: 8 100 000
Cropland (Km²): 4 500

0 60 km

Let us go to Desert !

Since the delta and the Nile valley are already overcrowded, sustainable desert development is the solution. In order to achieve this goal, it is imperative to save necessary amounts of water from our present share from the river Nile by increasing water use efficiency during irrigating and planting the delta and valley through:

Increasing Water use Efficiency

1) Decreasing water losses during conveyance and irrigation networks. 2) Changing the present flood irrigation system to more suitable techniques leading to less water use, 3) Promoting systems which would encourage farmers to use less amounts of water through the choice of suitable crops.

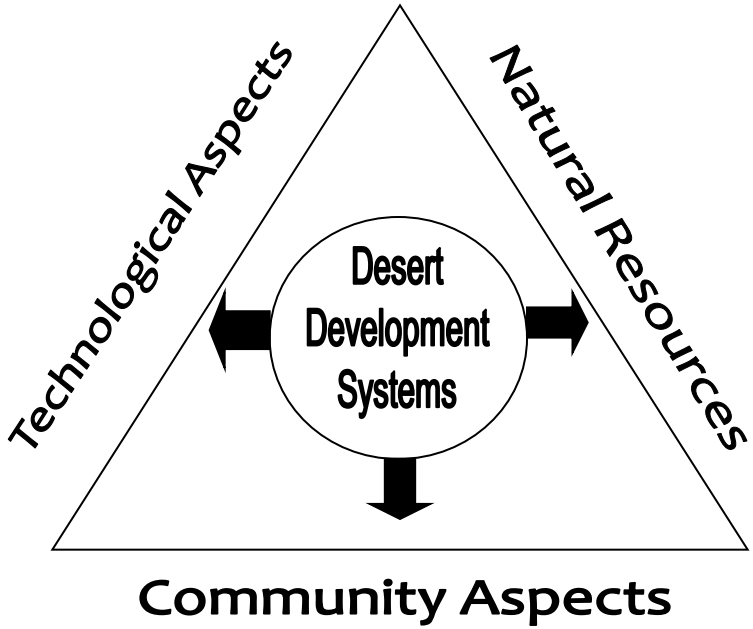
Desert Development

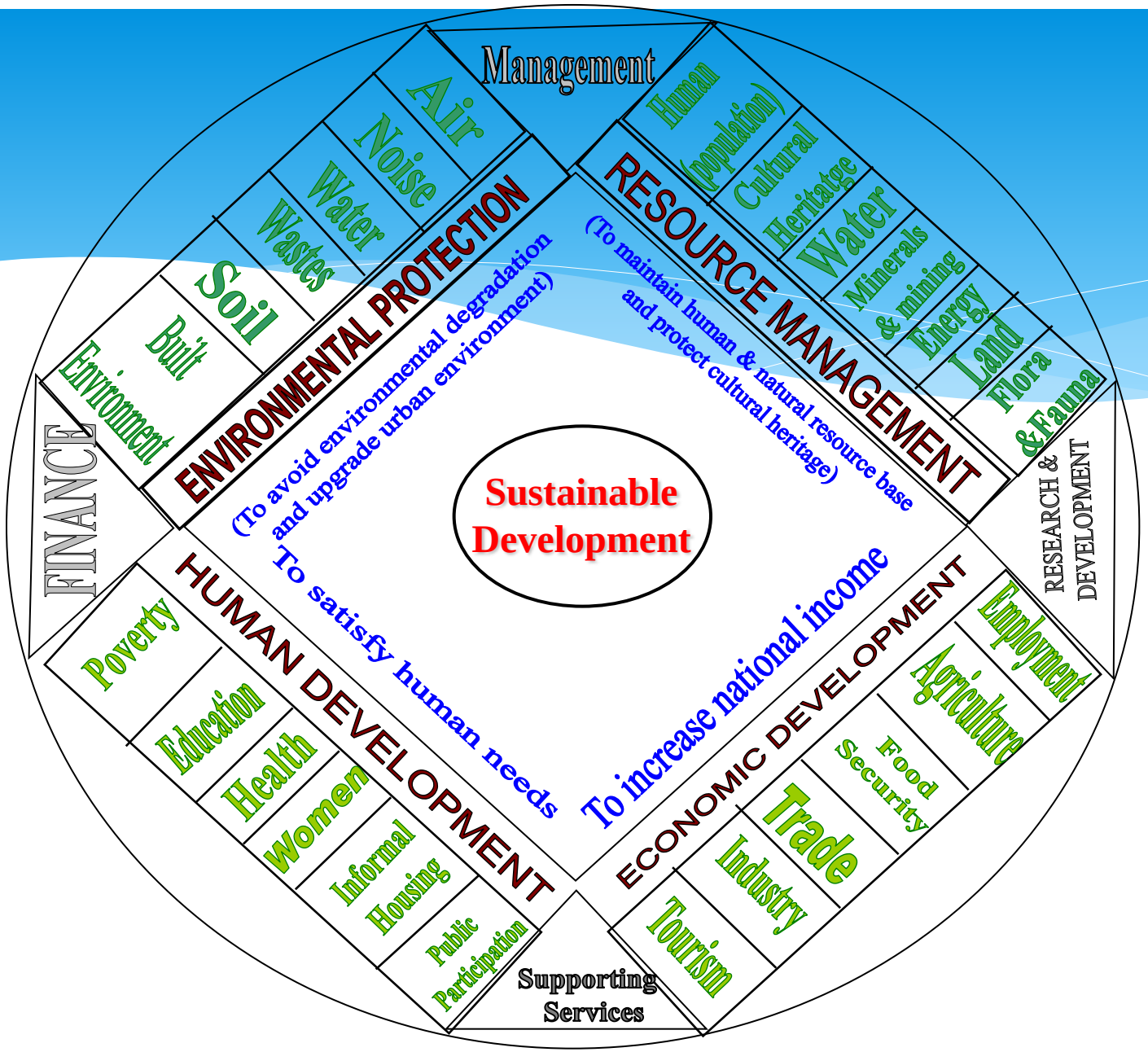
This approach advocates that a desert should be treated as a desert (no outside manure or silt added to the land). Desert development should be based on a balance of appropriate indigenous methods with modern technology. Any trials for improving productivity should be environmentally compatible with desert conditions and economically replicable under prevailing social and technical constraints.

Sustainable Desert Development

It is possible to deal with these environmental, social& economic changes through promoting sustainable development for desert lands based on adopting a systems approach integrating natural resources, technological and community aspects.

The Integrated approach





Sustainable Development In Egypt

Creation of Multipurpose Communities

A scenario is proposed for creation of viable **multipurpose communities** in the desert, involving agriculturally newly reclaimed land as well as industrial, agro- industrial and urban activities.

Advantages of Multipurpose Communities

This approach will help to solve problems caused by water scarcity, energy limitations and food deficiency as well as population increase, in addition to problems caused by rising sea water caused by global warming and problems facing graduates and small farmers previously allocated reclaimed land in the desert.

The G 20 meetings for 2011

The G20, which accounts for two thirds of the world's population, has a duty to provide concrete solutions to development problems. In November 2011, the G20 will seek to conclude the existing actions designed to tackle the root causes of the current financial crisis.

Proposed Agenda for G 20 /2011 meeting

It is proposed that it should also broaden its **agenda** to include new actions aimed at sustainably improving global stability and prosperity, with emphasis on ensuring food security in the most vulnerable countries. It is also proposed that discussions during G20 meeting in 2011 should promote innovative development financing involving private investors and donors.

Private Investors and Donors

In Egypt, private investors and donors are also encouraged to form ***holding companies*** to manage multipurpose communities created in the desert to help in solving problems of Delta migrants as well as unemployed young men & women and other small investors.

Distribution among share holders in Holding Companies

40% Private Investors & Donors

35% GOE + Delta Migrants

25 %Graduates and Small Investors in the Zone

Holding Companies

With emphasis on community participation, and technological support, ***holding companies*** will be responsible for providing necessary services, infrastructure, education, health and creating job opportunities for members of the multipurpose communities.

Holding Companies (cont.)

Holding Companies will also be responsible for proper planning and managing of financial resources and providing services such as marketing, purchasing and other needs of Delta migrants.

Supporting Sustainable Development

This will result in supporting the proposed local multipurpose communities and the area's sustainable development through promoting the use of solar, wind and biogas technologies, environmental protection & social development.

Thank You