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Flood irrigation and people's livelihood along the Gash River in the Kassala State in eastern Sudan

From January to March 2011, I had a chance to visit Kassala State, Sudan, to participate in the Capacity Development Project for Provision of Services for Basic Human Needs in Kassala. Kassala is one of the 25 states in Sudan located in the eastern part of the country. (Note: according to the referendum conducted in January 2011, the separation of the South Sudan was decided.) Kassala's ethnic and language compositions are highly diverse. Since the ceasefire agreement in 2005 after the long years of civil war, the Kassala area is gradually progressing towards reconstruction. Around the Kassala City, making use of the warm climate and fertile soils, horticulture with pumping irrigation is widespread, producing vegetables such as onion, tomato and okra, and citrus such as orange and grapefruit, as well as banana and mango. Kassala is also one of the most popular tourist destinations in Sudan, with rare and attractive rock formations. It is also thriving as a popular honeymoon destination. There is also a wide range of regional variety in agricultural production apart from horticulture. There is gravity irrigated cash crop production, rain-fed water-harvesting agriculture, large-scale mechanized grain cultivation and farming floodplains using irrigated water from floodplains.

Basically, although Kassala is located in an arid area with an average annual rainfall of 300 - 400 mm, such diversity of farming has developed owing to the two rivers that flow vertically through the state called the Gash River and Atbarah River. The Atbarah River originates in Ethiopia and feeds into the Nile. Construction of dams (including the ones being constructed) has enabled the irrigated area to expand. Under planned production systems with farmers being encouraged to move to this area, cash crops such as cotton and wheat are cultivated. On the other hand, the Gash River originates from Ethiopia and Eritrea but is a seasonal river. Except for the 2-3 months in the raining season between June and August when the flood water flows through the river courses, the river is dry. The riparian area along the Gash developed over millennia based on floodplain agriculture. More recently with the introduction of irrigation systems using pumped irrigation wells, the aforementioned horticulture and sorghum and cotton production have developed.

The Gash flood brought about yearly floods with different levels of water volume. The silt from the upstream has appropriate water permeability and water retentivity and is rich in nutrients. As a result of this, Kassala has developed horticulture producing citrus fruits and vegetables. Thousands of hectares of flood irrigated agricultural lands have been reclaimed, managing aqueducts to cope with excess flood water. However floods at times strike towns and settlements without mercy. Sometimes, increased water from rain travels through long underground tunnels that are dug by small animals flooding urban areas. In some cases, flooding causes epidemics such as cholera and dysentery and brings undesirable presents such as scorpions and snakes from upstream. As Egypt is a gift of the Nile, Kassala is a gift of the Gash. The river has shaped peoples' daily livelihoods with its positive and negative forces. The relationship between the seasonally flooding river and local livelihoods is so unique and complex with the intricate web of links, that it is extremely hard to describe in words. Finding out the secret of the connection between the people and the rivers has been a furtive pleasure of visiting Kassala, and I would like to continue my visits with such delight in future. (April 2011 by Koga)

Agricultural scenery with distinctive Jebel Totil in the background

Bustling vegetable market in the western suburb of Kassala

Dried Gash River in dry season

New Series

From assistance to business-from support to collaboration <Part 1>

Introduction

In development assistance to support developing countries, various efforts have been made to ensure that effective assistance reaches directly to the poor who need the most support. Development assistance activities aiming for sustainable and self-reliant development after cooperation activities finishes are also pursued.

One example is the establishment of microcredit such as the Grameen Bank in Bangladesh which provides small lending to the poor without collateral. Fair trade to guarantee appropriate prices for products secures and generates employment for production and distribution of the products. There is also the Bottom of the Economics Pyramid (BOP) businesses that target BOP poor, generating local employment and improving their livelihoods.

Through this form of direct reach-out assistance, stakeholders can build "win-win" relationships that serve everybody's interests. This in turn creates incentives for those who are recipients of the assistance, leading to effective human resource development and their subsequent self-reliance.

On the other hand, in the case of technical cooperation by official development cooperation agencies, the main counterparts are often the recipient government agencies. This often creates a situation where the government agency perceives development assistance projects as "extra work". We therefore often struggle to see how we can provide incentives for our project's work, encourage active participation in the project, and ensure sustainability of activities after the project support ends. One thing we could do is to introduce business principles in local operations rather than providing time-bound assistance. In this way, monetary benefits can accrue to the counterparts depending on their degree of effort, which will change the way the counterparts work on a project.

This kind of thinking and methodology is not only useful for assistance in developing countries, but is also applicable to our support for Japan's agriculture. For instance, in supporting Japan's agriculture, it is necessary to encourage the "fair trade" thinking to establish appropriate prices between producers and consumers in the effort to support Japan's farmers who are troubled by sharp increases in production costs and low prices for agricultural products.

In addition, as has been discussed earlier, there is no doubt that business and management in agriculture, including marketing, is becoming increasingly important. Business is originally a means to achieve objectives. Certainly, it is necessary to have an economic foundation for sustaining activities. However, business should not be perceived as equal to profit making. It is important to see a value in maintaining and conducting farming activities in their own right.

There is a type of business person such as a "social entrepreneur" who would combine the idea of contributing to society and business for profit making. It is becoming increasingly necessary to explore a new business model as a means for solving social issues. Such a business would pursue not only economic return but social return, based on the philosophy that business can solve many of the problems in our society. This new series will introduce a number of cases and ideas in the following table both in Japan and abroad and will examine the direction and feasibility of each idea.

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Table: Case studies in this series

Classification	Target Area/Country	Contents
Domestic	Ushimado, Okayama Prefecture	Introduction of new vegetables and marketing
Domestic	Nanairo Farm, Kanagawa Prefecture	How to realize the 6th industry development / Fair trade for domestic agriculture in Japan
Overseas	Africa	Exploration of business opportunities through collaboration with the ex JICA participants
Overseas	Syria	Establishment of an irrigation facility service company
Overseas	Middle Eastern oil states (UAE and Oman)	Exploration for non-ODA AAI's own activities

New Series

Agriculture and farmers in Kurdish region <Part 1>

Kurdish agriculture

As introduced in AAINews volume 70, the three prefectures (Erbil, Suleimania and Dohuk) in the Kurdish region in north Iraq have autonomous status and have seen their own unique development. In the past, the Kurdish people went through harsh periods in Iraq and in neighboring countries. However, after the former Iraq regime collapsed, although it is not perfect, the Kurdish region is developing rapidly within stable political situation and public order as well as with foreign investments. In these circumstances, the Kurdistan Regional Government has been actively supporting the farming population both financially and technically with the aim of agricultural development, which is the main regional industry.

The Kurdish region's topography is characterized by plains with an altitude of less than 300m in the Erbil prefecture and the south western part of the Suleimania prefecture. In the south of Dohuk and from the central part of Erbil to the central part of Suleimania, the scenery is dominated by gentle hills. In the border areas with Iran and Turkey, the mountain ranges rise over 3,000m and their southern slopes are steep. The precipitation in the Kurdish region varies immensely, ranging from 400mm per year in the arid south to 1,000 mm in the mountainous areas in the north. Iraq in general has sufficient precipitation and a varied topography with many different types of soil. Compared to southern Iraq, the northern areas, including the Kurdish region, enjoy relatively fertile soil. In the Kurdish region, from the southern plain to the gentle hills, rain-fed grain cultivation (mainly wheat) is predominant. In the areas with abundant water, vegetable cultivation using underground water irrigation is common. In the sloping areas, fruit cultivation is widespread. In this way, various forms of farming are practiced, making the most of the varied climate and topographical conditions. In addition, livestock farming by grazing is popular and it is a major source of cash income for farmers.

In this kind of environment, agriculture has high potential to grow in the Kurdish region. It is therefore one of the most important industries for the re-construction of Iraq. At the same time, agriculture can act as an important link between the Iraq central government and the Kurdistan Regional Government to continue their friendly relationship. The Kurdish region used to be the bread basket of Iraq, however due to the long years of fighting and exodus of farmers and technocrats, the production has not reached the past high levels. However, the Kurdistan Regional Government is seeing reconstruction of the agricultural industry as a pillar for the new autonomous region, and is directing various forms of support into the agricultural field.

Kurdistan autonomous region in Iraq

In this series, we will introduce the current situations and issues surrounding agriculture in the Kurdish region, dealing separately with the fields of grain production, vegetable cultivation and fruit cultivation. We will introduce the voices of farmers and local technicians which we gathered through local interviews. Moreover, by introducing the cultivation processes, we would like to touch upon the Kurdish people's spirit and their living environment.


Agricultural land around Ebil (taken from the air)


Hilly agricultural lands in the Kurdish areas

Mini series

Facts about dry land vegetation <Part 1>

From volume 1 to 7 of the AAINews, we introduced representative geography and main natural vegetation in the Al Ain Region in the United Arab Emirates (UAE) with the theme "Plants in Arid Land and Their Utilization." Since then, we have encountered a variety of interesting plant species in arid areas ranging from west Asia to Africa but with particular emphasis on species in the Arabian Peninsula. Many plants in the arid region possess distinct characteristics due to their adaptation to the harsh environment. Some have a high concentration of special ingredients. In this series, we would like to introduce plants that are particularly interesting.

In this first part of the series, we focus on mesquite (*Prosopis juliflora*). The plant is originally from America and its current range extends from Asia to Africa. As introduced in the previous series from AAINews Volume 1, in the UAE, mesquite has been widely used as a preferred species for afforestation in saline soil, for fixing sand dunes and for general wind break applications. Also, as discussed in the AAINews volume 59, it has been used as a wind break strategy in Mauritania in West Africa. Furthermore, in the afforestation activities in Mali, Africa, organized by the Association SAHEL, mesquite has been used as an important tree species. The FAO has been promoting mesquite planting to combat desertification and as an integral part of agricultural development. In many regions, mesquite shows faster growth compared with local tree species. In the UAE, a growth rate of 40-50 cm per month in mesquite branches was observed in a good season. Mesquite is an effective dune fixer because of the tree's shape which has a canopy that covers the ground surface. It is also useful as livestock fodder. In particular, seeds are considered to be a nutritious supplement for camels and other animals. Furthermore, it is a useful material for building and fire wood, providing precious cash revenue for local people. In Sahel, the branches and leaves are used as protective fencing for farming fields.

However, mesquite is an invasive species and can spread very easily beyond necessity as the tree can easily germinate and spread its territory using surface water runoff or by using livestock feces as a medium of transport. In fact in Sudan and Somalia, invasive mesquite in farming or range lands has been causing undesirable impacts for crop production and livestock movements, resulting in a reduction of agricultural revenue. In addition, mesquite overgrown in canals for irrigation is making removal of silt difficult, having negative impacts on irrigation farming and inland fisheries. Furthermore, as mesquite trees have long roots, they lower underground water tables, leading to reduction of potable water for human consumption. Livestock is reported to have died of indigestion after eating mesquite seeds. There are also reports of an increase in malaria cases. Furthermore, mesquite's invasion impacts on local flora and pasture resources are leading to a loss of biodiversity. When we visited Oman recently, we met government officials who are troubled by invasive mesquites in natural rangeland.

As described above, mesquite has both positive and negative effects like a medicine. In areas with severe desertification threats, people tend to think mesquite should be conserved. However, in many areas, appropriate management of mesquite is called for. In countries such as Sudan, large scale control and stump pulling is carried out using machinery. However, such operations require a large amount of cost and labor, and as a result operations often get half done and local people suffer from "reinvasion." One counter measure is to conduct early and frequent removal when plants are small as a preventative measure. In the future, it is necessary to establish an appropriate management and monitoring system regarding mesquites' distribution and invasion. Simultaneously, it is necessary to conduct broad environmental education and awareness raising activities targeting local community.

Mesquite ground cover stopping the sand dune shifts

Dry branches that are used for protection fence

Branches with many pods