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Ecotourism in Yakushima: Reflections in the rainy season

The island of Yakushima is famous for its endemic cedar species called 'yakusugi' many of which are over one thousand years old. Furthermore, due to its geographical location as well as its mountainous topography (which peaks at some 2,000m above sea level) the island hosts a great diversity of vegetation. This consists of sub-tropical deciduous forests in Yakushima's lower regions which is then succeeded by coniferous forests at higher altitudes before finally giving way to alpine flora on the mountain peaks. Due to the richness of its natural environment, Yakushima became one of UNESCO's World Heritage sites in 1993. Another unique aspect to Yakushima is the fact that the waters around the island host the greatest variety of fish species to be found in Japan. It is estimated that the diversity and uncommon natural features of Yakushima attract as many as 150,000 - 200,000 tourists to the island per year.

With the increasing number of tourists to the island, however, serious problems are arising such as environmental destruction resulting from the construction of tourist facilities, an increase in trash left by tourists, and deteriorating water quality due to increases in discharges from tourist facilities. Residents of Yakushima have come to feel that, while tourism could be encouraged as the island's major industry, the unique nature of the island should never be spoilt by tourism development. Consequently, the concept of 'ecotourism' was introduced for the purpose of conserving Yakushima's precious natural resources while aiming at maintaining and improving the quality of life of people on the island.

Ordinary tourism can be described, if rather roughly, as an act of reaching a so-called 'tourist spot', appreciating a particular landscape or architectural feature, buying some souvenirs and then rushing away home or on to the next spot. This kind of tourism results in a situation where the tourist has been to a certain place and bought certain things there, but often nothing more. By contrast, it can be said that eco-tourism aims at combining tourism and nature conservation by considering the sustainability of the local environment and culture, and appreciating and respecting both more deeply than conventional tourism.

It is said that ecotourism started in Costa Rica in Central America, where farmers around protected conservation areas are trying to improve their standards of living by increasing local employment opportunities while at the same time maintaining local natural resources in a sustainable manner. Ecotourism can provide an important pointer for balancing development and conservation in developing countries, as well as for the revitalisation of remote, underpopulated areas in Japan.

However, in talking to many people in Yakushima and actually taking part in the ecotour program myself to walk around the yakusugi forest, I thought that, in order to start off and maintain ecotourism successfully, no doubt the existence of 'natural resources' is crucial as an attraction for tourists but not sufficient by itself. What is needed in addition for the success of ecotourism is, in my opinion, the establishment of 'soft' factors, such as well-prepared / equipped tour-hosting bodies, careful consideration of the contents of the ecotour programs, certification, improved quality of tour guides, and so on. (Reported by KOTO in Yakushima)



Misty Yakusugi forest covered with moss



Broad-leaved sub tropical forest in Yakushima Island

Past Technical Assistance for the Gulf States and Future Challenges (4)

Part 4: Technical assistance by the private sector

Kashima Oil Co. provided technical assistance for the UAE, Abu Dhabi Agricultural Bureau in the field of intensive horticulture, with funding from JICA. In 1981 they introduced the sandponix system developed by Sumitomo Electric Industry Co. in a greenhouse equipped with a simple cooling system, and started experiments into vegetable cultivation using dune sand. Artificially creating a mild environment for the purpose of intensive farming is one of the future options for agricultural development in desert countries with harsh climates. In this technically assisted experiment it proved possible to grow vegetables throughout the year in the greenhouse. This system saves water by using water-saving cultivation beds each of which is 7 cm thick and raised above the ground. Cucumbers and tomatoes could be harvested in almost double the average yield. If other soft techniques can also be transferred successfully, such as thorough training for site workers to maintain and manage the facilities, this cultivation system can be expected to become wide-spread.

In another example of technical assistance by the private sector, Taiki Co. undertook part of the afforestation project promoted under the Abu Dhabi Emirate's desert greening policy, and carried out large-scale (hundreds of hectares per unit) plantations in several places. This kind of contract work includes all aspects of plantation projects, starting from the establishment of campsites in plantation areas allotted by the Forest Department, the construction of fences and irrigation systems, tree planting, and the protection of the planted trees. Instructions as to the species to be planted, the density of the plantations and the outlines of irrigation and fertilization schemes are given by the Forest Department. But it is up to the contracted company's capability and technology to devise methods to raise healthy saplings and increase their growth rate, as well as to improve irrigation facilities such as filters, liquid fertilizer mixers and drip irrigation systems. The main objectives of these afforestation projects is the greening of the environment, but planted trees also play other important roles such as protecting roads and residential areas from shifting sand dunes. Therefore, it is thought that such plantation schemes will become more and more important in the future.

One of the major goals of Official Development Assistance is to develop local manpower, but it takes a long time and often it is difficult to see or evaluate its effects in the short term. On the other hand, technical assistance by the private sector aims at gaining immediate profits by transferring appropriate hard techniques and methods. If the effect can be shown in visible figures, it will be easily accepted by the beneficiaries. In reality this seems to be a short cut to technology transfer which leads to steady, widespread acceptance in the recipient country. In assisting the oil producing countries to proceed independently in their efforts for economic development, it is an effective way to invest a large sum of capital in order to provide them with new technologies, necessary facilities and equipment to start off with. From now on, as countries in the Gulf region are growing out of the stage where they need to receive Japan's ODA for their development, facilitating more of such private sector-based technical assistance may be a more appropriate way of supporting them.



Cultivating melons in Kashima Oil CO. experimental farm



One of the afforestation project sites contracted to a private plantation company

Agriculture in the Dhofar Region, Oman (4)

Part 4: Pasturage in the Nejd and the development of modernised agricultural farm zones

In the north of the Jabal region on which we reported in the last issue, there is a vast, barren desert area called Nejd. In this area are found a number of wadis originating in the Jabal region in the south. The plain changes its features from soil desert in the southern part to sand desert in the north, leading further up to the Rub'al Khali Desert of Saudi Arabia. This area has long been used by the nomad Bedouins for raising camels, and there has been date farming in some small oases, but otherwise the area has few inhabitants and it has generally been regarded as being of little use.

However, during the process of resource assessment conducted along with oil exploitation in this region, it was discovered that the Nejd area has abundant water resources, which consequently have started to be exploited and utilized in recent years. Since the first center pivot irrigation system (a sprinkler system with water pipes moving in a circle) was introduced in 1986, some 900 ha of farm land (some temporarily out of use) has been created in the Nejd as of today. In some parts melon and alfalfa are planted, but the major crop of this farming area is Rhodes grass (a gramineous plant that grows as pasture) used as forage for livestock (mainly cattle) in the mountain region and for camels in the Nejd. Today this area serves as an important supplier of cattle forage (which previously used to be imported from northern Oman and Saudi Arabia).

While the Nejd is gaining in importance as a major forage producing area, some problems have been pointed out with regard to the development of the farm land. Although in the early period of the agricultural development, the water resources of this area were thought to be in great abundance, the decline of ground water levels due to intensive water pumping from the ground has become a problem. Some of the farm land where water used to be supplied from wells which pumped up water solely by water pressure, had to be abandoned as water could not be taken from the wells due to lowered water pressure, and in many farms submersible pumps had to be installed deeper to reach the declining water level.

In such circumstances the local government is now being careful about the development of agricultural land in this area, and today construction of new wells or of new farms is, in principle, regulated. In reality, however, there can be seen many pieces of land fenced around and set aside, implying further agricultural development of the area.



Satellite image of the Nejd area: The white lines indicate wadis, the central part is soil desert, and the yellow part in the north-west is sand dune.



Satellite image of farm land in the Nejd desert area: The red circles are where pasture is grown.



A wadi flowing from Jabal



Melons and pasture grown with the center pivot irrigation system

Plants in Oman and UAE: Part 3 - Rich desert and poor desert

Most of the UAE's territory is covered with sand which forms a variety of desert environments. Indeed, a 'desert' can assume various features, such as white desert, red desert, vast desert, tiny desert, rich desert, or poor desert. The differences in desert colours comes from the different substances making up the sand. White deserts are rich in calcium carbonate, and the red deserts are red from oxidised iron adhering to the sand. Various factors such as the size of the sand particles, their quantity and strength, wind directions and the existence of any blocking objects determine the size of dunes. So what makes the difference between the rich and poor deserts ?

In today's Arabia (Arabian Peninsular) the value of a desert is often associated with oil, but the natural richness of a desert is formed by its water and the green vegetation that is nurtured by the water. In visiting a number of plantation sites in UAE, we observed that, however many trees were planted by humans in a naturally poor desert, the desert remained poor and dry - a far cry from the richness of natural dunes.

What all the rich deserts have in common is plenty of good ground water. In such deserts trees can grow by extending their roots down to the ground water, and the trees form small colony, which in turn spread as green patches. Bushes also grow around the tree patches and, however roughly, further the reaches of the greenery. After winter rain, herbaceous plants start shooting up around the bushes. This is the image of rich deserts. On the other hand, poor deserts are poor in ground water, with little or no green vegetation although some salt resistant vegetation may be seen.

Both rich and poor deserts receive more or less the same amount of rainfall and the temperature conditions are also the same. However, even some grasses and flowers, whose survival totally depends on seasonal rainfall, can be seen in greater abundance in rich deserts than in poor deserts. The reason for this is thought to be that in rich deserts various types of plants exist and influence each other, which may be creating a milder and easier environment for other plants to grow in. That is, in rich deserts with abundant ground water of good quality there are trees with roots reaching the ground water level, and bushes take up their positions (although it is unknown whether their roots grow as deep as the ground water level) in the shadows of such trees and behind dunes blocking the wind. Then, on the ground covered by the bushes the temperature becomes even lower, and water from rainfall is held in the soil. Seeds of various seasonal grasses and flowers can be well kept and nurtured, and all shoot at once after the winter rain. It is easy to imagine that, in former times, the Bedouins would bring their cattle to the rich green deserts for grazing in such flowering seasons. Still today, some Bedouin elders do come to rich deserts to collect shoots and seeds of edible plants.

Rich deserts with plentiful water resources and vegetation are very valuable in dry areas, and such deserts are often targeted for ground water exploitation or agricultural development projects. However, such development projects have to be carried out without damaging the precious vegetation of the deserts. Also, the greening of deserts by means of extending the vegetation of rich deserts to surrounding places may be possible in such extremely dry areas as UAE, and this can be seen as the most environmentally sound method of desert greening.



Rich desert: Various plants can be seen



Poor desert: There is virtually no vegetation. Low land between sand dunes is a saline marsh.