

## Desert Transformation or Desertification Control?

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### Introduction

The UNCCD has been ratified by over 190 countries. It is the attempt by nations, both rich and poor to control the scourge of desertification. The definition of which is “land degradation in arid, semiarid, and dry subhumid areas resulting from various factors, including climatic variations and human activities. It is now widely accepted that desertification is not the relentless advance of desert but rather the development of land degradation in discrete sites that can coalesce and spread (Squires and Sidahmed 1998). China, a signatory to the UNCCD, has a large area of desert and an alarming rate of desertification of all types wind and water erosion, and soil salinization (Luo and Zhang 2006). In China for example, in provinces such as Ningxia, Inner Mongolia and Gansu the local officials report that the rate of expansion of desertified lands is proceeding at double the rate of control measures. Clearly, this is unsatisfactory and better ways must be found to reverse the trend. National efforts to combat desertification employ a range of measures, some physical and others relate to socio-economic and policy change (Lu *et al.* 2005). Other countries that are UNCCD signatories face similar problems. Sandy desertification<sup>1</sup> (sandification) is of great concern in China (Wang 2000). Iran and countries of the Gulf Persian region (Al Faraji 2002). Until recently the area of sandification in China was growing at a rapid rate, despite efforts to combat it (Fig. 1). It is estimated that the rate of rangeland degradation in semi arid and dry sub-humid areas is 90-97%, and the annual rate of rangeland degradation is accelerating. But, in China as a whole, from 2004 onwards the rate of expansion of land affected by sandification has declined and in some areas it has been reversed (Luo and Zhang 2006). Other forms of desertification, especially in the marginal cropping lands in the interface zone between the pastoral zone and the croplands, are on the increase. This is also apparent in other countries as burgeoning human and livestock populations put more and more pressure on the shrinking arable land base (El-Beltagy, Saxena and Wang 2008).

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<sup>1</sup>-Sandification refers to sandy desertification. It is experienced in many areas of China from the sub-humid Hulunbir grasslands in NE China to the edges of the various deserts in western and northern China.

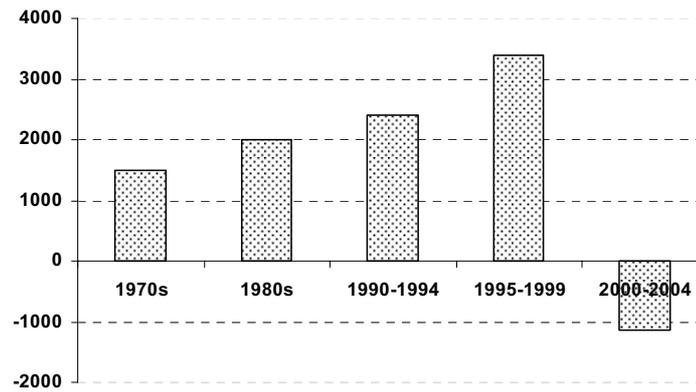


Fig. 1. Annual Rate of Spread of Sandification-prone Land in China from the 1970s to the Early 21<sup>st</sup> Century

### Desert Control – a Distraction?

The preoccupation with “taming the desert” in China and elsewhere and the constant attempts to transform the desert (by creating a new oasis, for example) into a better environment is major distraction from the urgent task of controlling land degradation. The International Conference Desertification in the Third Millennium held in Dubai in 2001 brought together a diverse group of people many of whom were desert specialist's geologists, climatologist, sociologists and rangeland experts. A large part of the agenda was given over to desert development, and reflected the philosophy that “man is dominant over nature”. Not so much attention was paid to actual desertification control measures. Similar meetings have been held in different venues around the world and confusion still seems to prevail about the difference between “fighting the desert” and halting (and reversing) accelerating land degradation under control. Combating desertification is so different from desert development or desert control (Squires 2003). It requires a different mind set and an understanding that desertification is a slow-onset problem that cannot be fixed rapidly by an engineering approach (Reynolds and Stafford Smith 2002).

Lack of capital investment is stated by many officials in many countries as the principal reason for the lack of progress in

controlling desertification. When asked about how they might proceed if money was available a common answer was to extend the system of irrigation distribution channels and plant trees in the desert i.e. to create a new oasis. There is a complete lack of interest in more ecologically sound and sustainable approaches that rely on native vegetation already adapted to the harsh desert environment (Squires *et al.* 2009).

In my view unless this contradiction between the aim of desertification control and the agenda of using foreign loans and grants to transform the desert is resolved little progress can be made in dealing with the burgeoning problems of dust storms and rural poverty that afflict many countries in Central Asia, SW Asia and China and Mongolia in particular.

There is a reluctance to acknowledge that much of the current land degradation is due to poor land use decisions and flawed development strategies over a long period of time, rather than climate changes or other natural factors. In China, the arable land per capita is only 0.11 ha. The shrinking arable land area and increasing demand for agricultural products pressures farmers to extract higher yields from their land, at the expense of stable soil structure and adequate organic matter content, leading to increased soil erosion. There is a clear connection between land degradation and poverty. Almost 90 percent of rural

people living in poverty are located in areas suffering from land degradation. In the dryland areas, rapidly increasing livestock numbers exacerbate the spread of deserts and directly contribute to the increasing frequency and severity of dust storms (Lu *et al.* 2008).

Taking China as an example, over 90 percent of the rangeland (grasslands and shrublands) in NW China (Xinjiang, Inner Mongolia and Qinghai) suffer from moderate to severe degradation at a time when livestock numbers are increasing to meet the demand for meat and other livestock products is rising. Urbanization and standards of living increase throughout China are the drivers for this. These pressures to produce more are likely to put the rangelands under greater stress and contribute to more frequent and severe dust storms. Efforts to relieve the grazing pressure on rangelands include an expansion of water-demanding artificial pastures and the building of indoor feeding sheds. The long term implications of this system of meat production have not been considered (Squires *et al.* 2010).

In water-scarce regions it would seem to be more relevant to use the scarce water for domestic consumption or for production of high value crops. A reform of the water pricing policy to reflect the real cost (and value) of water would soon force the rational use of water. Water allocated for tree planting to protect the oasis, the urban areas, industrial sites and important infrastructure like roads, railways and power transmission lines, canals, reservoirs etc should be priced differently, depending on its use. For example, it could be worth 100 times more to protect valuable infrastructure than it is to protect cropland on the edge of the oasis. This implies that the “user pays principle” should be adopted. Higher water use charges can be easily met by urban communities, industry and the authorities who build and maintain infrastructure such as railways and roads etc. Water used to beautify the urban environment and to

“green” the environment might attract a different scale of charge. Priority in the use of scarce water should be assigned on the basis of need and the willingness to pay.

### **Desert Transformation: How Does it Relate to Anti-desertification Measures?**

A clear distinction should be made between those land management measures designed to control sand encroachment (mainly tree planting and creation of shelterbelts) and dust storm control (mainly restoration of degraded rangelands). Over emphasis on the former and neglect of the latter is commonly observed throughout the China’s drylands (Yang, Lu and Squires 2002).

The land use pattern throughout the drylands seems to dictate the responsibilities of the various line Ministries and their counterpart Bureaus at Provincial, Prefecture and County level. In China, for example, cropland is the responsibility of the Agriculture portfolio. As land is converted (so called land reclamation) from rangelands to cropland it passes to the control of Agriculture. The residual land (sometimes called wasteland) is the responsibility of Forestry whose mandate is to control sand encroachment, prevent desertification and protect the artificial oasis and the associated urban settlements. Apart from extending the water distribution to sites for tree planting little else seems to be done by Forestry bureaus to control desertification in the rangelands (a major source of dust in duststorms that are a scourge in spring) and whose presence regularly plagues the east coast cities such as Beijing and Tianjin and to Korea and Japan where it is seen as a transboundary environmental problem (Squires 2008). Dust transport from the edge of the Sahara and from North Africa pose a problem too (Sunnu, Afet and Resch 2008) Measures designed to prevent sand encroachment are quite ineffective against dust storms. The finer particle size that characterise the sediment in dust storms derives from the rangelands

where it is lifted and transported at a height far in excess of that of any tree barrier.

Sand on the other hand, is rarely lifted above 0.5 m above the ground and is transported by a quite different mechanism (Yang, Lu and Squires 2002). Trees and shrubs that are planted in strategic locations in belts and blocks can be effective barriers to sand movement (Zhou and Ma 2009).

A feature of much of the tree planting effort so evident in China today is that follow-up is poor or completely neglected. The enthusiasm of people to volunteer to dig the holes and plant the trees is high. The maintenance of the plantings is neglected and many trees die because of lack of water. Tree spacing is too close in many instances and the sustainability of such plantings must be seriously questioned. Despite the establishment of six Thematic Programming Nodes (TPN) under the auspices of the UNCCD. Often, the research institutes seem to be providing answers to questions that no one is asking. Practical applied research (problem oriented) is absent or weakly expressed (Lu *et al.* 2006).

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