

## THE ROLE OF FORESTRY IN THE FIGHT AGAINST DESERTIFICATION

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SELOSTE:

### *METSÄNHOIDON MERKITYS AAVIKOITUMISEN TORJUNNASSA*

This paper reviews the background documents and the final report of the United Nations Conference on Desertification, held in Nairobi, Kenya, in August/September of 1977. The importance of afforestation and forest protection is strongly emphasized in several recommendations of the Conference.

Deforestation for grazing or agriculture has often been the initial step towards desertification. Consequently, tree planting plays a central role in the reclamation of desertified areas. Shelterbelts and other tree plantations protect agricultural land, settlements and communications. Tree plantations in densely populated areas also have a great amenity value for the people.

Tree plantations in arid zones need effective protection against grazing and other improper land use. This must be explained to political leaders and local people. Since afforestation always is a long-term investment, a high level of education is needed to understand its ultimate usefulness. Intensive research is also needed to choose best species and to develop suitable techniques for different climatic and soil conditions.

Afforestation will greatly contribute to the solution of energy problems. Wood and charcoal burning is the main source of energy in many areas, and collecting of firewood is a serious reason for continued desertification. Planting fast-growing trees, even with artificial irrigation, can be the most efficient and economical way to cover energy needs of rural people; in this way the disastrous influence of uncontrolled wood gathering is eliminated and shelterbelts and other plantations can be better protected.

Shelterbelts and other protective plantations also produce timber for house construction and other necessary uses and sometimes even byproducts with high commercial value.

Considering the vast areas destroyed or threatened by desertification, their reclamation and protection through afforestation, including necessary research and education, is a huge challenge to forestry. To accomplish this task, international cooperation and technical and economic support from industrial countries to developing countries is needed. Desertification is serious problem of the whole earth and mankind.

### INTRODUCTION

Desertification, i.e. conversion of productive land into useless desert, is one of the most serious problems of the mankind. This fact came to general awareness par-

ticularly during the catastrophic drought of the Sahelian region in 1968–1973.

Along with the rapid growth of human population and the need for increasing food production, 50 to 70 000 km<sup>2</sup> of cultivated land are abandoned every year because of desertification. The degradation of grazing

lands into deserts is still more alarming. About 38 mill. km<sup>2</sup> or nearly 30 % of the land surface of the globe are estimated to be threatened by desertification. More than 600 mill. people or 15 % of the human population are living in this area.

## UNITED NATIONS CONFERENCE ON DESERTIFICATION

### Background

Being aware of the seriousness of the problem, the General Assembly of the United Nations decided in 1974 to arrange a World Conference on desertification and its control. This Conference was held in Nairobi, Kenya, from August 28 to September 9, 1977. Preparatory work for the Conference was made by the United Nations Environmental Programme (UNEP), whose Director General, Dr. Mostafa Tolba also acted as the Secretary-General of the Conference.

The Conference was well prepared. A thorough overview of desertification and a draft plan of action to combat it were the most important background documents. The main task of the Committee in Whole of the Conference was to revise and amend the draft plan of action.

The final plan of action, as it was adopted at the Conference, includes 28 recommendations, proposing technical, economical and social measures and international cooperation to combat desertification. The role of forestry in this programme is reviewed below.

Afforestation, and forestry in general, had received rather little attention in the original background documents of the Conference. This was noticed and pointed out by many foresters attending the Conference and, consequently, numerous proposals for amendments were made when the draft plan was revised by the Committee in Whole. As a result, the importance of forest protection and afforestation is strongly emphasized in the final report of the Conference.

### Recommendations for forestry

#### Afforestation and forest protection

From the viewpoint of forestry, the recommendation No. 9, dealing with the protection of natural vegetation and reclamation of denuded areas, is most important. It starts from the well-known fact that deforestation very often is the first step in the process of desertification. Forest is destroyed either for grazing or for clearing for agriculture. The initial moderate grazing is often followed by overgrazing and gradual desertification. Deforestation for agriculture, again, often proceeds to marginal areas, such as dry lands and steep slopes, where water and wind erosion may result in desertification.

Since deforestation has often been the first step towards desertification, logically the goal of reclamation of desertified land should be returning the forest where it once was destroyed, the only way to this target being afforestation. The aims of reclamation can be large uniform forest plantations or mosaics of tree plantations, fruit gardens, improved pastures and cultivated fields. The recommendation particularly emphasizes the importance of shelterbelts along desert margins and in other susceptible areas, to protect fields, pastures, settlements and communication. Tree plantations around cities and other settlements also have a great amenity value for the people. For these reasons the role of shelterbelts and other tree plantations is also emphasized in the recommendations dealing with agriculture, range management, water resource management, and human settlements.

Afforestation as a tool of antidesertification also includes several research problems, such as search and experimentation of suitable tree species for dry and hot climates, and development of feasible and reliable nursery and planting techniques for various conditions.

Recommendation No. 9 also emphasizes the importance of protection of plantations. Plantations must be effectively protected against grazing and other improper land use for a sufficient time. Without proper care and protection, plantations almost invariably fail for various reasons. Because afforestation is often conducted in regions where pastoralism is the main source of living, and since grazing must be heavily restricted in afforested areas, the opinion of local people may be strongly against afforestation and serious conflicts may rise between local people and forest authorities.

Because tree plantations are long-term investments and require long-term planning, a high level of education is needed for understanding their ultimate usefulness. This fact must be particularly considered in information and education programmes. When tree plantations are planned, their purpose and usefulness should be clearly explained to the local people.

Considering the vast areas destroyed or threatened by desertification, the above task of afforestation, including necessary protection, research and education, is a huge challenge to forestry. For their successful implementation, strengthening of national forest management in respective areas is recommended.

#### Energy sources

Recommendation No. 19, dealing with energy problems, partly also concerns forestry. Wood and charcoal are the primary energy sources in many areas threatened by desertification. When forest land was cleared for agriculture or grazing, in the beginning usually plenty of firewood was available. Gradually, however, shortage of fuel appeared; firewood is taken where woody plants are found, and this gathering of fuel destroys even the last remnants of woody vegetation, thus further accelerating

desertification. The use of cow manure for fuel likewise contributes to desertification.

In the Conference report, therefore, research and development of new energy sources are recommended. However, although new energy sources could be developed, wood and charcoal burning will still long produce the main energy for home cooking in many developing countries threatened by desertification. Hence, sustained supply of wood for both fuel and building and other purposes is essential. Growing fast-growing plantations, even with artificial irrigation, often is the most efficient and economical way to cover the energy needs of rural people; in this way the disastrous effect of uncontrolled fuel gathering is eliminated and shelterbelts and other tree plantations can be better protected.

Besides their protective effect, shelterbelts also produce considerable amounts of wood for fuel and other necessary uses.

#### Other benefits from plantations

The Conference recommendations ignore the possibility that shelterbelts and other antidesertification plantations could produce timber for industrial raw material. Desertification generally is a problem of regions with dry climate, where natural conditions for tree growth are relatively poor. Therefore the main aim of afforestation must be the control of desertification and production of wood for local needs, whereas possibilities for commercial timber production are limited. It should be pointed out, however, that some drought resistant tree species, which are used for shelterbelts and desert reclamation, also may produce useful by-products with high commercial value. Furthermore, tree plantations may produce valuable forage for cattle, even fruits for human consumption, and food and shelter for game animals. All such aspects should be considered and told to decision-makers when control of desertification and afforestation in that context are planned.

#### International cooperation

As was pointed out previously, every afforestation project is a long-term invest-

ment and, to be successful in a dry climate, requires high costs. Many developing countries, which most suffer from desertification, have no means for such investments. Therefore international cooperation is needed. Afforestation, as a part of the fight against desertification, is certainly a field where support from industrial countries to developing countries is most urgently needed and where such a support also is well founded. For desertification does not only concern some individual

developing countries but is a problem of the whole earth and mankind.

Thanks to the humid and cool climate, desertification is an unknown phenomenon in Finland. We do not need to bother ourselves with fighting desertification in our own country. Wherever cooperation in this activity is needed, however, Finland can offer skilled and well-trained professionals and highly developed nursery and afforestation techniques.

#### SELOSTE:

### METSÄNHOIDON MERKITYS AAVIKOITUMISEN TORJUNNASSA

Aavikoituminen, tuottavan maan muuttuminen aavikoksi, on ihmiskunnan vakavimpia ongelmia. Sen vuoksi Yhdistyneet Kansakunnat järjesti 28. 8.—9. 9. 1977 Nairobissa konferenssin, jossa pohdittiin keinoja aavikoitumisen pysäyttämiseksi ja sen aiheuttamien tuhojen korjaamiseksi. Metsänhoidolla ja erityisesti metsänviljelyllä on tässä työssä keskeinen asema. Metsän hävitys on yleisesti ensimmäinen askel kohti aavikoitumista. Hyvällä metsänhoidolla estetään metsän hävittäminen ja metsänviljelyllä muutetaan aavikoitumisen tuhoamia alueita jälleen tuottaviksi.

Metsänhoidon ja metsänviljelyn merkitystä korostetaan useissa em. konferenssin suosituksissa. Metsänistutuksilla torjutaan eroosiota, ja suojaistukset suojelevat viljelyksiä, asutusta ja liikenneyälyä. Istutusmetsät myös tuottavat polt-

topuuta ja siten vältetään polttopuun keräilyn haitallisia vaikutuksia. Polttopuu tulee säilymään kehitysmaiden kotitalouksien tärkeimpänä energian lähteenä. Metsänhoidon menestyksellinen käyttö aavikoitumisen torjunnassa edellyttää tehokasta tutkimusta ja koulutusta. Viljelymetsät on suojeltava laiduntamiselta ja muulta metsää hävittävältä maankäytöltä. Paikallinen väestö on saatava ymmärtämään suojaistutusten ja muiden viljelymetsien hyödyllisyys. Kaikki nämä tehtävät vaativat metsähallinnon vahvistamista kansallisilla tasoilla sekä kansainvälistä yhteistyötä ja rikkaiden ja kehittyneiden maiden tukea köyhille kehitysmaalle. Aavikoituminen ei ole vain joidenkin yksittäisten kehitysmaiden ongelma, vaan koko maapalloa ja ihmiskuntaa uhkaava vaara.