
Additional information:www.mmm.fi/english/agriculturewww.mmm.fi/english/landwater

Mr. Jaakko Sierla

WATER RESOURCES MANAGEMENT AND AGRICULTURE IN FINLAND

Historical background

In 1999, Finland celebrated the 200th anniversary of the foundation of the Royal Waterways Board. When the Board was established Finland was part of the Kingdom of Sweden. The Board was appointed by King Gustavus IV of Sweden, who wanted it to begin by clearing the rapids of the Kokemäenjoki river to prevent floods and improve the conditions for waterborne traffic. After the war between Sweden and Russia in 1809 Finland was annexed to Russia as a Grand Duchy, with an autonomous position granted by Tsar Alexander I. Under Russian rule the Waterways Board operated as an imperial board. On Finnish independence in 1917, the work of the Board was continued by the National Board of Roads and Waterways in relation to transport and by the agricultural administration in the area of flood protection and drainage.

Special characteristics of Finland due to its northerly location

On the world map, Finland is a very northerly and sparsely populated country. Despite its location between the 60th and 70th parallels of latitude, the climate is relatively mild owing to the warming effect of the Gulf Stream and the Baltic Sea. In Helsinki the average annual temperature is +5oC, while at the Arctic Circle it is +1oC. The surface area of Finland is 338,145 km², the population 5.3 million and the population density 16 inhabitants/km². More than 40 per cent of people anywhere in the world living north of the 60th parallel live in Finland. Traditionally Finland has been known as a land of lakes, which is very true, as there are 56,000 lakes of more than 1 ha. Inland waters cover about 10 per cent of the country's surface. Over 80 per cent of these waters are of high or excellent quality.

Most of the lakes are located in the central and eastern parts of southern Finland, which could be well described as the Finnish Lake District. In these areas the lakes serve as natural flood retention basins, which means that significant flood problems occur quite rarely. The west coast of the country is dominated by river basins with few lakes, where, in addition to the spring floods due to snowmelt, heavy rains may also cause serious flood damage during the growing season. The flood problems on the west coast are also partly due to the land uplift after the Ice Age, which is still continuing at a rate of about one metre per hundred years. In the north, Lapland is dominated by long rivers with flooding during snowmelt. The situation may be critical in years when the water equivalent of snow is high and there are heavy rains during snowmelt.

Finland – the world's northernmost country with a viable agriculture

Owing to the Gulf Stream the average temperature in Finland is 4°C higher than at the same latitudes in other parts of the world. Thus the preconditions for agricultural production are not quite as unfavourable as might be deduced based on the location only. It is possible to practice farming in almost all parts of the country, but in the north the conditions are obviously quite severe. The growing season varies from 180 days on the south coast to 130 days in Lapland. In the north, the short growing season is partly compensated by the amount of daylight, as the sun hardly sets at all during the summer.

Only a limited number of arable crops, such as hay and potatoes, can be cultivated in Lapland. In the south, the range of possible crops is much wider, but even there the climate is not suited to large-scale, commercially significant production of maize, for example. In the north, the land is covered by snow for about 7 months, and in the south for about 4 months a year. However, the cold winters also confer certain advantages, as they restrain plant diseases and the population growth of insects. Annual precipitation, on average 550-650 mm per year, is mostly sufficient for cultivation. However, the weather conditions are quite unfavourable for agriculture, as it rains more in the autumn than in the spring. Annual variations in the length of the growing season and the level of precipitation make it very difficult for farmers to decide which arable crops to grow. Except for the southern parts of the country, Finnish agriculture has traditionally been dominated by livestock production, with milk production in particular being highly significant. Reindeer husbandry is practised as an indigenous occupation in Lapland.

Developing the structure of agriculture.

In the past fifty years, Finnish agriculture has undergone major structural change, which is still continuing, although efforts have been made to balance as well as slow down the pace of change through agricultural policy measures. The primary objectives in Finnish agricultural policy have been related to social policy rather than to agriculture as an industry. The objectives have included, among other things, keeping all parts of the country populated and balancing regional development, maintaining self-sufficiency in food and securing food supplies in emergency situations. At the turn of the 1950s and 1960s the number of farms was at its height, at almost 300,000, the average area of farms was less than 10 ha, the population engaged in agriculture was 600,000, and the agricultural contribution to GDP was more than 10 per cent. According to the statistics for 1999, the number of active farms is now around 82,000, the average arable area is 25 ha, the number of people practising agriculture is 120,000, and the GDP share of agriculture is 1.2 per cent.

Finland's membership of the European Union from the beginning of 1995 has had a significant impact on the country's agricultural policy. Since accession to the EU, agricultural output has been quite close to the self-sufficiency level. Current development prospects would suggest it should be possible to continue agricultural production at about the same level in the future, too. The number of active farms is nevertheless expected to fall further, to about 60,000 in the next few years. Since EU membership, rural development has received more and more emphasis, owing to the new opportunities provided by the Common Agricultural Policy and the EU's structural funds. One important objective is to generate new entrepreneurial activity, such as rural tourism, which will simultaneously improve the viability of farms.

Flood protection in Finland

For climatic and geographical reasons the problems caused by floods are much less severe in Finland than in Central and Western Europe. However, floods in the large river basins in the

north and on the west coast where there are very few lakes used to cause serious damage every year. Flood protection in the north improved considerably as a result of the construction of major hydroelectric power stations in the main watercourses from the 1940s until the 1960s and the associated construction of reservoirs and regulation of watercourses. Since then, the main emphasis in flood protection has been on implementing flood protection projects in the rivers on the west coast and developing operational flow regulation and flood defence. Most flood control projects were completed in the 1990s, and as a result about 50,000 ha of arable land is no longer flooded. Present flood protection projects are relatively small and directed mainly at reducing flood damage in inhabited areas.

There is an obvious need for further development of flood protection, even though the most significant water construction projects have already been completed. A survey of major floods conducted in 2000 mapped out the most endangered areas and the potential damage to these in order to prepare for extremely infrequent flood events (HQ 1/250). Based on these results, further attention should be directed at e.g. the development of operational flood prevention. The plans of action for flood prevention in large watercourses based on modern flood forecast modelling have in recent years also fundamentally improved preparedness for flood prevention.

The regulation of lakes and rivers mainly serves the needs of hydroelectric power production and flood protection, but needs relating to the multiple use and protection of the watercourses have invariably been taken into account in the projects. However, changes in needs and values mean that many of the 200 or more water regulation projects implemented in Finland need to be reassessed and updated. Special attention should be directed at e.g. fisheries, biodiversity and recreational use of watercourses, without neglecting the original purposes of the projects.

Drainage and irrigation

After the Second World War Finland had to resettle altogether about 500,000 evacuees from the areas ceded to the Soviet Union. This resettlement together with the need to secure the food supply, which had been considerably weakened by the war, led to a rapid increase in land clearing and drainage. The peak was reached towards the end of the 1950s, when the area drained was almost 100,000 ha per year. With mechanization, subsurface drainage became the dominant drainage method in the 1960s, when the area of land drained by this method had risen more than tenfold from the pre-war level of about 3,000 ha per year, and remained at this very high level until the 1980s. Since then the construction of subsurface drainage has decreased considerably, and the current level is less than 10,000 ha per year.

The structural change in Finnish agriculture is also reflected in the area of drainage. In regions favourable to farming, the demand for basic drainage and subsurface drainage is still considerable and the systems for these need to be enhanced and maintained. On the other hand, increased efforts are being made to restore to their natural state the water levels of shallow lakes lowered for drainage, together with other efforts to improve the overall status of these lakes by reducing eutrophication, increasing their biodiversity and improving their landscape value and the opportunities for recreational use. The new EU directive establishing a framework for Community action in the field of water policy will put further emphasis on maintaining and improving the ecological quality of surface waters.

The role of irrigation is relatively insignificant in Finland, and in practice it is mainly used in the cultivation of vegetables, and in some places potatoes. However, there has been some increase in

recent years in research and development on irrigation, with the main emphasis on irrigation fertilization in special farming and combining irrigation with controlled drainage in the cultivation of potatoes. A survey of present and expected need for using water resources for irrigation is currently being conducted by the Finnish Environment Institute and the Regional Environment Centre of South-West Finland.

Administration of water issues

Owing to the importance of water issues in Finland, there is a long tradition of state administration in this sector. In 1970 an attempt was made to consolidate administration by establishing the National Board of Waters and regional Water Districts under the Ministry of Agriculture and Forestry. Since then these bodies have evolved into the present-day environmental administration under the Ministry of the Environment, whose field of administration covers all environmental protection issues. However, the Ministry of Agriculture and Forestry still supervises the Regional Environment Centres and the Finnish Environment Institute in duties relating to the use and management of water resources. In 1999, the Ministry of Agriculture and Forestry produced a new strategy for water resources management.

Prospects

The European Union's Agenda 2000 provides a framework for the development of agriculture in Finland and the other Member States of the EU. In preparing for Agenda 2000 Finland's main concern was to secure the preconditions for farming despite the country's unfavourable climatic conditions. In order for farms to survive, their activities have to be viable. Attention needs to be directed to the development of productivity and, in particular, the quality of production and output, and also to purity, which is becoming an increasingly important competitive factor. Agriculture has to be environmentally friendly, taking environmental considerations and protection into account in all it does. During the Finnish Presidency of the EU, the Helsinki Summit in December 1999 saw the approval of an environmental strategy for agriculture which established the guidelines for integrating environmental considerations and sustainable development into the Common Agricultural Policy. The strategy is based on the European model of agriculture, with particular emphasis on its central elements, i.e. family farming, multifunctional agriculture and sustainable competitiveness of agricultural production.

The management of water resources is based on the principle of social, economic and ecological sustainability. An extensive evaluation of environmental and other impacts is required for all major projects influencing watercourses or water resources, and more and more attention will be devoted to the quality of work in this area. This concerns watercourse planning as well as use of watercourses and safety requirements for related structures. There is also a need to further enhance transparency and interaction in water issues. The EU Water Framework Directive, which will be implemented in stages in the forthcoming years, will bring new challenges to the entire sector, including the need to revise national water and environmental legislation. In Finland, regional administration of waters is quite strong in terms of both the information base and functional capacity, and thus Finland is quite confident of successfully implementing the directive.

Water administration in Finland

