

Switzerland - the Green Utopia?

by Simon Watkinson

Between 1876 and 2001 over 43 major legislative instruments to protect the environment in Switzerland were passed. With such an impressive environmentally-conscious track record, it's not surprising that Switzerland has long enjoyed an enviable reputation for its pure, invigorating mountain air and pristine lakes, and for being the ideal place to convalesce.

Bordered by Austria, France, Germany, Italy and Liechtenstein, Switzerland shares five river basins and some large lakes with its neighbours. With 6% of Europe's freshwater reserves, it has three times the European average quantity of readily available water, which is more than sufficient to meet its requirements. Furthermore, as the source of several major European rivers that ultimately flow into the North Sea, the Mediterranean, the Black Sea and the Adriatic, Switzerland takes very seriously its stewardship of the environment and responsibility to ensure good water quality.

Ecosystem Approach

In order to safeguard water, the protection and restoration of Swiss water-related ecosystems is vital. The ecosystem approach is advocated as the primary, most efficient way of ensuring a sustainable supply of good quality water. To this end, the sustainability of forests, soils and wetlands – the ecosystems that naturally capture, filter, store and release water – is ensured through protective measures.

Forest protection

In Switzerland, good stewardship of the forests, which cover 31% of the territory, is also vital to flood prevention. The Swiss National Forest Programme (SNFP), an action programme at federal level for 2004-2015, was developed during a large interdisciplinary

consultation among federal and cantonal authorities, NGOs, forest owners and other interested parties.

One of SNFP's objectives is to protect forest soils, trees and drinking water against harmful chemicals, physical agents and unsustainable management practices. The use of fertilizers in forests is banned, and pesticides are mostly prohibited, except, for example, when used to protect felled logs from bark beetle. Landfill sites in forests are also forbidden, and in forestry conventional lubricants and fuels are increasingly being replaced by environmentally-friendly products. The development of a Swiss timber certification is also crucial in helping Switzerland maintain good water quality. These measures are important, as more than 80% of the country's drinking water is sourced from groundwater bodies, and 42% of its groundwater protection zones (zones where activities are forbidden or limited) are located in forests.

Fruits of the forest

As well as filtering water through its soil and providing most of a city's drinking water, a forest located near a city shields it against landslides and avalanches. For example, in Altdorf, in the Canton of Uri, the water collected from the protected wetland cascades down the steep mountain slopes to provide drinking water, and also turns the turbine of a small hydropower plant. By generating 1.5 million kW per year, this satisfies the energy needs of 300 households.

U-turn

There hasn't always been a healthy regard for the environment and natural resources in Switzerland; environmental legislation was only considered in response to tragedy. Switzerland was a poor country in the early 19th century

and to finance its development, it embarked on an intense deforestation programme. As a result, floods, erosion and mudslides devastated many Swiss valleys and cities in 1834. Given the urgent need to prevent such a recurrence, a Swiss water policy was introduced, and in 1876 the Law on Forests came into force. As the first ever environmental law in Switzerland, this regulated timber harvesting by means of permits and the provision of subsidies for reforestation.

Water legislation

In 1877, the Federal Law on Hydraulic Engineering responded to flood threats, and in 1916 the Federal Law on the Exploitation of Hydroelectric Power regulated the use of hydropower. To ensure the protection of good quality water, the Federal Law on Water Protection was introduced in 1955. Based on the ecosystem approach, this law established a series of qualitative and quantitative targets for the protection of the physical and chemical quality of water. The 1991 Federal Law on Flood Protection and its ordinance issued in 1994 sought to ensure both the protection of human life and of high-value property, allowing minimal structural measures along the watercourse, and the integration of environmental concerns into flood protection schemes. As flood protection and ecological concerns (e.g. space for rivers) have complementary aims, high priority is given to spatial planning and the maintenance of watercourses to achieve the required level of flood protection. Structural measures may only be introduced if environmentally-friendly schemes fail to provide the required level of protection.

The development of a Swiss Water Information System is crucial to an integrated, sustainable protection and use



of water resources in Switzerland. This will enable the collection of federal and cantonal water data representing the water-relevant information of all catchment areas throughout Switzerland.

Soil protection

Roughly three quarters of the nitrate leaking into groundwater originates from farm land. The new agricultural policy, which links direct payments to ecological performance, controls the use of fertilizers and pesticides, and now covers 98% of Switzerland's agricultural land, thus reducing water pollution. Swiss farmers are encouraged, by the incentive of financial compensation for loss of earnings, to switch from intensive to extensive farming methods, which reduce the run-off and leaking of nutrients and pesticides into rivers and groundwater. This amounts to an annual subsidy of CHF 2,000 per hectare. The village of Wohlenschwil in the Canton of Aargau is a shining example of this policy's success. In the mid-1990s, intensive farming in Wohlenschwil resulted in an excess of nitrate – some 53mg/l – in its drinking water. After the intensive cultivation of 23.5 hectares of land was halted and the arable land transformed into unfertilized meadows, the nitrate content diminished by over a half, to 25mg.

Wetland protection

Wetlands, such as fenlands and raised bogs, occupy about 2% of the total area of Switzerland. Though 90% have been destroyed in the last 150 years, two wetlands of national importance are now protected by the Swiss Federal Constitution as ecosystems with rich biodiversity. As raised bogs act as buffers against flooding, this has aided water management and protection. So re-naturalization programs for raised bogs are being

developed to re-establish the hydrology perturbed by drainage. Farmers are also compensated for following cantonal instruction on aspects which protect the fenland from forest encroachment.

Conservation commitment

With reference to the cantons' disposal of their water resources, Article 76 of the 1999 Federal Constitution states: "Within the limits of its powers, the Confederation shall ensure the moderate use and the protection of water resources, and fight against harmful effects of water." Furthermore, Article 78 of the Federal Constitution states: "Moors and marshlands of special beauty and national importance are protected objects. Installations must not be built on them and no alterations to the land of any kind may be carried out. Exceptions are installations which serve to maintain the purpose of protection, and existing agricultural use."

Carbon check

Undoubtedly, Switzerland is committed to a cleaner environment; a fact also demonstrated by its setting of reduction targets for carbon dioxide (CO₂) in the CO₂ Act. When its CO₂ emissions in 2006 were 95.4% of those in 1990, while the target was 94%, it imposed a levy of CHF 12 per tonne of CO₂ emitted by fossil fuels used for heating (heating oil, natural gas), as of January 2008. This is not a cynical tax as the revenues from this levy will be fully redistributed to members of the public via health insurance companies, and to businesses as a percentage of wages paid.

This measure, designed to encourage businesses and the public to use fossil fuels more efficiently and to invest in renewable forms of energy, should help

to reduce CO₂ emissions and enable Switzerland to meet its commitment under the Kyoto Protocol.

International benefit

Even though Switzerland is an independent nation, its environmental awareness has far-reaching benefits. It embraced the UN International Year of Sanitation, 2008, with a national awareness campaign designed to highlight the appalling living conditions of one third of humanity, and to provide practical improvements. Furthermore, Switzerland is active in the Water Convention and associated protocols of the United Nations Economic Commission for Europe (UNECE), the legal framework for bilateral and multilateral regional co-operation on shared water resources (rivers, lakes and groundwaters).

Dr Keith Bull, Chief of the Pollution Prevention Section in UNECE's Environment, Housing and Land Management Division, recently highlighted Switzerland's international commitment to a cleaner environment. He said, "The Swiss government has shown a strong commitment to UNECE-wide endeavours on environmental issues such as air pollution and water resources. Even before becoming the 190th member of the United Nations in 2002, Switzerland was very involved in UNECE environmental matters and was signed up to many of the region's environmental Conventions and Protocols. Swiss delegates to United Nations environmental meetings continue to provide a driving force for action, while government resources provide support to many projects across the UNECE region. This reflects the Swiss national interest in protecting man and his environment." ●

© Simon Watkinson, 2008