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Forests and Water: A virtuous cycle



Future of European Waters
Budapest, Hungary, 23-25 March 2011

Water Framework Directive

Integrated Water Resources Management (IWRM)

In basins

What is IWRM:

- ✓ **Water for People**
- ✓ **Water for Food**
- ✓ **Water for Nature**
- ✓ **Water for Industry and other uses**

What about Nature for Water

”Upstream dimension”

**To ensure a sustainable water supply of good quality,
we should protect and use in a sustainable manner the ecosystems
that naturally capture, filter, store, and release water,
such as rivers, wetlands, forests, and soils.**

*Ministerial Declaration of the 3rd World Water Forum
(March 16-23, 2003, in Kyoto, Shiga and Osaka, Japan)*



60% terrestrial precipitation falls on forests

Forests as water infrastructures

With many ecosystems services for water:

Flood control and local water storage

Groundwater recharge

Water purification

Sediment retention and erosion reduction

Water Framework Directive:

On wetlands-forests

Preamble:

- (8) On 29 May 1995 the Commission adopted a communication to the European Parliament and the Council on the wise use and conservation of **wetlands**, which recognised the important functions they **perform for the protection of water resources**.
- (23) Common principles are needed in order to coordinate Member States' efforts to improve the protection of Community waters in terms of quantity and quality, to promote sustainable water use, to contribute to the control of transboundary water problems, to **protect aquatic ecosystems, and terrestrial ecosystems and wetlands directly depending on them**, and to safeguard and develop the potential uses of Community waters
- **Article 1:** (a) prevents further deterioration and protects and enhances the status of aquatic ecosystems and, with regard **to their water needs, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems**;

1.4. Identification of Pressures

- Annex: 1.4 Estimation of land use patterns, including identification of the main urban, industrial and agricultural areas and, where relevant, fisheries **and forests**.

Supplementary measures for river basin plans:

- (vii) recreation and restoration **of wetlands areas**

Groundwater Directive: On forests

- Preamble:
- The protection of groundwater may in some areas require a change in **farming or forestry practices**, which could entail a loss of income. The Common Agricultural Policy provides for funding mechanisms to implement measures to comply with Community standards

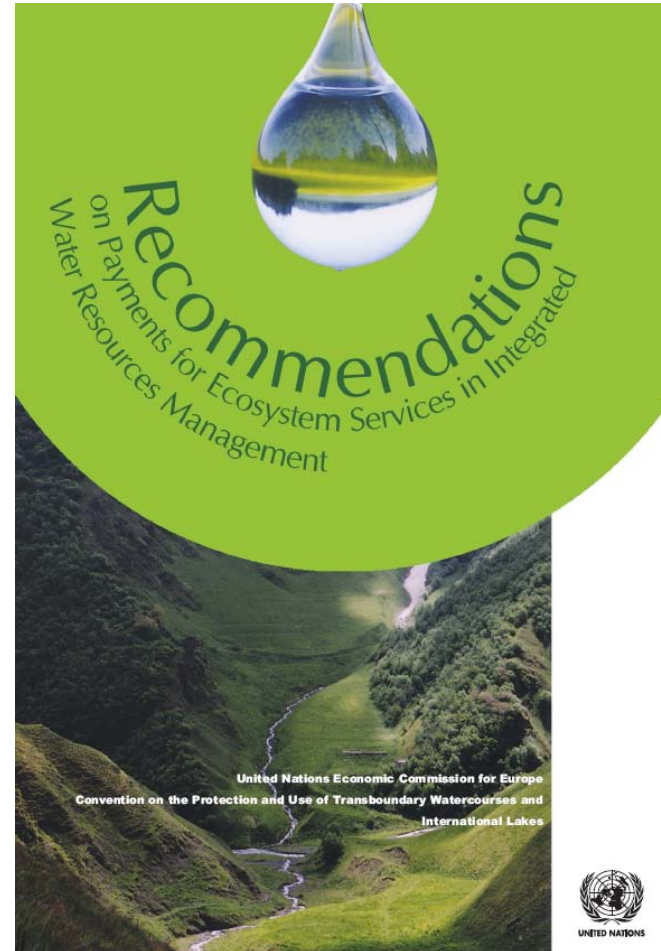
Art. 3 **Criteria for assessing groundwater chemical status**

- The threshold values applicable to good chemical status shall be based on the protection of the body of groundwater..., having particular regard to its impact on, and interrelationship with, associated surface waters and directly **dependent terrestrial ecosystems and wetlands**

Payments for ecosystem services: In IWRM plans and National Forest Programmes

Convention on the Protection and Use of Transboundary Watercourses and International Lakes of the Economic Commission for Europe of the United Nations

5th Ministerial Conference on the Protection of Forests in Europe:
Resolution on Forests and Water



Water Framework Directive:

Payments for ecosystem services

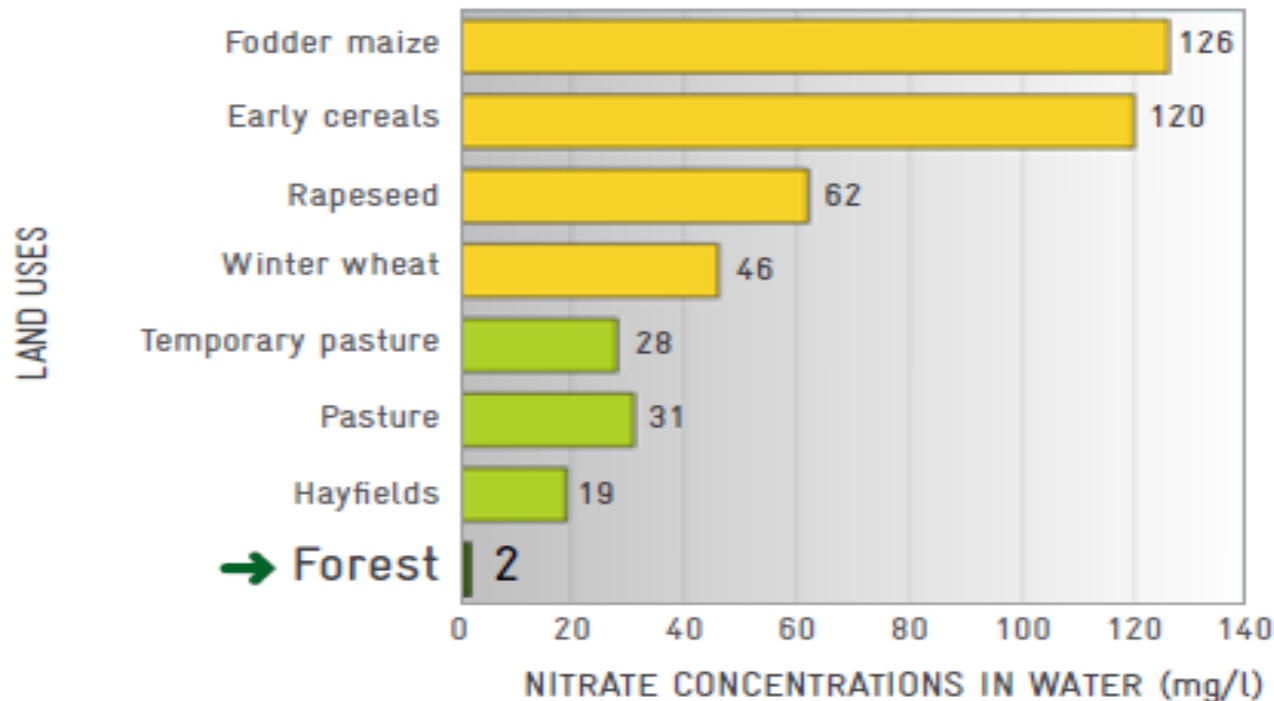
Article 9: Recovery of costs for water services

Member States shall take account of the principle of recovery of the costs of water services, including **environmental and resource costs**, having regard to the economic analysis conducted according to Annex III, and in accordance in particular with the polluter pays principle.

Article 11 : Programme of measures

....., including measures to safeguard water quality in order to **reduce the level of purification treatment required for the production of drinking water**

France: Nitrates



Benoit, Papy, 1997.

Fig. 1 : Nitrate concentrations in water in the rooting zone (at a depth of 1.10m) for different types of land uses in Lorraine.

France: Water price and forest cover

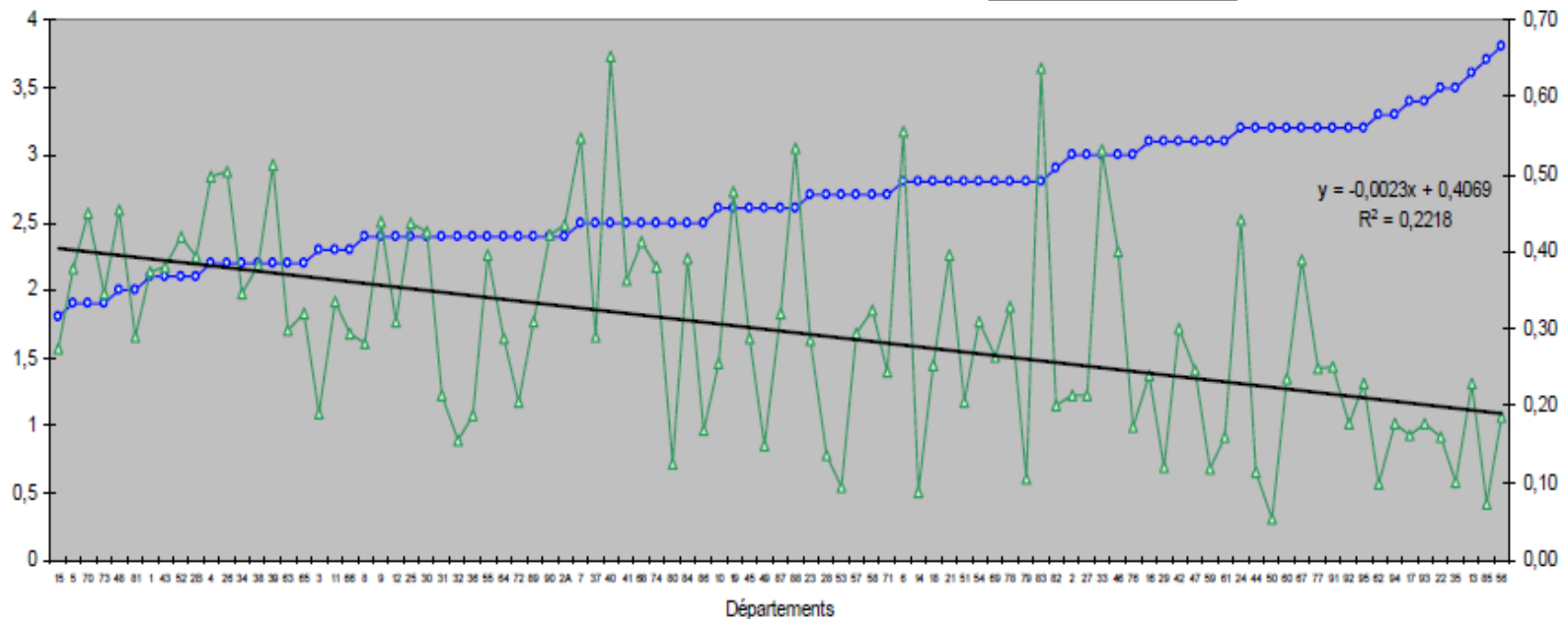


Comparaison des prix de l'eau et taux de boisement départementaux

(Départements métropolitains, sauf Paris, moyenne des taux de boisement pour les départements 92, 93 et 94)

Prix de l'eau 2001
Source : IFEN SCEES

Taux de boisement
Source : Teruti 2001



J. Figuepron - Laboratoire d'Economie Forestière, 2006

France: Masevaux in Upper Rhine



Forestry activities dedicated to drinking water protection	Additional management costs
<ul style="list-style-type: none">– clearing brash above water catchments– cable logging of windthrown trees– biodegradable chainsaw oil– more use of cables for felling– “woodsman kits” to deal with accidental pollution	33 €/ha/year
<ul style="list-style-type: none">– recommendations as above with cable logging in general use in protection areas around water catchments (fig. 3)	75 €/ha/year

France: Renne

- Lack of drinking water
 - 2 scenarios possible:
 - a) Bring water from another region or,
 - b) Purchase and afforestation of 70 ha (1 mio €)**
- In 10 years, protection costs: 0.16 €/m^3
- Avoided costs: 1.50 €/m^3



Danemark

- Problem: loss of drinking water wells: 14 mio m³ /year
- Drinking water → groundwater



«Copenhagen Energy Corporation»

- Biggest public company
- 55 wells for over 1 mio inhab.
- Fund for the provision of ecosystem services
- User/payer: 10 €/year/consumer

Ex: Well of Vigerstedt (100'000 inhab.):

- a) Purchase and conversion of 530 ha agricultural land into broad-leaved forests : management by state and cities
- b) Measures over 95 ha of private forest: total ban of pesticides: 1.5 mio €contract for 30 years

Germany:

A private enterprise

- Bionade Corporation: non-alcoholic organic refreshment drinks (1995)
- In the biosphere reserve of Rhön (Bavaria, Hesse and Thuringe),
- Partnership with the association « Trinkwasserwald »
- Conversion of 130 ha of pine forests into broad-leaved forests (+100 mio/l/year)
- 20 year contract for public and private forests (>18 ha)
- Increase of 800'000 l/ha/year after 10 years of conversion (1ha=6'800 €)



Japon



- 67% forests
- 50% forests are for water supply and disaster prevention
- Toyota city: forest management in basin of river Yahagi: 0.008 €/m³.
- Cities of Okayama and Kochi: yearly tax of 4 €/inhab. (up to 8 €)

View of the "Natural Water Sanctuary Oku-Daisen" from the Kimendai overlook

**In order to create more natural water
than we use in our factories, we are boosting
the forest's ability to cultivate water.**

That's our promise to nature.



Our goal : to create more natural water than we use in our factories.

By protecting the forest's natural capacity for cultivating water, we increase it.

We have expanded the Natural Water Sanctuary Project

we began in Aso, Kumamoto in 2003 to seven areas,

including the Minami Alps, Akagi and Oku-Daisen.

Currently, the total area is 18 square kilometers. To achieve our goal of generating more natural water than we use in all of our factories, we will increase that total area to 70 square kilometers by 2011.



"Natural Water Sanctuary project"

As the "Bringing Water to Life" corporation,
we do everything we can. Our Natural Water Sanctuary Project
cultivates the water supply.

SUNTORY

<http://www.suntory.com/>

FORESTS MAKE OCEANS

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Water management from mountain to the sea: An intersectoral affair

→ Land-use policy as an umbrella for a coherent water management at basin level

While implementing jointly

- IWRM plans
- National Forest programmes
- Biodiversity strategies
- Wetland management plans
- PES schemes

Your agenda for forest and water

- **7 – 8 July 2011 – Geneva, Switzerland:** Seminar on PES for water in dryland forests

UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes

- **12-16 September 2011 – Kastamonu, Turkey:** “Forests for water – water for forests”

28th session of the European Forestry Commission Working Party on the Management of Mountain Watersheds of the FAO