



**SEMINAR ON ENVIRONMENTAL SERVICES AND  
FINANCING FOR THE PROTECTION AND SUSTAINABLE USE OF ECOSYSTEMS**

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**SOME ISSUES AND EXAMPLES OF ENVIRONMENTAL SERVICES AND FINANCING  
FOR THE PROTECTION AND SUSTAINABLE USE OF WATERRELATED  
ECOSYSTEMS IN THE NETHERLANDS**

**A contribution of the Ministry of Agriculture, Nature and Food Quality**

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**I. VALUING ECOSYSTEM SERVICES**

**A. Determining factors for using payment for ecosystems services (PES)**

In the Netherlands there are many different projects that consider payment for environmental (water related) services. The projects seem sometimes to have more differences (in size, in topic, in actors involved and in the way the payment is arranged) than conformities which makes it hard to determine specific factors for success. Still there are some preconditions for PES, these are listed below. Many ecosystem services are linked to water but are not solely a water service. Therefore the boundaries of water-related or non-water related ecosystem services are hard to determine. In this overview we consider the broad scope of water related ecosystem services.

Factors for success are many but first of all the ecosystem services should be **considered as valuable or indispensable**. The value is not only determined by the economic factor but also by the ecological and social value of the ecosystem service (for example drinking water supply and flood protection but also scenic beauty). Secondly the ecosystem services should be **used by consumers**. But recognizing and utilizing ecosystem services alone is not enough. In the Netherlands recognizing the values of ecosystems started over a century ago. But this practise did not directly provide direct payment or wise use of the ecosystems delivering these services (see the box drinking water).

### **Drinking water**

In second half of the 19th century the extraction of drinking-water from the dunes started in the Netherlands. The quality of the drinking water in the cities was at that time very bad. For the public health the clean dune water contributed in the combat against the contagious sickness cholera. In the following years more and more water from the dunes was extracted. The groundwater level dropped and around 1930 it was necessary to transport water from the rivers to the dunes. This undrinkable river water was pumped in channels and infiltrated the sand. At a small distance from the channel filtered clean drinking water was pumped to the surface. Around 1950 this method was used on large scale. Much later people found out that the used river water was polluted.

The consequence of water winning in the dunes was lowering of the ground water tables and pollution with all kind of chemicals from the water of the river. Desiccation of wet dune-valleys resulted in the loss of particular plants and animals species. The restoration and rehabilitation of these nature areas turned out to be a very difficult and complex process.

The impact of groundwater extraction and surface infiltration in the dune area became a topic in the last 30 years. In 1977 the foundation for dune conservation (Stichting Duinbehoud) was established. As a result of the public discussion the drinking water suppliers have invested a lot of money to improve their nature unfriendly practise and image. Better purification of

The third factor that determines the possibility for payment for ecosystem services is the ownership of the ecosystem service. The ecosystem service should be more or less owned (**managed**) by a **group of people (“providers”)** to whom customers can redirect their wishes. The ecosystem service should be **well defined**. Customers of ecosystem services must feel **responsible and be willing to pay** for the ecosystem service.

The government policy document *Nature for People, People for Nature* for nature, forest and landscape published in 2000 captures the notion that nature should meet the demands of the society and that natural areas should be of good quality and size, within easy reach of urban areas and accessible and usable for people. The strengthening of public involvement, to increase their responsibility and initiative in forest and nature management is considered as a key Government goal, but this does not mean that sustainable management and protection of nature are left completely to the economic forces of market mechanisms. The Government considers nature as a common good and sees her role as facilitator and stimulator of private initiative and creator of the long-term framework conditions.

The last point is very important. There should be a **legal frame work** which makes PES possible. For

the landscape funds (see box) it is still uncertain if they fulfil the EU regulations for subsidies (Staatsteuntoets). Without legal possibilities for customers who are willing to pay it is hard to create PES. Especially farmer groups who deliver water retention or water supply can only be paid compensation afterwards which means high administration costs).

### **Landscape fund**

In the eastern part of the Netherlands a beautiful scenic landscape is created by small scale agricultural activities. The habitants of the area and many tourists enjoy the scenic beauty of the landscape. For the local farmers it becomes more and more difficult to generate sufficient income with the limited number of animals and (many) small strips of land. Recently a pilot project “landscape funds” was established. These funds compensate farmers loss of income for activities that contribute directly to the improvement and conservation of unique landscape characteristics. A major uncertainty for the project is whether it fits the European regulation for subsidies.

It should be clear that not all functions can be regulated by the market. Policy, legislation and control will have their own function in the management and protections of nature. But involving stakeholders and consumers of ecosystem services in management and protection will broaden the basis for the management and protection.

### **B. Characteristics of river basins or ecosystems favourable to establishing PES**

Not only river basins or ecosystems as a whole are favourable to PES. In the Netherlands mostly the ecosystem service (clean water, beautiful landscape or meadow birds) is valued and a PES is established to conserve the service. In the Netherlands forest areas, agricultural landscape and meadow birds have proven to be suitable for the introduction of PES. Almost all these activities do relate to water issues, like water retention or improving water quality. Farmers are paid for a high ground water level which means loss of production but is favourable for nature development and meadow birds.

### **C. Measuring ecosystem services**

#### ***Overview Effects Infrastructure (OEI)***

The decision-making process on major transport infrastructural projects in the Netherlands includes an Overview Effects Infrastructure (OEI). The aim of OEI is transparency and active actor involvement in the valuation and decision making process. It has been initiated by the Ministries of Transport and Economic Affairs after discussions on the benefits of different major infrastructural projects. In the year 2000 the OEI method was introduced and it has become highly successful. The Cost Benefit Analysis includes all costs and benefits related to the infrastructure for the society as a whole, e.g. building costs, road safety, travel time and effects on nature. In 2002 an evaluation of the OEI stated that nature effects were not sufficiently incorporated.

In December 2004 the Ministry of Agriculture, Nature and Food Quality developed standard guidelines for the inclusion of costs and benefits for nature, water and soil. See also the website (in Dutch only)

[http://www9.minlnv.nl/servlet/page?\\_pageid=112&\\_dad=portal30&\\_schema=PORTAL30&p\\_item\\_id=96362](http://www9.minlnv.nl/servlet/page?_pageid=112&_dad=portal30&_schema=PORTAL30&p_item_id=96362))

Five types of effect of infrastructure on nature are distinguished, namely: area change, fragmentation, disturbance, desiccation and pollution. In order to make these effects on nature, water and soil quantitative in an OEI, a step-by-step method was introduced. In this step-by step method the physical impact of infrastructure on the natural environment is translated to prosperity of the country. The method follows the following steps: (1) examine the physical impact of the planned infrastructure on the natural environment, (2) to which ecosystem function the physical impact is related (this is a step aside), (3) provision of the prosperity impact in terms of goods and services which the natural environment produces, (4) quantifying of the impact, and (5) valuation

by accounting the prosperity impact. This guideline is applicable for terrestrial and water related ecosystem services.

### **The Water Impact Assessment (WA)**

“*Water Impact Assessment*” (watertoets) has become mandatory since 1 November 2003 to ensure that a ‘water paragraph’ is included in spatial plans, describing how the consequences of these plans affect water management. Apart from safety and flooding, the water paragraph must address the effects on water quality and desiccation. The way in which areas have been urbanized or otherwise developed (e.g. glasshouse areas) is one of the causes of flooding. Spatial plans and decisions may lead to flooding, a deterioration of water quality, the desiccation of nature areas, etc. The Water Impact Assessment is designed to prevent or compensate these negative effects.

<http://www.watertoets.net/>

This integration of water in spatial planning works in two ways: a plan is assessed on its implications for the water system and the restraints that the water system puts on land use are made explicit.

### **Nature Protection Law**

The Ministry of Agriculture Nature and Food Quality has developed a new “*Nature Protection Law*” (Natuur Beschermingswet) ; this law has been approved by the Parliament in 2004. In this new law article 6.4 of the EU Habitats Directive is implemented.

“Article 6.4 If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted” This means that if a new plan or project starts in a protected area appropriate assessment of its implications for the site is necessary.

In all three above mentioned examples the impact of a project on the ecosystem services is made clear. This information is taken into account in policy decisions. The loss of ecosystem services can be reduced and negative impacts can be compensated.

### **Rural Development Plans**

For “blue and green services” delivered by farmers not the ecosystem service determines the payment but the loss of agricultural production. The indemnification for farmers under the environmental contracts for on-farm nature management (Subsidieregeling Agrarisch Natuurbeheer (SAN)) is the loss of income plus the extra costs made with a maximum of 20% extra stimulant.

This is according to the European regulation and must be approved in the national Rural Development Plans. All national arranged agreements, like blue and green services, need to be approved by the European Commission on state support (Staatssteun).

### **D. Social and Economic aspects**

#### ***Regional differences – economic aspects***

For the Overview Effects Infrastructure (OEI) the division of benefits between different provinces within the Netherlands is an important issue. The OEI can only present clean facts to decision makers. Social and economical aspects and available budget play apart from the OEI a role in the decision making process.

***Open access – social aspects*** For many “green” subsidies by the EU or national government the condition for payment is that 90% of the nature area should be open for the public.

## **E. Cost-benefit analysis of land use alternative and their impact on ecosystem services**

See answers under I C.

## **II. LEGAL AND CONTRACTUAL ASPECTS**

### **A. Legal and regulatory frameworks that can help establish payments for ecosystem services**

Integrated Water Recourse Management is more and more included in the water management practise in the Netherlands. This is reflected in the policy developments in for example at national level (The Water Policy for the 21st Century) and at EU level (the EU Water Framework Directive). At this moment in the Netherlands the implementation and the transposition of the WFD is in full progress. See also page 6 Water Framework Directive.

In the Netherlands there is great interest for green and blue services from the on-farm Nature management programme but almost all projects need the European Commission approval (on state support). At this moment the number of applications is far exceeding the capacity of the approval system.

In the near future not the national government but the provinces will be responsible for the execution of the payment for environmental services under the Rural development plans. It is expected that this will contribute to more tailor made programs but the consequence is also that the applications will be more diverse. This means an extra delay by the approval system. Therefore a solution can be to develop an approved Catalogue of environmental services. The Dutch Ministry of LNV favours the idea of the Catalogue. At the moment there are discussions between LNV and the 12 provinces in the Netherlands about possibilities and responsibilities for the development of the Catalogue for Environmental Services. The catalogue will be used by the EU Commission to approve of complete packs of environmental services, which means that separate applications are easier to be approved.

In the new Council Regulation on support for rural development by the European Agricultural Fund for Rural development (EAFRD 2007-2013) not only farmers but also other land owners can be paid for environmental services. Also tendering is possible, so market forces are introduced in the payment for environmental services.

### **B. Contractual arrangements**

The farmers and land owners in rural areas are very interested in the concept of environmental services, including “blue services”. This is expressed in the growing number of initiatives which are often supported by the municipality, water boards, provinces and some times by private partners.

#### ***1 Self-organized private deals***

There are many initiatives in the Netherlands which can be considered as (self-)organized private deals. Often not especially focussed on water related ecosystems but often they do relate to water issues.

#### ***Adopt a...***

Very popular at the moment are many different adoption possibilities for individuals. The success story started with ‘Adopt a chicken’ campaign by the organic umbrella organisation for organic producers “Biologica”. Over twenty thousand people adopted a chicken for 30 Euros a year and received in return six eggs a month from organic farmers. The campaign was an innovative way of strengthening the relationship between the consumer and the organic product. The organic production claims to have less negative effects on the environment and water system than traditional farming methods.

After this campaign many other adoption possibilities appeared.

A possibility is the adoption of flower rich ditch edges of farmers fields. The field edges are not sprayed by chemicals and fertilizer. Flowers can be picked in return. A same kind of arrangement for farmers can be made with the water boards. The water boards pay for the reduced negative effect on the water quality.

Even birds like the Black tailed Godwit can be adopted. Farmers contribute to the protection by postponing mowing and a favourable ground water level for this species. The higher ground water is favourable for many nature areas dealing with desiccation.

### ***Friends of the landscape***

Friends of the landscape pay in Overijssel 1.250 euro a year for a minimum period of three years. The “friends” are mentioned in a magazine ‘Natural Overijssel’ (‘Natuurlijk Overijssel’) and receive a certificate. Every year there is a friends meeting. With the money the projects, like the cleaning of fens, which favour the natural surrounding of the area are supported.

The foundation Alblasserwaard-Vijfheerenlanden has a similar kind of initiative the ‘club of 100’ (‘Club van 100’) for conservation and management of the typical landscape of the area. The goal is 100 companies or individuals who contribute 500 euro a year. Very important for the Club of 100’ is the ‘multiplier’ effect: the money is used to receive contra financing for projects from different government levels.

### **Fund Shaping**

Since the notion grows that the rural area fulfils a substantial function for the cultivated surroundings, regional actors are more and more interested in participating in payment schemes for environmental services. In these regional initiatives different financing sources are bundled and financing of projects is arranged through a capital fund (vermogensfonds)

The national government does not participate in this type of fund shaping because it is prohibited by the accountancy law. and the fact that filling only one fund already claims a large proportion of the funding available by the government.

### ***Entry fee***

National Park De Hoge Veluwe (5.500 hectares) is a non-profit foundation. In total 80% of the income comes from ticket sales to visitors (6 euro a person). Every euro received is invested in the Park. Other form of support is generated by friends of the park (volunteers) and sponsoring of the park. The Park receives no subsidy from the State. Also some of the nature areas which are owned by the drink water companies ask an entry fee.

### ***Others***

#### ***Membership of Nature organisations***

Several private nature organisations, like the national private *Nature Conservation Organisation (Natuurmonumenten)* and the *Provincial Landscape Societies* own substantial forest and other nature areas (ca 16 % of the total forest area); a substantial part of their funding they get through individual membership contributions and financial support by large private companies (e.g. for advertising, building etc.). Often the member utilize the nature areas for recreational purposes.

### ***Trading schemes :***

#### **Quota**

Apart from pollution unit payment there are government-managed markets like for example milk and manure quota which turned out to be successful in reducing the agricultural pollution. These quota can be sold between producers.

### **Public payment schemes:**

#### **Water Framework Directive**

To stimulate sustainable water use the Water framework Directive (WFD) uses the principle 'the polluter/user pays'. It is translated in the form of cost recovery for water services. In the Netherlands cost recovery for water services is very usual. The classification of water services in the Netherlands is based on the institutional structure of the Dutch water management. At institutional level insight is gained in cost recovery and it simplifies the date collection. In the Netherlands the following activities are defined as water service:

- production and supply of water;
- collection and removal of sky water and waste water;
- purification of effluent;
- management of groundwater;
- regional water system control / management.

The table presents the results of calculation of cost recovery in the Rijn Delta of the Netherlands. (information from [http://www.kaderrichtlijnwater.nl/Download/24067\\_Rijndela\\_Hoofdrapport2.pdf](http://www.kaderrichtlijnwater.nl/Download/24067_Rijndela_Hoofdrapport2.pdf))

Table 1: An overview of the cost recovery costs in the Dutch part of the Rijn Delta

<b>Water service</b>	<b>cost recovery</b>	<b>Service provider</b>	<b>Users</b>	<b>% recovery costs</b>	<b>instrument</b>
production and supply of water	99%	drink water company, companies, agriculture	households companies agriculture	55% 42% 2%	rate Euro/m <sup>3</sup> , standing charge
collection and removal of sky water and waste water	78%	municipalities	households companies agriculture	53% 25% 0%	sewage standing charge
purification of effluent	99%	water boards	households companies agriculture	68% 32% 0%	pollution levy, service
management of groundwater	93%	provinces	households companies agriculture	100%	ground water levy, ground water tax
management of the regional water system	98%	water boards	households companies agriculture	50% 16% 32%	levy

#### **Blue services**

In the water management it is assumed that retention and discharge measures make the water system more robust and less sensitively for high water levels (for example at abundant rain fall) and lower water levels (for example in times of dryness, moving dikes etc.). Holding and storing the water must happen. The most obvious space to hold water or is store on agrarian ground. But storing the water means loss of income for the farmer. Analogously to the system of green services (paying for making green efforts) the idea has arisen of providing blue services (paying for providing services in the field of water storage). A market test has started where water measures are tendered in association with the Stichtse Rijnlanden. Also for the water board this is an experiment: farmers get the possibility to take paid measures that contribute to the aims of the water board.

In Winterswijk farmers make money out of rainfall. Instead of growing a heavily fertilised crop of maize farmers have converted some of their arable land into grassy collecting areas into which rainfall can infiltrate. Their annual harvest now consists of some 1.000 cubic metres of clean rainwater that percolates to groundwater for use by water supply company. The farmers receive

about 1.500 Euro per hectare in compensation, which is a reasonably profit compared with the income from regular crop cultivation.

### ***Financial compensation systems***

Regulation On farm nature management 2000

In the Netherlands in discussions about the Rural Development Policy is linked with the concept of 'Environmental services'. The concept applies to those environmental services which benefit society but the traditional economic systems do not pay for.

They will be expanded in the period 2005-2009 with the themes water and accessibility.

Regulation Nature management 2000 (Subsidieregeling Natuurbeheer 2000)

The Regulation nature management 2000 (also called "Management Program") , that started in 2000 is based on two principles: paying for results and more responsibilities for the owners/managers. The level of financial compensation is based on the type and level of services (biodiversity, landscape, recreational, environmental services) provided by the nature area. A contract is signed between the owner and the government in which both parties agree upon a set of measures to be taken to achieve specified ecological and other goals; these have been formulated in so called "basic" and "plus"-packages.

Prerequisite for the basic package (fl 100,- /ha) is that nature owners open their areas to the public. "Plus-packages" include development of ecological values or maintenance of traditional management systems.

### ***Tax incentives***

*Green investments*

The arrangement "green projects" was adopted by the Dutch government in 1995. This arrangement provides private persons the opportunity to invest money in environmental projects via approved green funds without paying tax. Green funds can be launched by any financial institution that is approved by the Dutch National Bank. Interest and dividends from investments in Green Funds are exempted from income tax. Banks with a Green Fund can provide loans from this money for financing environmental friendly projects. At least 70% of the money in Green Funds needs to be invested in Dutch Green projects.

*CO-2 Forest Certificates* of the National Green Fund are a specific example of these green investments. As of April 2001 the National Green Fund issues so-called "CO2 Forest Certificates". Individuals, companies and other organisations can buy these certificates to compensate for their CO2-emissions. The money invested is free from income tax. The money generated in these transactions is to be invested in the establishment of new nature areas, provided that these areas are managed sustainable and are open to the public. Also outside the Netherlands several projects have been started with "green funding".

Public interests in green investments is high.

### ***"New Estates"***

The Government Fifth Memorandum on Spatial Planning (Vijno) emphasises the importance of nature in enhancing the quality of the environment. It introduced an instrument for realising new estates. To obtain permission for the construction of a building (e.g. house, office) in certain areas it must include the establishment of a surrounding nature area of at least 5 hectares, of which 90% must be open to the public. Financing for establishing and management of the estate will be provided by private means (individuals, companies, and other organisations).

### **Reconnoitring Green services**

There are six projects under the "Reconnoitring Green Services": Ooijpolder-Groesbeek, Groene Woud, Farmers for Nature (Landgoed Twickel and Polder van Biesland), De Venen, Noordelijke

Friese Wouden, Langbroeker Wetering. De Venen (The peatlands) is focussed on water only just started. These projects receive support from the ministry of Agriculture Nature and Food Quality.

### **Public Private Partnerships**

#### ***Red for Blue***

The “blue city” (De Blauwe Stad) is the result of public private partnership in the Province of Groningen. The Province, National Government and the water boards wanted to revitalise an area in the Northern part of the country. The combination of the development of 250 hectare house building (1200 - 1800 houses), a lake area of 800 hectare and 300 hectare of nature development is expected to contribute to the revitalization. A consortium of constructing companies finances 375 million euro and the different governments a total of 125 million euro.

“Lake City Groningen” (Meerstad Groningen) works with the same principle. 829 hectares of (water related) nature are paid by the development of 829 hectares of house building development.

#### **Wadden Sea Fund**

The decision by the Dutch Parliament to support the Cabinet allowing gas production under the Wadden Sea under strict conditions as well as further exploration activities makes it possible for the NAM (Nederlandse Aardolie Maatschappij) to explore gas production in the Wadden Sea. The benefit for the Wadden Sea itself, is the intend of the Cabinet to invest a half Billion Euro in nature development and sustainable economic development in this tidal area.

The Netherlands will establish a Fund for nature development, management and sustainable economic development in the Wadden Sea area. The fund will be filled from the benefits of future gas production and exploration in the Wadden Sea area.

### **C. Socio-economic and environmental impacts of PES**

## **III. CHALLENGES FOR IMPLEMENTATION**

### **A. Challenges for the establishment of PES**

#### **B. Challenges for the dissemination of best practice**

Dissemination of best practices and the exchange of information are strongly supported by the Government of the Netherlands. The Government of the Netherlands and FAO organized for example an International Conference on Water for Food and Ecosystems, from January 31 - February 5, 2005 in the Hague <http://www.fao.org/ag/wfe2005/>. The conference provided a high level platform for over 600 participants around the globe, including a ministerial segment. The prime objective of the WFE Conference was: to help governments identify management practices, practical lessons learned and the necessary enabling environments that lead to sustainable water use at the river-basin level and the harmonization of food production and ecosystem management with a view to implementing already internationally agreed commitments. One of the three themes of the Conference was “The new economy of Water for Food and ecosystems”. The database with best practices of this theme are available on the FAO website. In two partnerships (Colombia en South Africa) the implementation of the results of the conference are further explored. The results of the conference are also presented at this meeting.

On the 8<sup>th</sup> December 2005 a national symposium on “Ecosystem Valuation and Financing; making the priceless valuable” is organized by the ministry of Agriculture, Nature and Food Quality. The general objective of the symposium is to contribute to the development and implementation of innovative instruments for the broadening and diversification of the financial basis of ecosystem management by enhancing the link between policy, research and practice in the field of ecosystem valuation and financing.

The brochure of this symposium is attached

The Dutch Government finances a Programme on “Water for Food and Ecosystems” in river basins with involvement of Dutch water sector and bilateral cooperation. This programme deals with the interdependencies between water for food production. Economic dimension of water plays an important role in this programme.

Public information campaigns were especially organized around the self organized private deals like adoption and membership of nature organisations.

In the recently published report Nature and Landscape as investment (“Natuur en Landschap als Investeren”) by Smit et. al. (2005) is stated that the general opinion in the Netherlands is that collective goods like landscape and nature should be paid from government sources. The strengthening of public involvement, to increase their responsibility and initiative in nature management is considered as a key Government goal.

On the website “Beautiful Netherlands” ([nederlandmooi.nl](http://nederlandmooi.nl)) examples for citizens, companies and local government for payment for ecosystem services are mentioned. They all relate to the ecosystem services that enhance the attractiveness of the landscape and support flora and fauna.

#### **D. Challenges for research and capacity building initiatives**

The Netherlands actively supports international cooperation through bilateral support to partner countries and through international organizations who work in water related fields such as: Global Water Partnership (GWP), World Water Council (WWC), Water Aid, International Water Management Institute (IWMI). Also support is being given to different initiatives which were presented during the third World Water Forum like: Dialogue on Water for Food and Environment, Dialogue on Water and Climate, Water for Peace. Many projects have been developed to support payment for environmental services under the inter ministerial programs Partners for Water, PIN- en BBI-MATRA and the International Policy Programme on Biodiversity of the Netherlands (2002-2006). Furthermore support is given to Wetlands International which head quarter is hosted by the Netherlands.

There is a special research programme dealing with Sustainable Water management more information on the Programme and projects can be found at:

<http://www.kennisonline.wur.nl/Program.aspx?Site=https://portal.wur.nl/SITES/LNVWEB/T10/C20/417>