

Environmental taxes and subsidies in SEEA forest accounts

Jukka Muukkonen

Contents

- Environmental taxes and subsidies
 - General definition of taxes and subsidies
 - The scope and definition of environmental activities (SEEA CF)
 - Definition and classification of environmental taxes (SEEA CF)
 - Definition and classification of subsidies and similar transfers (SEEA CF)
- Environmental taxes and subsidies related to forests, examples
 - Finland
 - Some Central African countries
 - Mali
 - USA
- Some observations on environmental taxes and subsidies in forest accounts

Environmental taxes and subsidies in the SEEA CF

Chapter 4: Environmental activity accounts and related flows	Chapter 5: Asset accounts
4.2 Environmental activities, products and producers	5.2 Environmental assets in the SEEA Central Framework
4.2.2 The scope and definition of environmental activities	5.2.2 Scope of environmental assets
4.2.3 Other economic activities related to the environment	5.2.3 Valuation of environmental assets
4.2.4 Classification of environmental activities	5.4.3 Principles of asset valuation
4.3 Environmental activity accounts and statistics	5.4.4 The Net Present Value approach
4.3.5 Accounts for resource management expenditures	5.4.5 Approaches to estimating resource rent and net present values
4.4 Accounting for other transactions related to the environment	5.6 Asset accounts for land
4.4.2 Environmental payments by government	5.6.5 Monetary asset accounts for land
4.4.3 Environmental payments to government	5.8 Asset accounts for timber resources
4.4.4 Environmental transfers by non-government institutional units	5.8.4 Monetary asset accounts for timber resources
4.4.5 Permits to use environmental assets	5.10 Accounting for other biological resources
4.4.6 Transactions concerning fixed assets used in economic activities	5.10.2 Accounting for natural biological resources

Taxes: compulsory, unrequited payments made by institutional units to government units

- **Taxes on products:** Taxes payable per unit of some good or service. E.g. value added type taxes, taxes and duties on imports, export taxes.
- **Other taxes on production:** taxes on products that enterprises incur as a result of engaging in production, e.g. on land, fixed assets, and labour.
- **Taxes on income:** taxes on incomes, profits and capital gains.
- **Other current taxes:** current taxes on and miscellaneous current taxes, e.g. payments by households to obtain certain licenses.
- **Capital taxes:** taxes levied at irregular and infrequent intervals on the values of assets or net wealth owned by institutional units or on the values of assets transferred between institutional units as a result of legacies, gifts or other transfers.

Subsidies and similar transfers

- Subsidies are payments that government units make to enterprises on the basis of the levels of their production activities or the quantities or values of the goods and services that they produce, sell or import.
- Social benefits to households are current transfers received by households intended to provide for the needs that arise from certain events or circumstances, e.g. due to sickness, unemployment, housing.
- Investment grants consist of capital transfers made by governments to other units to finance all or part of the costs of their acquiring fixed assets.
- Other current transfers consist of other than current taxes on income, wealth, etc, social contributions and benefits, and social benefits in kind. Other capital transfers consist of all capital transfers except capital taxes and investment grants.

The scope and definition of environmental activities

- The scope of environmental activities is those economic activities whose **primary purpose** is to reduce or eliminate pressures on the environment or to make more efficient use of natural resources.
- **Environmental protection activities are those activities whose primary purpose is the prevention, reduction and elimination of pollution and other forms of degradation of the environment.**
- **Resource management activities are those activities whose primary purpose is preserving and maintaining the stock of natural resources and hence safeguarding against depletion.**
- Activities are environmental activities only if the primary purpose of the activity is consistent with the definitions of the environmental protection or resource management.

Groups and classes of environmental activities

I: Environmental Protection

- 1 Protection of ambient air and climate
- 2 Wastewater management
- 3 Waste management
- 4 Protection and remediation of soil and water
- 5 Noise and vibration abatement
- 6 Protection of biodiversity and landscapes
- 7 Protection against radiation
- 8 Research and development for environmental protection
- 9 Other environmental protection activities

II: Resource Management

- 10 Management of mineral and energy resources
- 11 Management of timber resources
- 12 Management of aquatic resources
- 13 Management of other biological resources
- 14 Management of water resources
- 15 Research and development for resource management
- 16 Other resource management activities

Other economic activities related to the environment

■ Natural resource use activities:

Extraction, harvesting and abstraction of natural resources, including related exploration and development. These activities are not considered environmental but may be of particular interest in the assessment of environmental impacts and the development of environmental policy.

■ Activities associated with the minimization of the impact of natural hazards on the economy and society:

Research, observation and measurement networks, surveillance and administration of hazard warning systems, provisions for fighting the effects of natural hazards and for the evacuation of the population, the building of structures to prevent hazards. In some cases the primary purpose of these activities may be environmental protection and they should be recorded as part of environmental protection activities.

Selected payments to and from government and similar transactions (SEEA CF Table 4.4.1)

Payments made by	Payments received by				
	Government	Corporations	Households	NPISH*	Rest of the world
Government	Transfers between levels of governm.	Subsidies and investment grants	Current and capital transfers	Subsidies; Current and capital transf.	Current and capital transfers
Corporations	Taxes, fines, fees, charges and rent	Rent	Rent	Donations	Donations to NPISH in ROW
Households	Taxes, fees, charges and fines			Donations	Donations
NPISH*	Taxes	Current and capital transfers	Current and capital transfers		Current and capital transfers
Rest of the world	Taxes and current transfers			Donations	

* Non-profit institutions serving households

Taxes, subsidies and other transactions in the SEEA

- The SEEA only records taxes and subsidies for which an actual transaction takes place between institutional units.
- In some cases there is interest in the value of so-called implicit subsidies, for example via tax exemptions or preferential tax rates. However, as there are no transactions recorded in relation to these amounts following standard national accounts principles, no estimates of the values of these flows are included in the SEEA.
- In addition to payments to and from government, there are other transactions of a similar nature recorded in the national accounts that may be of interest in the analysis of environmental matters. Examples are donations made by households and enterprises to non-profit environmental groups.

Environmental tax

- ***An environmental tax is a tax whose tax base is a physical unit (or a proxy of it) of something that has a proven, specific, negative impact on the environment.***
- The approach taken in the SEEA differs from the Pigouvian taxes approach, where environmental taxes are defined with reference to taxing negative externalities. (Pigouvian taxes do not include taxes collected for fiscally motivated reasons.)
- In cases where the use of the tax revenue is known, these taxes are considered “earmarked taxes”. Those taxes that are earmarked for environmental protection are relevant in the calculation of environmental protection expenditure.

Environmental tax bases and categories

- **Energy taxes**
on energy products used for both transport and stationary purposes, on carbon (under energy rather than pollution taxes).
- **Pollution taxes**
on measured or estimated emissions to air (including sulphur) and water, on generation of solid waste.
- **Transport taxes**
related to the ownership and use of motor vehicles, on other transport equipment and related transport services, related to the use of roads.
- **Resource taxes**
taxes on water abstraction, extraction of raw materials and other resources, e.g. sand and gravel (exclude payments to government for the use of land or natural resources which are treated as rent).

Treatment of Value Added Tax (VAT)

- **Generally, VAT are excluded from the definition of environmental taxes** because they are considered to have no influence on relative prices in the same way that other taxes on environmental tax bases do (i.e. VAT is levied goods and services regardless of their impact on the environment). This lack of direct influence is also reflected in the deductible nature of VAT for many tax payers.
- There is one specific exception: In principle, where VAT is calculated on a price that includes a duty or tax already determined to be an environmental tax, the relevant amount of non-deductible VAT can also be considered to be part of environmental taxes and classified based on the nature of the underlying tax base.

Environmental subsidies and similar transfers

- **An environmental subsidy or similar transfer is a transfer that is intended to support activities which protect the environment or reduce the use and extraction of natural resources.**
- Includes transfers defined by the SNA as subsidies, social benefits to households, investment grants and other current and capital transfers.
- A subsidy or similar transfer should be treated as environmental when the primary purpose of the government is that resources be used for either environmental protection or resource management purposes.
- In principle, a decision as to whether the primary purpose of a transfer is environmental should be made for each individual transfer. The total value of the transfer is treated as being for that primary purpose.

Classification of environmental subsidies and similar transfers

- It is possible to classify these transfers using the Classification of Environmental Activities (CEA) Part I (Environmental Protection Activities) and Part II (Resource Management Activities).
- For accounting and analytical purposes, it is necessary to separate the transfers into those of a current and capital nature following the definitions in the SNA.
- It may also be useful to classify the transfers by the industry or institutional sector of the recipients following ISIC or standard SNA institutional sector classifications.

Potentially environmentally damaging subsidies

- The definition of environmental subsidies and similar transfers focuses on the **government's intention** rather than on the effect on the environment from the use of the resources provided.
- Another perspective that may be taken is whether the size and structure of payments from governments are environmentally beneficial or environmentally damaging.
- A measure reflecting this perspective is Potentially Environmentally Damaging Subsidies (PEDS), encompassing subsidies and similar transfers that support activities that are considered environmentally damaging. In some definitions this measure also includes so-called implicit (or indirect) subsidies, such as preferential tax rates.
- However, definition of PEDS is not included in the SEEA CF.

Other transfers related to forests

■ Permits to extract and harvest land and timber resources

- The acquisition and disposal of forest land including the value of the timber resources should be recorded in the capital account.

■ Permits for the use of the environment as a sink

- The payments for emission permits, issued by governments under cap and trade schemes, should be recorded at the time the emissions occur as taxes on production on an accrual basis.

Case Finland

- Subsidies for financing sustainable forestry (forestry as an ISIC sector, focus on timber production)
- Environmental subsidies for forestry
- Tax on game from hunting (mainly in forests): recorded as environmental tax (resource tax according to EU definition)
- Gathering (berries, mushroom, lichen): free of taxes
- Product taxes on timber and taxes on forest land: not environmental taxes

Finland: Subsidies for financing sustainable forestry

- **State subsidy and loan used for securing wood production and energy wood harvesting** (to private forest owners)

- Forest regeneration
- Prescribed burning
- Tending of seedling stands and improvement, Pruning
- Repelling root-rot disease, Remedial fertilisation
- Ditch network maintenance
- Construction and basic improvement of forest roads
- Securing wood production
- Harvesting and chipping energy wood

- **Main purpose: Natural resource use activities (not environmental)**

Forest regeneration may include resource management and environmental dimension

Finland: Environmental subsidies for forestry

- Purpose of environmental subsidies for forestry is to compensate forest owner income losses or costs caused by protection and preservation of biological diversity or some other environmental feature of forest area.
- Compensations are paid on the basis of decreasing current and future logging incomes or costs of planning and management of protection measures.
- Management and treatment of environmental features may consist of maintaining, restoring or increasing environmentally specific values of forest area
- Compensations on temporary or permanent protection of forest area (protection fully restricts forestry and logging activities)

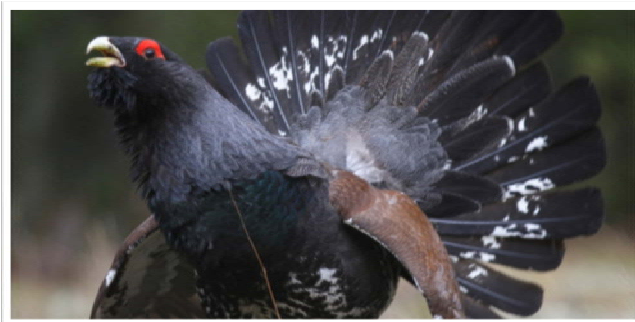
- **Main purpose: Environmental protection activities**

Finland: The Forest Biodiversity Program METSO

- The Forest Biodiversity Program METSO 2008 –2016 aims to halt the ongoing decline in the biodiversity of forest habitats and species, and establish stable favourable trends especially in Southern Finland's forest ecosystems.
- The program is targeted to both privately and state-owned lands.
- Funding for the program is about 40 million euro per year.
- Ministries of the Environment, of Agriculture and Forestry, the Finnish Environment Institute and the Forest Development Centre Tapio.
- **The main purpose:**
Environmental protection activities
- Activates voluntary-based conservation agreements between forest owners and authorities
- improves Finland's network of protected forests
- continues and enhances the application of nature management methods in commercially managed forests
- improves the knowledge base on forest biodiversity conservation and train professional foresters
- increases collaboration between forest and environmental organizations
- improves communication on biodiversity of forest habitats and ecosystem services

Metso is also the Finnish name of the capercaillie

Metso is a well-known forest bird that has become scarce in Finland in recent years.



Capercaillie and many other forest birds, animals, plants and fungi will benefit greatly from the protection of more of the forest area under the METSO Forest Biodiversity Programme for Southern Finland.

Finland: Ecological shopping list of the METSO program

- The site selection criteria define what kind of ecologically valuable habitats are to be protected in the program
- The selection criteria form "an ecological shopping list", based on the ecological structure of forests and on forest habitat types important for biodiversity and ecosystem services.
- Sites are especially favoured where habitats are well preserved in their natural state or could easily be restored, where they host rare or endangered species, or where they are important for ecological connectivity.
- On a smaller scale, measures are particularly taken to conserve forests that are rich in biodiversity because they contain features such as decaying wood, burnt or charred wood, mature broad-leaved trees, large aspen trees, nutrient-rich soils, springs, brooks, and other natural water features.
- Consideration may also be given to impacts on economic activities, recreation, tourism and cultural values, if they also support biodiversity conservation.

Central Africa: Forest fees (taxes)

- Forest fees (or taxes) are levies paid by the concessionaire to the owner of the forest for the right to harvest a plot of land during a prescribed period of time.
- In economic terms, fees and taxes serve two distinct functions:
 - Enable the government to capture a share of the economic rents associated with natural forests.
 - Affect harvesters behavior and, as a result, may play a role in the sustainability of forest exploitation. Thus, forest taxes (or fees) may act as Pigouvian taxes by internalizing the long-term, non-wood, and off-site values of the tropical forests under exploitation.
- During the 1980s and early 1990s greater attention was paid to the "economics" of the environment. Market-based incentives could help control deforestation by internalizing negative externalities. More specifically, deforestation was seen to be encouraged by underpricing of timber through outdated forest fees and taxes. In turn, this provided false signals regarding the value of forests, leading to severe waste in harvesting and processing.

Central Africa: Export tax, waste fee and profit tax

- Four main revenue instruments exist in Central African countries: export taxes, waste fees, profit taxes, and concession/area fees.
- The *export tax*, as a *yield tax* for those countries where logs are not exported but processed locally, is levied as a fixed percentage of the value of the resource harvested and exported.
- The *waste fee* is only remotely similar to the stumpage fee. Waste fee is applied "per tree" harvested irrespective of tree volume, while stumpage fees have usually remained tied to the volume of harvested trees.
- The *profit tax* and the *area tax* are in a different category. *Profit taxes* levied on the companies' total returns (after other taxes); the *area tax* as a productivity tax, is charged on an equal and annual basis on each hectare under concession. (A powerful instrument with which to collect revenues.)

Forest Taxes, Government Revenues and the Sustainable Exploitation of Tropical Forests
Luca Barbone and Juan Zaldueño, Africa Region Working Paper Series No. 5, January 2000
<http://www.worldbank.org/afr/wps/wp5.htm>

Central Africa: Government's goal

- Export and waste taxes appear to have strong environmental effects, as they modify the behavior of the concessionaire in any one hectare (*intensive margin*), but as will be shown individually they might not ensure sustainability
- Government's goal is to maximize a discounted stream of revenues subject to an environmental constraint and the firm's optimal behavior. This allows for the co-existence of goals aimed at capturing State revenues while sustainably exploiting the forest.
- Government can choose a combination of "purely environmental" taxes and fees (export and waste taxes) and "purely revenue-generating" taxes and fees (area and profit taxes).

Forest Taxes, Government Revenues and the Sustainable Exploitation of Tropical Forests
Luca Barbone and Juan Zaldueño, Africa Region Working Paper Series No. 5, January 2000
<http://www.worldbank.org/afr/wps/wp5.htm>

Central Africa: Analysis of Purely Environmental Taxes (Export Taxes and Waste Fees)

- Changes in export tax rates (and opposite sign changes in waste fees) may lead to either an increase or a decrease in government revenues
- For example, once export taxes and waste fees are defined so that sustainability is ensured, area fees could be established through an auction system so that the government may capture a larger share of the underlying economic rents. Larger profit or area taxes in effect shift vertically up the government revenues function.
- Once a certain environmental constraint is chosen, a key element of a sustainable forest exploitation policy resides in the mix of export and waste taxes as these are the revenue instruments which affect the deforestation rate in any one hectare (*intensive margin*). Both export taxes as well as waste fees are needed, export taxes by themselves will not ensure sustainability.

Forest Taxes, Government Revenues and the Sustainable Exploitation of Tropical Forests
Luca Barbone and Juan Zalduendo, Africa Region Working Paper Series No. 5, January 2000
<http://www.worldbank.org/afr/wps/wp5.htm>

Mali: Tax system for forestry

- All harvesters must pay fees and taxes in order to obtain harvesting rights, which are collected from the following permits:
 - taxes on the (forest) surface area and the right to transfer work sites; and
 - fees on exploration permits and permits for felling firewood and charcoal.
- The following taxes and fees are also collected, based on the quantities of products harvested:
 - a fixed-fee (per standing tree) for tree felling sites and a fee for a felling permit for industrial roundwood for processing; and
 - fees for felling permits for other industrial roundwood.

THE FOREST REVENUE SYSTEM AND GOVERNMENT EXPENDITURE ON FORESTRY IN MALI
Alassane B Maiga, Direction Nationale de la Conservation de la Nature, BP 275, Bamako, Mali
Forestry Policy and Planning Division, Rome, Regional Office for Africa, Accra, June, 2001
FAO working paper on financing sustainable forest management: FSFM/WP/06

Mali: Taxes on the production of roundwood

- The rates of tax collected from the harvesting of wood in state forests vary according to whether the products are from natural forests or state forest plantations and depend on the nature of the products (i.e. woodfuel, other industrial roundwood or industrial roundwood for processing).
- The tax rate also varies according to the type of area harvested: uncontrolled; guided; or controlled. *This measure stems from the concern to direct wood harvesting towards controlled areas*
- Generally, for harvesting woodfuel in state forests, the rates of tax collected from natural forests vary by origin and type of product (essentially fuelwood and charcoal) and they vary by species in state forest plantations.
- In state forest plantations, taxes are also based on volume (per stacked cubic metre) and apply to both native and exotic species

THE FOREST REVENUE SYSTEM AND GOVERNMENT EXPENDITURE ON FORESTRY IN MALI

- Varying tax rate contains an element of environmental tax

Mali: Taxes on non-wood forest products and services

- In Mali, up until 2000, these products and services were not taxed because of a legal loophole. There is a flourishing business in these products and services both inside and outside the country.
- Non-wood forest products, such as: leaves; bark; roots; fruit; and herbs, provide significant income to a section of the population who devote themselves to collecting these products (mostly women and young people).
- Harvesting other products, such as: gum arabic; and shea tree kernels, is a flourishing export business and the revenue generated from these exports is significant. This legal loophole will soon be closed when the Cabinet passes a decree on this subject.

THE FOREST REVENUE SYSTEM AND GOVERNMENT EXPENDITURE ON FORESTRY IN MALI

- To what extent will taxation of these products be focused on environmental protection or resource management?

Mali: Environmental tax on wood

- There is an Environmental Tax on Wood (ETW), which aims to cover the costs of forestry development and the implementation of sustainable forest management and to finance collective investments in villages.
- This tax is applied nationwide. It is redistributed in the form of a Forestry Policy Tax (FPT), which aims to provide incentives to the sector to act in the chosen direction or to directly finance forestry development activities.
- This tax is administered through a forestry network promotion fund, which is generally distributed amongst forestry professionals, the Permanent Association of the Malian Chambers of Agriculture (PAMCA) and the Nature Conservation Service (NCS).

THE FOREST REVENUE SYSTEM AND GOVERNMENT EXPENDITURE ON FORESTRY IN MALI

- Tax is focused on environmental protection and resource management

Mali: *Grants and subsidies to the forestry sector*

- It is extremely difficult to assess the grants and subsidies given to companies and individuals in the forestry sector, because the management of such money is not altogether clear.
- Furthermore, there is no mechanism for coordination, allowing for the gathering and centralisation of data on this topic from companies and individuals.

THE FOREST REVENUE SYSTEM AND GOVERNMENT EXPENDITURE ON FORESTRY IN MALI

Pennsylvania USA: Forest property tax

- Forest and farm landowners in Pennsylvania whose properties meet certain criteria can enroll in a preferential tax program known as Clean and Green.
- Program provides **tax relief** to eligible owners to encourage them to keep their land operating as forests and farms with the general goal of preserving open space.
- Forestland is eligible for referential assessment under Forest Reserve if it is ten contiguous acres or more stocked by forest trees of any size and capable of producing timber or other wood products.
- The rationale for the program is that development values can cause property values to rise to levels much higher than the value of the property in its current, forested use.
- Rising property values would then lead to excessive property taxes that could force landowners to develop the property

Forest Finance 4. Understanding Forest Property. Tax Assessment in Pennsylvania College of Agricultural Sciences. Agricultural Research and Cooperative Extension

Summary: The scope of environmental activities

Environmental taxes and subsidies on

Environmental protection and Resource management activities	Minimization of impacts of natural hazards on economy and society	Natural resource use activities
prevention, reduction and elimination of pollution and other forms of degradation of the environment.	E.g. research, observation networks, hazard warning systems, fighting the effects natural hazards, building of structures to prevent hazards.	
preserving and maintaining the stock of natural resources and hence safeguarding against depletion.		extraction, harvesting and abstraction of natural resources, including related exploration and development

Environmental taxes and subsidies in forest accounts: some observations

- Environmental taxes and subsidies related to forests are monetary transfers/flows mainly between **government** and corporations, households, non-profit institutions (and RoW).
- Environmental taxes and subsidies for forests often indicate government's willingness to stress the environmental importance of forests together with the timber values.
- Environmental taxes and subsidies have some effects on monetary asset accounts for forest land and timber, and they should be taken into account in valuation of forests assets by net present value approach.
- Effects of taxes and subsidies to sustainable extraction of timber and other products of forests become in the long term visible in physical flows and asset accounts.

Environmental taxes and subsidies in forest accounts: some observations

- General features of environmental taxes, subsidies and other environmentally related transfers should be explained by using examples (monetary transfers are not very well known by environmentalists and environmental dimension by economists).
- A consultant should have a general picture on forest related taxes, subsidies and other transfers in the country/group of countries where the consultation takes place.
- Government's goals may be environmental, but are the taxes and subsidies explained by these goals environmental according to the SEEA CF? Diplomacy with personnel from the government is needed.
- Does financing from environmental protection etc. programs automatically make transfers environmental?

Environmental taxes and subsidies in forest accounts: some observations

- Environmental resource taxes on renewable resources vs. definition of environmental tax on something proven, specific, negative impact on the environment; All harvesting do not cause negative impacts.
- Natural resource use activities / Resource management activities: Use and management of some renewable resources may be very close to each other, e.g. thinnings in young forest stands, selective hunting.
- The **primary** purpose of economic action may be seen/defined differently by environmentalists, economists, engineers and politicians.
- In forest accounts forestry as an ISIC sector, other uses of forests, and agriculture are not the same economic activity.

Environmental taxes and subsidies in forest accounts: some observations

- Tax concessions and reliefs can be remarkable incentives to take measures supporting environmental protection and sustainable use of forests resources.
- However, these concessions and reliefs are not considered environmental transfers (because there are no transactions recorded and no estimates of the values of these flows are included in the SEEA).
- Tax concessions and reliefs may still in some cases be seen as 'substitutes' to environmental subsidies.