



Glossary

Domestic extraction used: Materials extracted and produced on Swiss territory and used directly by the economy.

Economy (national): The economic activities (production, consumption, etc.) of all units (including households) whose financial interests lie primarily in Switzerland.

Environmental goods and services sector: All activities involving the measurement, prevention, limitation, minimisation or correction of environmental damage. This includes cleaner technologies, products and services that reduce environmental risk and minimise pollution and resource use.

EU-15: 15-member European Union (AT, BE, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, NL, PT, SE).

GDP (gross domestic product): Performance measure for a national economy. It measures the value of goods and services produced in a particular country insofar as they have not been consumed in the production of other goods and services. In other words, it defines the value added.

GVA (gross value added): Represents the increase in products' value resulting from the production process (value of production less intermediate consumption).

Indirect flows (associated with imports): Materials either displaced or used in the countries of origin in order to produce materials or goods imported into Switzerland, but which remain in those countries.

Industry: Activities 10-41 according to NOGA.

NOGA (General Classification of Economic Activities): Classification of «enterprises» and «establishments» according to their economic activity. Households do not form part of this classification unless they are employers or producers.

Polluter pays principle: Principle established in the Environmental Protection Act (EPA) of 1983 (art. 2) and in the Federal Constitution of 1999 (art. 74), according to which the costs of prevention and remediation of environmental damage are to be paid by those who cause it.

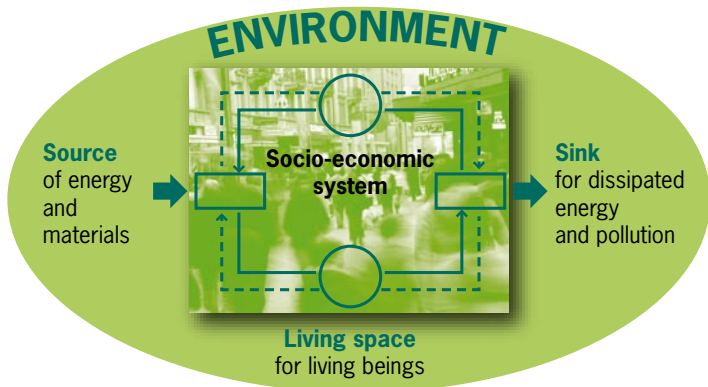
Note: The terms defined in the glossary are indicated in the text with *.

Why environmental accounting?

The environment makes three vital contributions to the economy*:

- As a **source**: the environment provides a supply of natural resources which are used for human activity.
- As a **sink**: the environment acts as a repository for waste and pollutants generated by human activity.
- As a **living space**: the environment provides a habitat for living organisms, including humans.

These contributions are limited and non-renewable. The objective of environmental accounting is to **encourage sustainable economic development by improving the knowledge and understanding of the increasing interactions between the environment and the economy.**



Environmental accounting is a satellite system of the System of National Accounts. It contains both economic and physical data on the environment. Its methodology is mainly based on the System of integrated Environmental and Economic Accounting (SEEA) which has been set up by several international agencies ¹.

This brochure provides a short introduction to the grounds for environmental accounting and describes the three groups of environmental accounts that are elaborated in Switzerland. Details are given on:

Monetary accounts >> p. 5

These identify monetary transactions relating to the environment that are not expressly traced in national accounts.

Physical accounts >> p.10

These identify material flows through the economy*, revealing the economy's physical «metabolism».

Hybrid accounts >> p.13

These group together data derived from national accounting with environmental data, per economic agent.

¹ United Nations (UN), European Commission, International Monetary Fund (IMF), Organisation for economic co-operation and development (OECD) and World Bank.

Monetary accounts

Monetary accounts provide crucial information for monitoring the effects of environmental policies on the economy*. They are made up of the following accounts:

- Environmental protection expenditure
- Environmental taxes and fees
- Environmental goods and services sector*

Environmental protection expenditure...

This account measures the financial effort made by different economic agents (public sector, businesses, households) with the express objective of preventing, reducing or eliminating pollution or any other degradation of the environment.

...globally

A coherent accounting framework has been jointly set up by OECD and Eurostat² to group together the environmental protection expenditure of different economic agents at a national level. It takes into account the transfers between economic agents and therefore avoids double counting. It also makes a distinction between financing expenditure and execution expenditure for environmental protection activities.

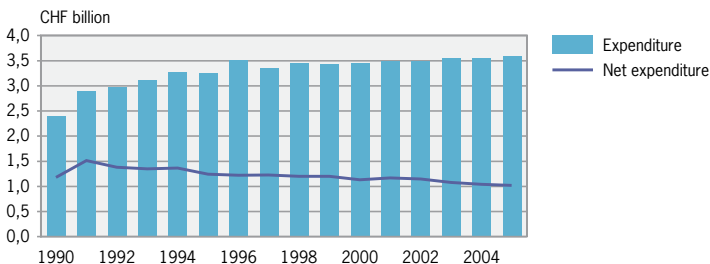
The environmental protection expenditure by the public sector and by businesses is analysed in more detail outside of this accounting framework (see pages 6 and 7).

² Statistical Office of the European Communities

...by the public sector

Expenditure by the public sector on environmental protection is partly financed by public funds³, but also by revenues collected specifically for environmental protection (e.g. waste taxes or waste-water charges). Net public expenditure on environmental protection is found by subtracting revenues from expenditure.

Expenditure and net expenditure on environmental protection by the public sector



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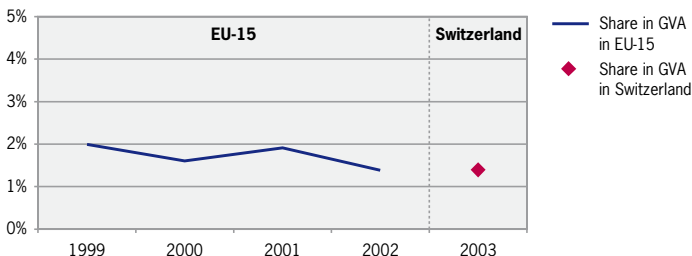
State expenditure on the environment is increasing. But the proportion of this expenditure which is directly financed by those responsible for environmental damage is continuing to grow. The level of net expenditure supported by the State is therefore decreasing. This is a reflection of the polluter pays principle* being gradually put into practice.

³ Provided via general taxation

...by businesses

Businesses have to comply with the requirements of various environmental standards. This results in financial burden made up of current expenditure and/or investments. These investments are either on «end of pipe» solutions (e.g. installation of filters), or on those that make the production processes cleaner (called «integrated» investments).

Share of environmental protection expenditure of industry in GVA*, in Switzerland and in EU-15*



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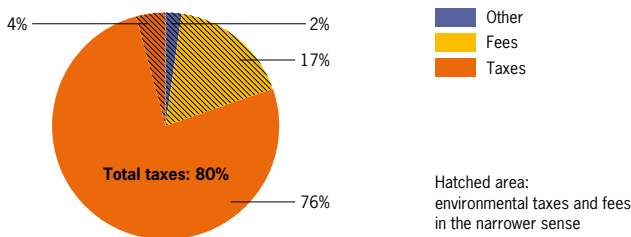
In 2003, Swiss industry* spent 1.4% of its GVA* on environmental protection. This spending level is comparable to that in EU-15*, and therefore does not hinder international competitiveness. A significant proportion of investments in Switzerland is integrated rather than «end of pipe» (56%; EU-15: one third). As integrated investments mean avoiding other expenditure, it is likely that this contributes to the low financial burden of environmental protection seen in Switzerland.

Environmental taxes and fees

This describes several types of taxes and fees that are levied on elements that are harmful to the environment such as waste, energy and transport. A tax or fee is termed «environmental in the narrower sense» if the motivation for its creation or allocation is borne out of an environmental concern.

Revenues from environmental taxes and fees in 2005

Share by type

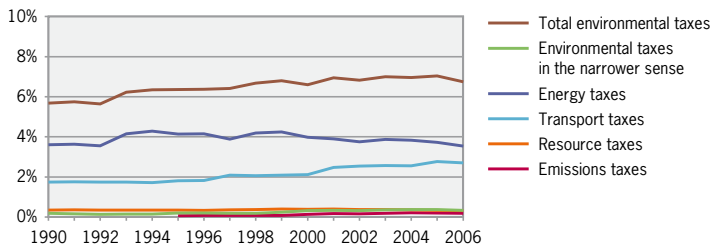


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Revenues from environmental taxes and fees rose to CHF 11.8 billion in 2005. Environmental taxes and fees in the narrower sense generated less than 25% of total revenues even though they represented the vast majority of the various taxes and fees. This taxes and fees category includes, among others, a tax on contaminated sites as well as various advance recycling fees, such as those on PET bottles.

Revenues from environmental taxes

as a share of total revenues from all taxes and social security contributions in Switzerland



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Revenues obtained from environmental taxes as a proportion of all taxes and social security contributions has been rising since 1990. The largest share of revenues comes from just a small number of environmental taxes in the wider sense and which make it more expensive to consume energy carriers. This includes, for example, mineral oil tax.

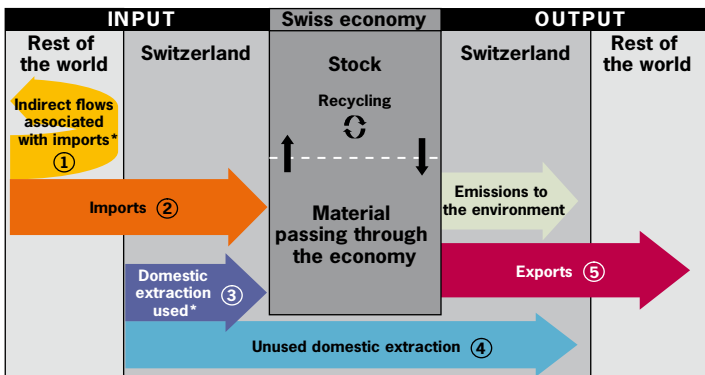
Environmental goods and services sector*

Environmental protection does not just incur costs, but also contributes to economic development and technological progress. The environmental goods and services sector* account aims to analyse the contribution of this sector to the national economy* (share of GDP*, for example). However, this account is only in pilot phase in Switzerland.

Physical accounts

The physical accounts drawn up in Switzerland are **Material Flow Accounts** or **MFA**s. They trace, in tonnes, the material flows passing through the economy* annually. By providing an overview of the economy's requirements and emissions, material flow accounts help to monitor consumption of natural resources and management of waste. They represent an essential tool for following up sustainable development.

Structure of material flow accounts



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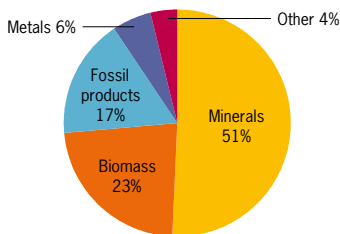
The main indicators of material flow accounts are:

- TMR (Total Material Requirement): (1) + (2) + (3) + (4)
- DMI (Direct Material Input): (2) + (3)
- DMC (Domestic Material Consumption): (2) + (3) - (5)

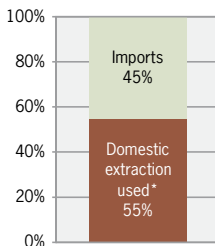
Direct Material Input (DMI)

DMI gives information on the materials used directly by the economy*. It does not take account of indirect flows* generated abroad in the manufacture of imported products. It also excludes materials that are extracted, produced or displaced in Switzerland but which do not enter the economy, such as building site debris (unused domestic extraction).

DMI by category of material and provenance in 2006



Total: 111 million tons



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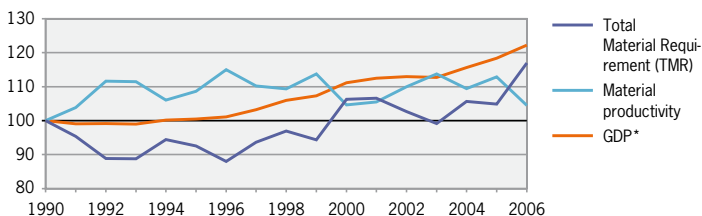
In 2006, 111 million tonnes of material were used directly by the Swiss economy, which represents 14.8 tonnes per person. More than 40% of these materials were imported. All metals and fossil products were procured from abroad. By contrast, nearly 65% of biomass and 80% of minerals were sourced from Swiss territory (domestic extraction used*).

Material productivity

Material productivity is indicated by the ratio GDP^*/TMR . It links the wealth produced with the total material requirements of the economy*. Material productivity increases if GDP and TMR are «decoupled». This decoupling is described as «relative» if TMR grows less quickly than GDP. If TMR falls while GDP is rising, it is «absolute». In the latter case, the economy is said to be dematerialising.

Material productivity, GDP and TMR

Index 1990=100



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Between 1990 and 1996, GDP stagnated while TMR decreased. The fall was essentially due to the decrease in construction activity. As economic growth took off again in the second half of the 1990s, TMR also grew. Across the whole period, only relative decoupling occurred. Furthermore, material productivity has been stagnating since 1993.

Hybrid accounts

Hybrid accounts are better known by the acronym **NAMEA** (**N**ational **A**ccounting **M**atrix including **E**nvironmental **A**ccounts). Here, environmental data (e.g. emissions to air or water) is broken down by economic activity according to NOGA* classification. The structure of environmental data therefore corresponds to that of national accounting, allowing environmental and economic data to be compared.

Simplified NAMEA matrix (data for 2002)

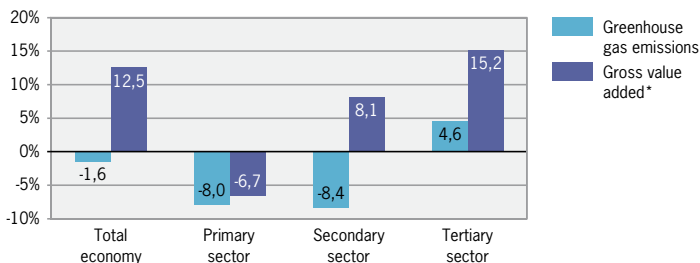
NOGA activity	Economic data		Environmental data	
Title (Division)	Gross value added*	Employment	CO ₂ emissions	CH ₄ emissions (methane)
	CHF million	Full time equivalent	Thousand tonnes of CO ₂ equivalents	
Agriculture and forestry (01-05)	5 693	138 338	1 082	2 929
Manufacturing of goods (15-37)	81 979	657 543	8 959	20
Construction (45)	23 599	270 408	937	6
Wholesale and retail trade (50-52)	55 830	517 225	1 797	4
Transport (60-62)	10 399	100 149	7 854	11
Banks and insurance companies (65-67)	59 429	190 594	300	1

Arranging data like this opens the way to innovative analyses. When applied to greenhouse gas emissions, NAMEA could become a key tool in defining Swiss climate policy.

Greenhouse gas emissions and value added

NAMEA enables a comparison between trends in greenhouse gas emissions and in the value added of various economic activities. This approach provides useful information on the causes of a rise or fall in the emissions from these activities.

Trend in greenhouse gas emissions and value added between 1990 and 2002



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Greenhouse gas emissions from the primary sector declined between 1990 and 2002, in parallel with a decline in production. In the secondary sector, by contrast, the fall in emissions is attributable to technological progress and to a growth in less polluting activities (e.g. chemicals and watchmaking). The rise in emissions from the tertiary sector is directly linked to the increase in emissions from transport. This rise is however lower than economic growth in this sector.

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Notes

Unless otherwise indicated, the information provided refers to the situation in Switzerland.

Figures are rounded up or down, which may mean that their sum differs from the total given.

Data source: FSO (chart p.7: FSO, Eurostat)

Detailed information related to this brochure

Federal Statistical Office:

www.environment-stat.admin.ch
(solely in French and German)

> Comptabilité environnementale

Supplementary information

Federal Statistical Office:

www.statistique.admin.ch
(solely in French and German)

> Thèmes > 02 – Espace,
environnement

> Thèmes > 04 – Economie
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Eurostat (Statistical Office of the
European Communities):

epp.eurostat.ec.europa.eu

> Thèmes: Environment and
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Environmental accounts

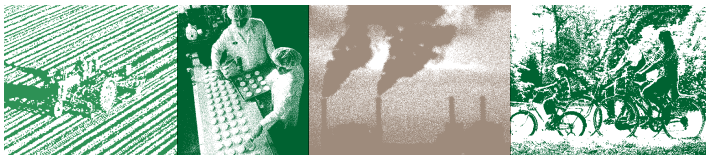
United Nations Statistics Divisions:

unstats.un.org/unsd/envaccounting

OECD (Organisation for economic
co-operation and development):

www.oecd.org

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