



Biodiversity damaging subsidies in Switzerland

The Confederation, the cantons and the municipalities have for many years financed measures to promote biodiversity in Switzerland. Despite this, biodiversity is in a critical state. One major reason for this is the large number of public subsidies and perverse financial incentives which promote activities that can cause severe damage to biodiversity. The Federal Council's Swiss Biodiversity Strategy aims to identify the negative effects of such measures and to abolish, gradually dismantle or redesign the harmful subsidies. The study presented here identifies 162 subsidies harmful to biodiversity and makes recommendations on how they can be abolished or reconfigured.

Biodiversity in Switzerland has been declining continuously for decades – a trend that has not yet been halted. More than a third of all animal and plant species, and almost half of all types of habitat are now endangered. In order to slow down the loss of natural diversity, the state finances numerous instruments, measures and support programmes. At the same time, however, and through funding which is many times larger, it enables activities with a directly or indirectly negative impact on biodiversity, for example through the loss, pollution, disruption or fragmentation of habitats.

Within the framework of the Convention on Biological Diversity, Switzerland has committed itself to abolishing, redirecting or reconfiguring subsidies that are harmful to biodiversity. The Federal Council has included this goal in the Swiss Biodiversity Strategy.

Subsidies that damage biodiversity are ecologically problematic. Beyond that, they are also economically inefficient. For one, they entail additional costs, because the resulting damage often has to be repaired – with public funds. In addition, they often reduce the price of products which damage biodiversity. As a result, production methods and products that promote biodiversity have to be subsidised in order to be marketable at competitive prices. Finally, subsidies affect the price formation on the market. Thus, the decline of natural resources is not sufficiently reflected in their price, so that the use of resources does not correspond to their scarcity.

This factsheet presents the most important results of the comprehensive study by Gubler et al. (2020), which was carried out by the Swiss Federal Research Institute WSL and the Swiss Biodiversity Forum (SCNAT). It first gives an overview of the issues surrounding subsidies, followed by descriptions of the situation with regard to subsidies in the individual sectors, including selected examples of subsidies.

Survey of biodiversity damaging subsidies and perverse financial incentives

On the basis of the state of the most important habitats in Switzerland, Gubler et al. (2020) identified the factors that damage biodiversity. These factors can be categorised under eight economic sectors, which were then reviewed to identify subsidies and incentive schemes: transport, agriculture, forestry, energy production and consumption, settlement development, tourism, wastewater disposal and flood protection.

The study by Gubler et al. (2020) covers various types of subsidies which reduce the costs of production or consumption and thereby damage biodiversity. It also includes some perverse incentives involving public funding streams which have a negative impact on biodiversity (e.g. earmarking taxes) but which do not constitute subsidies.

Overt subsidies



On-Budget

Subsidies which do appear in the state budget (e.g. financial support)



Off-Budget

Subsidies which do not appear in the state budget (e.g. tax breaks)

Covert subsidies 

(e.g. external costs which are not internalised)

What is a biodiversity damaging subsidy?

Biodiversity damaging subsidies benefit production or consumption and thus increase the use of natural resources; they lead to pollution, disturbance and loss of habitats and of their species and diversity. (based on Valsecchi 2009)

The impact of subsidies, and options for reconfiguring them

The effect of a subsidy on biodiversity depends on the level and duration of the subsidy, the effects on land, the type of damaging effect and the vulnerability of the species and habitats concerned. The negative impacts can be caused by the

goal of the subsidy itself (e.g. subsidies for road construction) or can occur as a side effect of the subsidisation (e.g. subsidies for energy-intensive companies).

KEY TO SYMBOLS

Level of damage caused by a subsidy

-  unclear
-  low
-  medium
-  high

Level of difficulty of reconfiguring a subsidy

-  entire
-  partial
-  subject to implementation
-  Internal conflict between ecological goals

Level of difficulty of reconfiguring a subsidy

-  low
-  medium
-  high
-  eliminate

Subsidies at federal and cantonal level: numbers and sums involved

Gubler et al. (2020) analysed 162 biodiversity damaging subsidies (eight of which were perverse incentives) at the level of the Confederation and the cantons (Fig. 1). At cantonal level, rather than a comprehensive analysis, only a limited number of subsidies were included as examples.

As the subsidies identified are not per se and in every respect damaging to biodiversity, they have been divided into four categories:

 58 subsidies support activities that are in every respect harmful for biodiversity (**entirely damaging to biodiversity**).

 69 subsidies support activities that are in part damaging to biodiversity (**partially damaging to biodiversity**).

 35 subsidies support activities whose damaging effect depends on how they are implemented (**subject to implementation**).

 For 45 subsidies, there is an additional **internal conflict between ecological goals**: the goal of the subsidy is to protect the environment or nature, but the subsidised activity has side-effects that are harmful to biodiversity.

The biodiversity damaging subsidies and perverse incentives identified can be assigned to four categories of subsidy, with the following annual subsidy sums for each category:

- ➔ 76 subsidies are **On-Budget** (e.g. direct money transfers). The sums are quantifiable for 90 percent of this category: CHF 0.34 billion are entirely damaging to biodiversity, CHF 11.7 billion partially, and for CHF 3.9 billion the damage is subject to implementation.
- ➔ 63 subsidies are **Off-Budget** (e.g. tax breaks). For 50 percent of them, the sums are quantifiable: CHF 4.7 billion are entirely damaging to biodiversity and CHF 0.5 billion are partially damaging.
- ➔ Most of the 15 **covert subsidies** (e.g. externalised environmental costs) can not be quantified, as estimates of these costs are only available for a few areas.
- ⚡ In the case of eight **perverse financial incentives**, CHF 3 billion are entirely damaging to biodiversity, CHF 0.6 billion partially, and CHF 1.4 billion are damaging subject to implementation.

On the following pages, the harmful effects of the subsidies on biodiversity and the categories to which the subsidies belong are presented for each of the eight sectors. In addition, selected examples of subsidies are presented which have a particularly strong negative impact or which are comparatively easy to abolish or reconfigure. A list of all the subsidies examined is provided on p. 14. Finally, and in line with the Swiss Biodiversity Strategy and the Biodiversity Convention, recommendations are made for the abolition or reconfiguration of subsidies that are potentially harmful to biodiversity. To make the document easier to read, references are not given. For a detailed list of sources see Gubler et al. (2020).

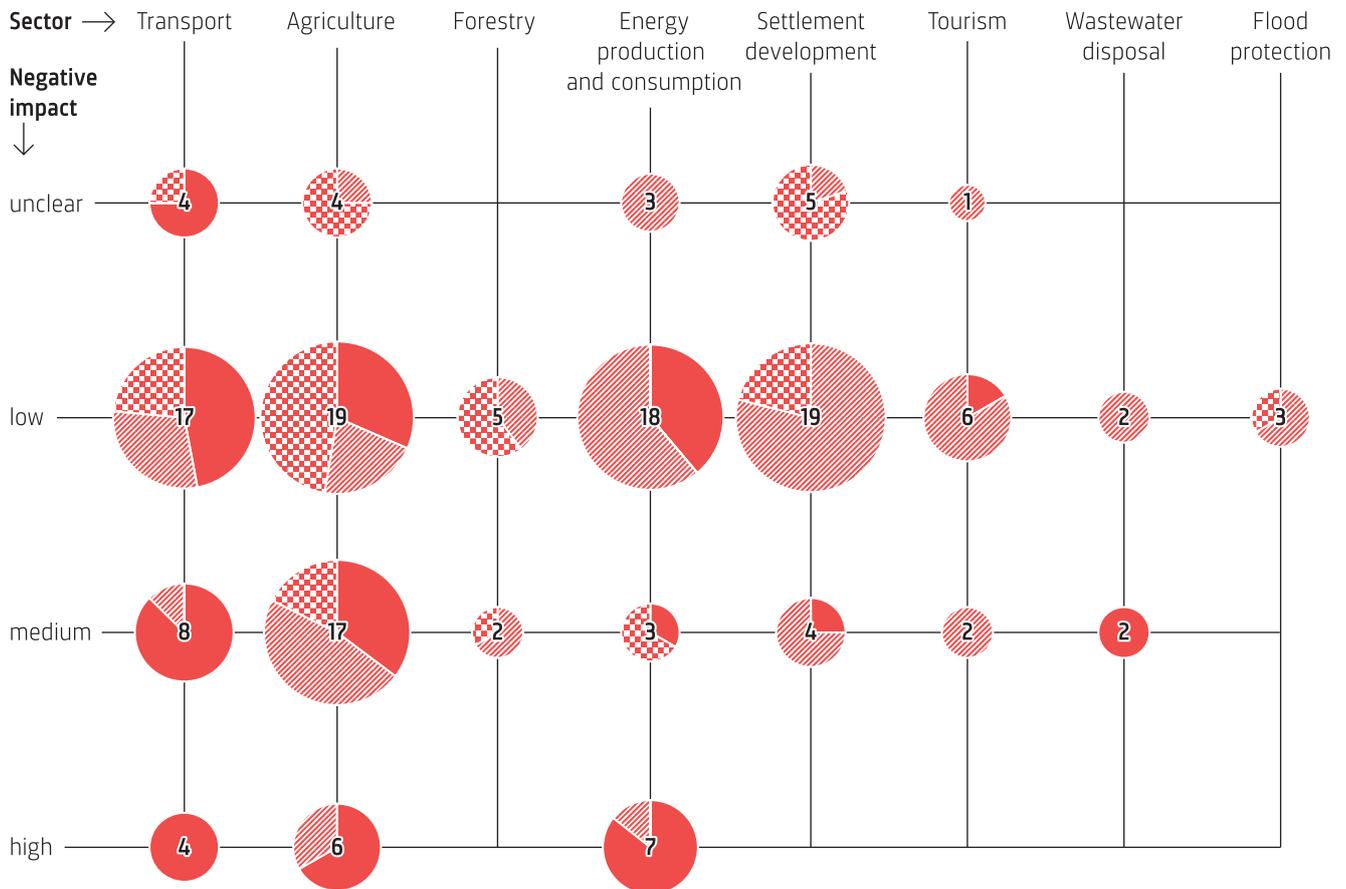


Figure. 1. Number of biodiversity damaging subsidies in each of the eight sectors examined, their effects, and the proportion to which they are damaging. (number in circle designates number of subsidies)

Proportion harmful to biodiversity
 entirely
 partially
 subject to implementation

Transport

The dense road and rail network seals and fragments habitats. This isolates and displaces plant and animal populations. In addition, invasive alien species can spread rapidly along traffic routes. The volume of traffic creates emissions of pollutants, noise and light, all of which reduce the size and quality of habitats. The negative impacts of motorised private transport in the form of external costs are disproportionately greater than those of rail transport.

In the transport sector, the following biodiversity damaging subsidies were identified (Fig. 2):

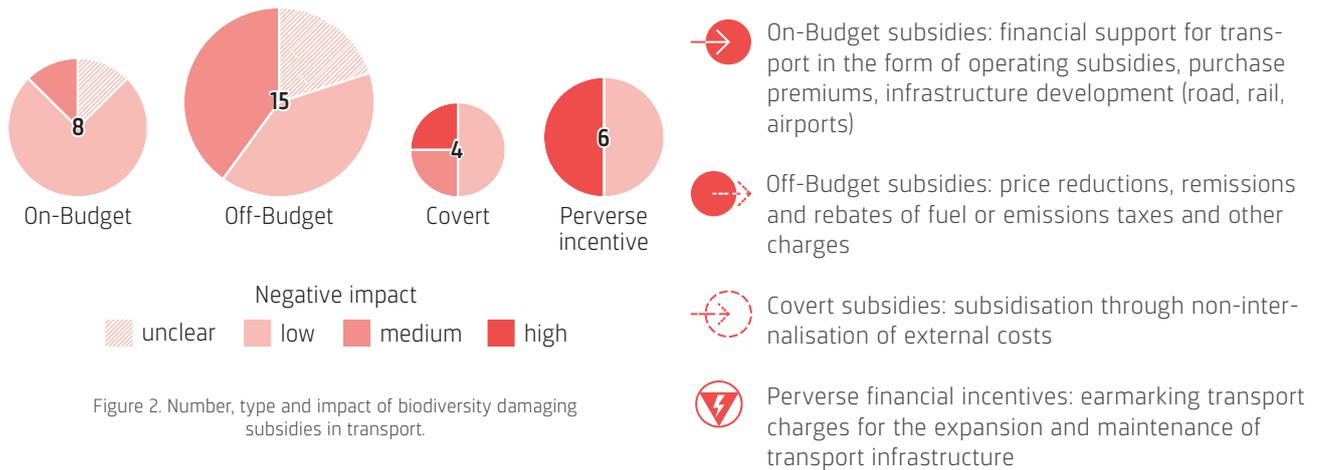


Figure 2. Number, type and impact of biodiversity damaging subsidies in transport.

EXAMPLES

Subsidies with highly damaging effects on biodiversity

Rebates on charges for motorised transport (Off-Budget subsidies)

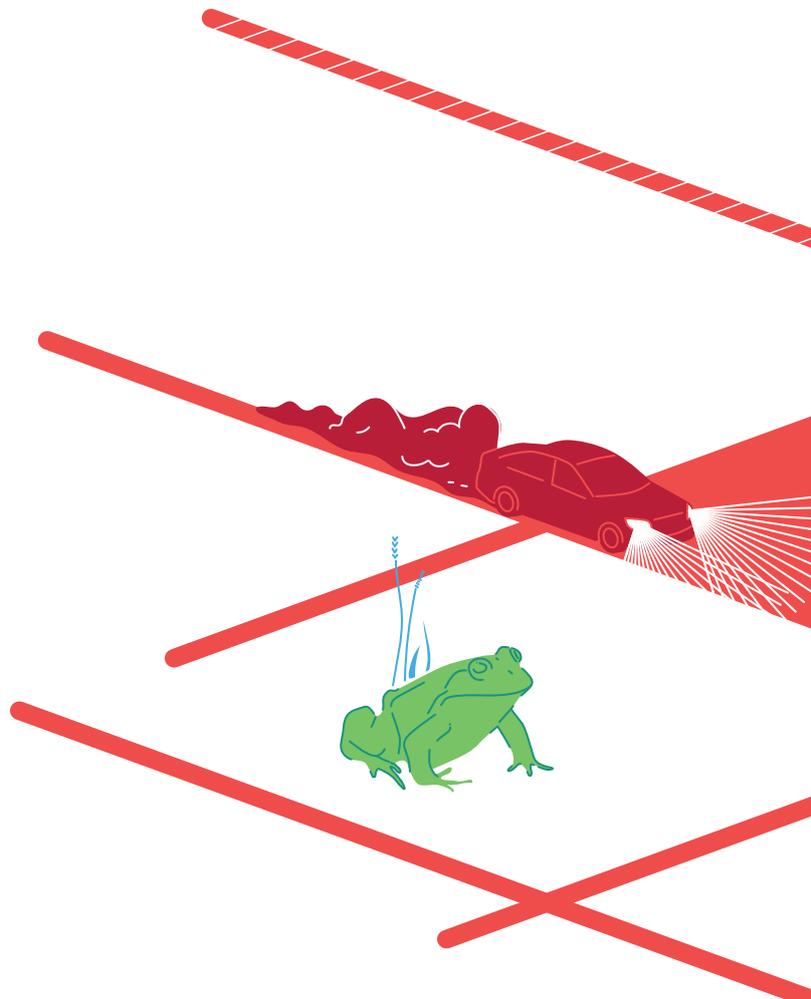
Motorised transport is subject to energy, transport and emissions charges and taxes. Exemptions and tax concessions as well as perverse incentives resulting from the design of the charges lead to a loss of revenue for the public purse. Examples of charge concessions are: the exemption of fuels from the CO₂ charge; partial instead of full CO₂ compensation for oil imports; exemption or refund of the mineral oil tax and the mineral oil surtax for various sectors; exemption of international air traffic from VAT; national road use charges unrelated to distance travelled; exemption of small commercial vehicles from the performance-related heavy vehicle tax (LSVA); reduction of cantonal motor vehicle tax and tax deduction of travel expense.

CHF 6 billion per annum



! Recommendation

Concessions on taxes and other charges should be abolished. Before this happens, the transport infrastructure financing system must be reformed so that increased revenues do not generate additional funds for infrastructure expansion (see next point).



Earmarking transport charges for transport infrastructure

Earmarking transport charges creates perverse financial incentives. Between 60 and 100 percent of the following charges are earmarked: the revenues from the mineral oil tax and surtax, automobile tax, national road charges and some cantonal motor vehicle taxes. They flow into the financing of transport infrastructure via the National Road and Agglomeration Transport Fund (NAF), the Railway Infrastructure Fund (BIF) and the cantonal coffers. There is no obligation to use money from the transport funds to cover the external costs of transport.

Perverse incentives arise as follows: earmarking means that large sums of money and well-stocked funds are available for transport infrastructure. This creates a momentum of its own that tends to drive the further expansion of the infrastructure. The resulting high road density and quality increases the volume of traffic and thus generates additional revenue from traffic charges, which in turn makes further road expansion possible.

CHF 4 billion per annum (2017/2018) 

! Recommendation
 The earmarking of funds should be ended, or funds at least partially diverted, in order to reduce the self-reinforcing nature of transport infrastructure financing. This would slow down or – depending on the availability of funds – stop the traffic development. The funds released should be used to remedy the external costs of transport, particularly with regard to their impact on biodiversity.

Subsidies which are easy to reconfigure

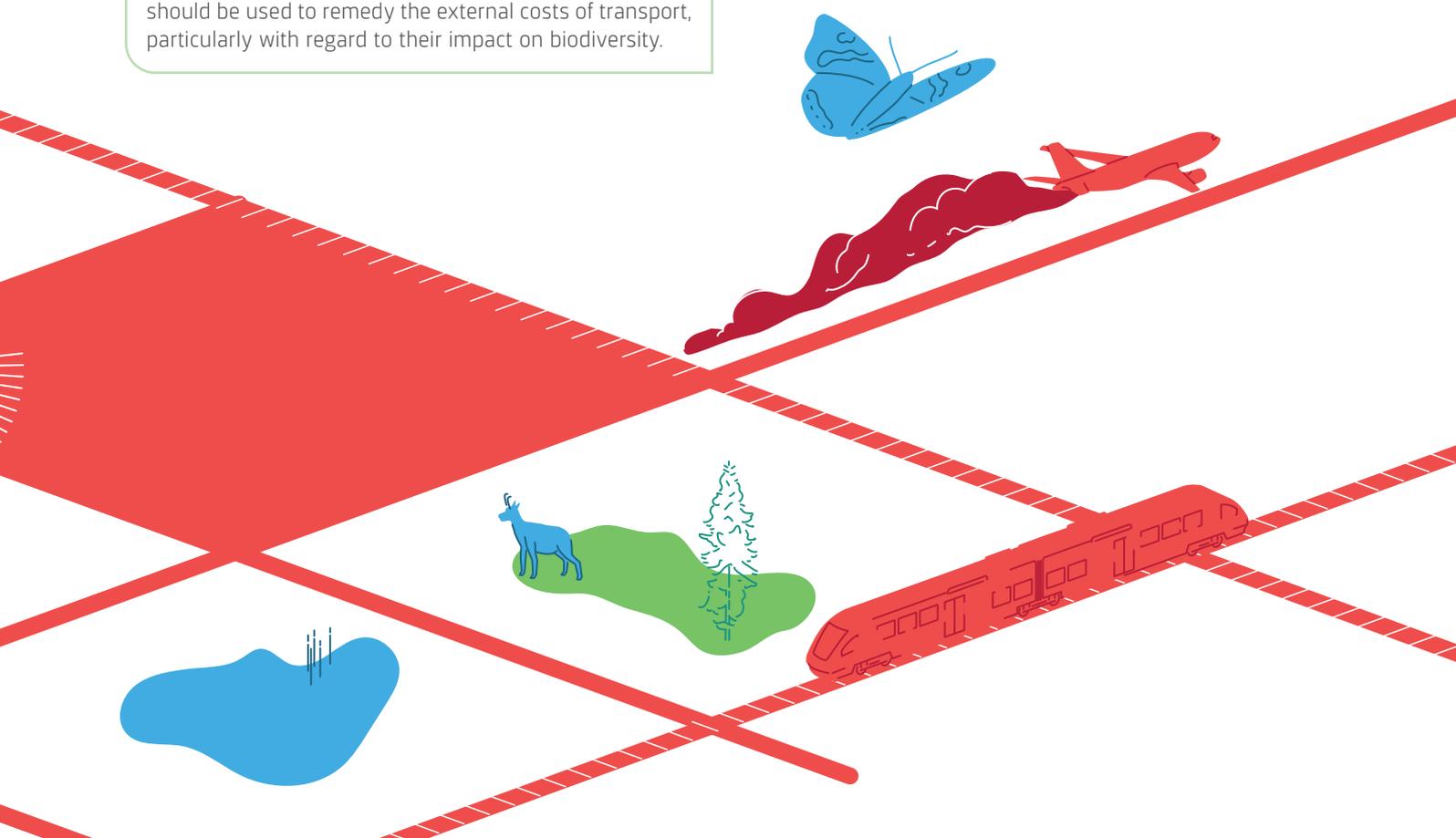
Public parking which is free of charge or does not cover its costs

According to the Swiss Federal Office of Energy, parking fees are one of the most effective tools for the management of motorised private transport. Free or non-cost-covering public parking spaces reduce the cost of vehicle use. Collecting parking fees is the responsibility of the local authority.

Sum unknown



! Recommendation
 Parking fees should cover costs and should be at least equal to those for private parking spaces. Furthermore, the legal basis should be amended in such a way that the full parking fee can be charged from the start of parking. The additional revenue should be used to reduce the external costs of transport, especially with regard to biodiversity.



Agriculture

Intensive farming leads to overuse, pollution, fragmentation and destruction of habitats. Low-nutrient and humid areas, small water bodies and small-scale structures disappear, the landscape becomes homogeneous and impoverished. In addition, various habitats are contaminated with pollutants from agriculture. All this causes a sharp decline in the flora and fauna of the cultivated land area. Agricultural practice is substantially shaped by Federal agricultural policy; the cantons implement and complement national agricultural policy.

In the agricultural sector, the following biodiversity damaging subsidies were identified (Fig. 3):

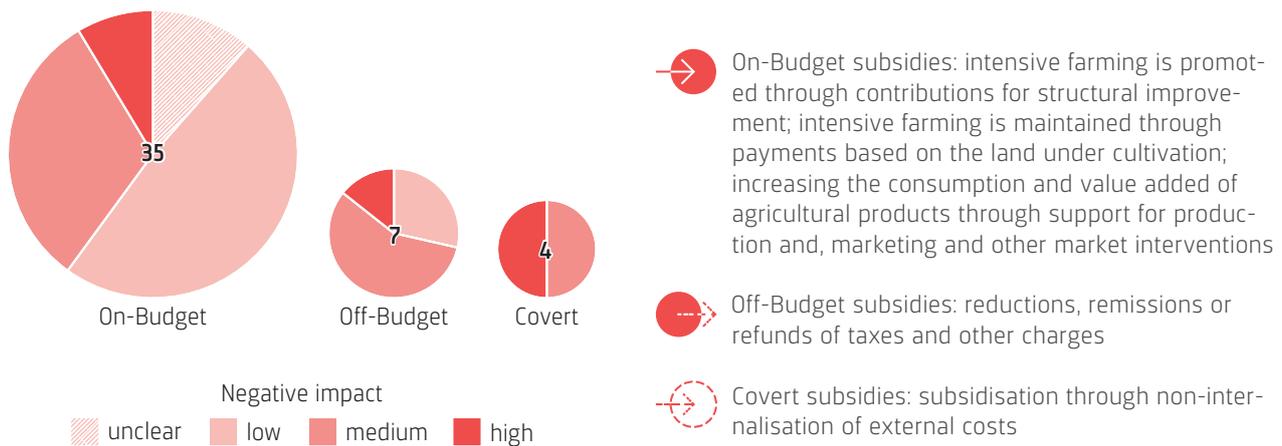


Figure 3. Number, type and impact of biodiversity damaging subsidies in agriculture.

EXAMPLES

Subsidies with highly damaging effects on biodiversity

Structural improvement ('Melioration')

Investment aid for structural improvement is intended to help improve living and economic conditions, particularly in mountain and peripheral regions. This includes support for road and path construction, land consolidation, the construction of agricultural buildings and of irrigation and drainage systems. The expansion of access roads damages – sometimes irreversibly – the habitats affected. Roads facilitate access to areas that are extensively farmed – and which, thanks to improved accessibility, can be farmed more intensively. Land consolidation rearranges land ownership or tenancies in order to promote more efficient management. As a result, land parcels usually become larger and small-scale structures are often destroyed. Soil improvement measures (soil aggradation) and the replacement of old drainage systems or the installation of new large-scale drainage systems also serve to support intensification. Most structural improvement measures promote intensive or rational management of cultivated land, increase segregation between intensively and extensively farmed areas and thereby damage biodiversity. Up to now, grants towards structural improvements have not been conditional on a requirement to promote biodiversity.

CHF 82 million *per annum* (2018)
Grants towards
structural improvements



CHF 56 million *per annum* (2018)
Interest foregone on interest-free loans



! Recommendation

The Structural Improvements Ordinance (SVV) allows for grants to be made towards ecological goals. This option should be used more frequently in future. In addition, investment aid for structural improvement measures should be made conditional on biodiversity issues. Support should only be given for new roads and for the replacement of simple paths if there is evidence that land cultivation would be abandoned if a road is not built or replaced.

External costs due to excess nitrogen inputs

The cheap synthetic nitrogen in form of fertilisers and the nitrogen in imported animal feeds enable intensive agriculture. Excess nutrients from agriculture damage biodiversity far beyond the application and spreading perimeter of the nitrogen. They over-fertilise water bodies, pollute large land areas via airborne inputs and acidify aquatic and terrestrial ecosystems. This displaces numerous species that depend on low-nutrient habitats. This pollution is an ecological external cost.

CHF 520 million *per annum*



! Recommendation

In order to reduce these external costs, the agricultural incentive system should be reconfigured in such a way that agricultural nitrogen input is significantly reduced. This can be achieved through technical measures (e.g. nitrogen-optimised feeding, low-emissions storage and application technology, fertiliser management), through market-based approaches (e.g. levies on nitrogen emissions, fertiliser, feed or food) and through incentives towards extensification (e.g. reduction of animal numbers per unit of area). A mix of measures will be needed to achieve a sufficient reduction in nitrogen input.

Subsidy which is easy to reconfigure

Basic payment

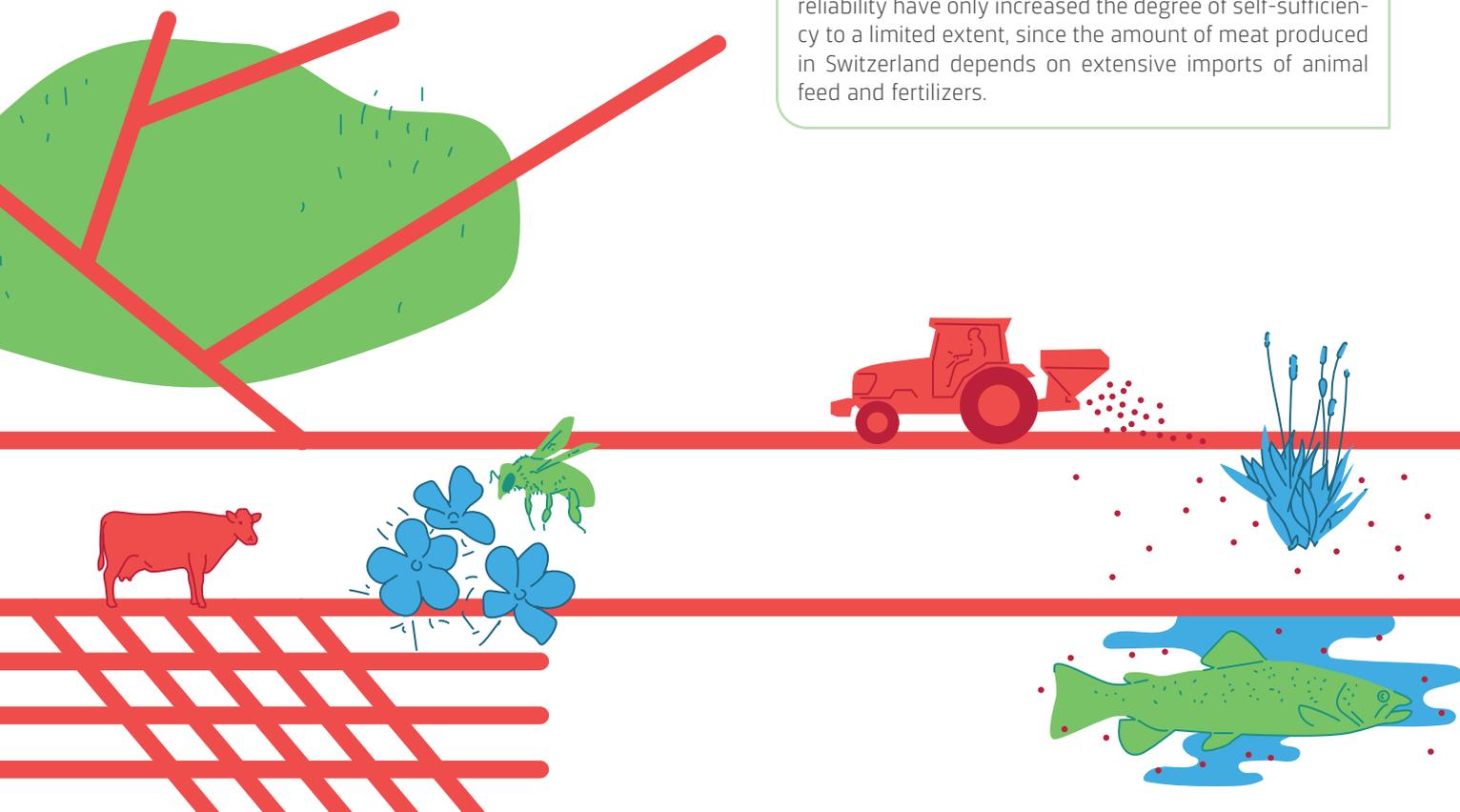
The so-called basic payment represents the main part of the payments for supply reliability intended to ensure a sufficient level of food production in Switzerland. It is paid as a fixed sum per hectare under cultivation. Because the basic payment (also) applies to intensively farmed areas and is not tied to any conditions promoting biodiversity, it supports intensive farming. In addition, the basic payment is linked to a minimum level of livestock, which creates an incentive to increase livestock numbers. The negative impact on biodiversity is reinforced by the fact that only 50 percent is paid for extensively managed permanent grassland (biodiversity priority areas). This creates an incentive to intensify the cultivation of the permanent grassland in order to receive the higher contribution rate.

CHF 746 million *per annum* (2017)



! Recommendation

The difference between the payment rates for intensively farmed land and biodiversity priority areas should be abolished, as should the linking of the basic payment to a minimum livestock level (as envisaged in AP 22+). The basic payment should also be linked to biodiversity criteria, for example, by only applying it to areas with low nitrogen input. In order to ensure a high degree of self-sufficiency in Switzerland, it would be more efficient if the basic payment for arable land is only granted if food is produced for direct human consumption. So far, payments for supply reliability have only increased the degree of self-sufficiency to a limited extent, since the amount of meat produced in Switzerland depends on extensive imports of animal feed and fertilizers.



Forestry

Swiss forests serve as a habitat for animals and plants and as protection against natural hazards, for timber production and as a recreational space. Although forest management can promote biodiversity, it also alters habitats and species composition: the age structure of trees becomes more uniform, there is often not a sufficient quantity and quality of old and dead wood, and distinctive forest habitats such as sparse or humid forests disappear. In addition, access roads cut through the forest, enabling both the spread of invasive alien species and other forms of use, especially leisure activities.

The following biodiversity damaging subsidies were identified in the forestry sector (Fig. 4)



Figure 4. Number, type and impact of biodiversity damaging subsidies in forestry

- On-Budget subsidies: support programmes within the framework of NFE programme agreements (Federal and cantonal payments); deficit guarantees for forest management
- Off-Budget subsidies: tax breaks (refund of mineral oil tax)

EXAMPLES

Subsidy with damaging effects on biodiversity

Forest management programme NFA

The funds from the Forest Management Programme are intended to enhance the economic performance of the forestry sector. Better economic performance, e.g. through higher harvest volumes and shorter rotation periods, often comes at the expense of biodiversity (e.g. less old and dead wood, fewer sparse sites). This creates conflicts of objectives with regard to sustainability. Furthermore, subsidising access roads impairs biodiversity because it makes forest management possible in remote areas and can create resistance to the elimination of natural forest reserves in some places.

CHF 45.1 million per annum (2017)



! Recommendation

Subsidies for forest management should be linked to evidence of ecological performance. This will support forestry operations which, for example, establish the necessary reserves, islands of mature timber or biotope trees and support and preserve ecologically valuable habitats and species.

Subsidy which is easy to reconfigure

Local authority deficit guarantees

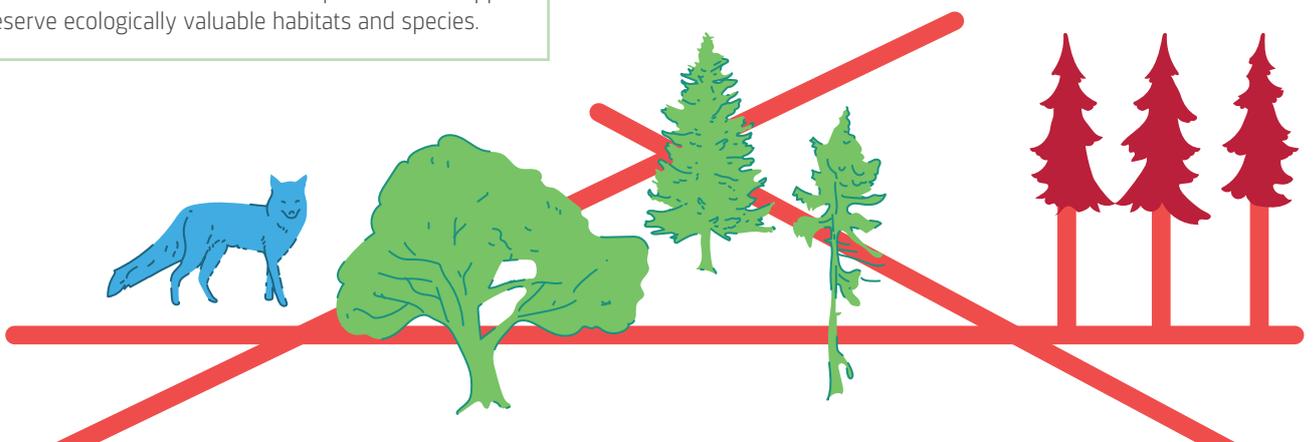
Deficits from forestry operations are usually borne by the forest owners. In many cases these are local authorities (70 percent of the total forest area is in public hands). In many cases, the deficit guarantee probably encourages more intensive timber harvesting, as forestry is traditionally oriented towards production. But the high costs and deficits represent an opportunity to switch the objective towards biodiversity promotion.

CHF 39.5 million per annum (2017)

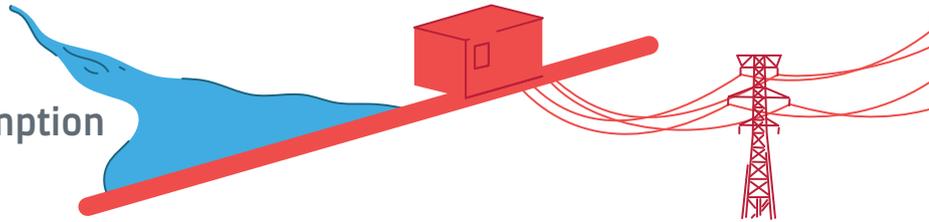


! Recommendation

In the public support schemes for forestry operations, the promotion of biodiversity should be given greater weight than output. In this way, local authority deficit guarantees can be linked to criteria that promote biodiversity.



Energy production and consumption



Energy production places different burdens on biodiversity depending on the energy source and production method. The production and consumption of fossil energy produces air pollutants that cause acidification or eutrophication of habitats and greenhouse gases contributing to global warming. The production of nuclear energy requires cooling water, which causes the temperature of water bodies to rise. But energy production from hydropower, wind and biomass can also damage biodiversity.

In the area of energy production and consumption, the following biodiversity damaging subsidies were identified (Fig. 5):

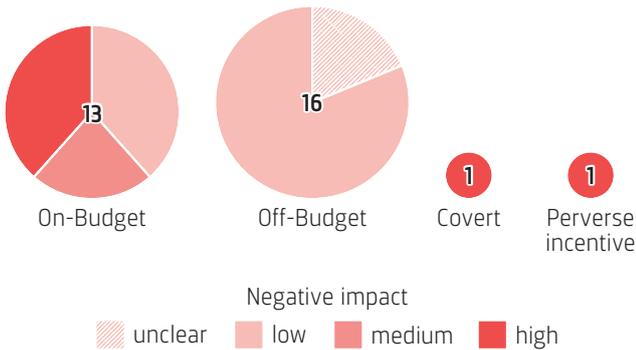


Figure 5. Number, type and impact of biodiversity damaging subsidies in energy production and consumption.

- On-Budget subsidies: payments and investment aid for the production of renewable energy
- Off-Budget subsidies: reduced charges for the production and consumption of fossil and nuclear energy
- Covert subsidy: subsidisation through non-internalisation of external costs
- Perverse financial incentive: charge paid to the public authorities (water charge), which increases the authorities' interest in hydropower use

EXAMPLES

Subsidies with damaging effects on biodiversity

Subsidies for small-scale hydropower

Hydropower is more environmentally friendly than fossil or nuclear energy. However, small and micro hydroelectric power plants have a particularly severe impact on aquatic biodiversity per kWh generated. They harness the remaining tributaries in the mountain valleys and prevent them from being passable for water organisms. Small-scale hydropower is subsidised through numerous programmes, contributions and payments (see p. 14). In addition, perverse legal incentives favour the expansion of hydropower. Since 2018, micro-hydropower plants < 1MW no longer receive support.

CHF 110 million per annum (2018) plus unquantifiable subsidies



! Recommendation

In line with the Swiss Energy Strategy, the subsidies for small hydropower plants should be used in a more targeted manner than hitherto: they should be 1. redirected to reduce energy consumption, 2. used for the expansion of photovoltaics (which is ecologically and economically more advantageous), 3. subject to ecological conditions and measures, 4. limited to a small number of efficient small power plants.

Subsidies which are easy to reconfigure

Energy consumption discounts for energy-intensive companies

The energy consumption of energy-intensive companies is subsidised by means of reduced charges: 50 energy-intensive companies are exempted from the CO₂ tax and instead included in the Emissions Trading System (ETS). The price difference from which these companies benefit corresponds to a subsidy. Further revenue losses result from free emissions allowances to companies in the ETS and reimbursement of the grid surcharge.

CHF 500 million per annum (2018)



! Recommendation

Energy consumption should not be discounted any more, because this results in high external costs - also at the expense of biodiversity. Any disadvantages for the international competitiveness of energy-intensive industries should be carefully assessed to determine whether energy prices are a relevant factor. If necessary, customs measures should be applied to exports (refunds) and imports (levies on embodied energy).



Settlement development

Increasing sealing over of land through settlement expansion damages and destroys habitats and adversely affects the living conditions for flora and fauna. At the same time, efforts to slow down urban sprawl lead to further densification and habitat loss within the settlement area.

In the area of settlement development, the following biodiversity damaging subsidies were identified (Fig. 6):

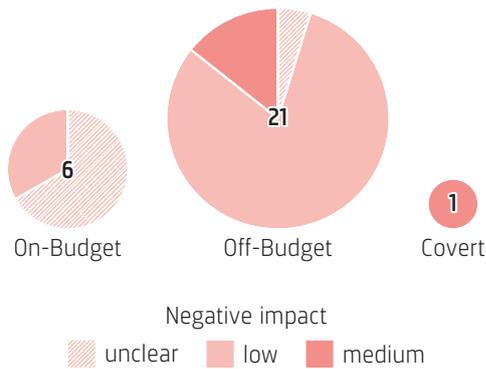


Figure 6. Number, type and impact of biodiversity damaging subsidies in settlement development.

- On-Budget subsidies: financial support for industrial and private residential property through loans, investment aid, provision of infrastructure for site development
- Off-Budget subsidies: tax breaks for private residential property and industrial buildings
- Covert subsidies: provision of infrastructure by public authorities

EXAMPLES

Subsidies with damaging effects on biodiversity

Support for home ownership through tax breaks

According to the Federal Constitution (Art. 108 para. 1), the promotion of home ownership is the responsibility of the Confederation. Due to the increasing use of land for residential purposes, the conflict between the constitutional goals of protecting natural diversity (Art. 78 para. 4) and economical land use (Art. 75 para. 1) is intensifying. Subsidies for home ownership can encourage the sealing of land, resulting in the loss of habitats. Home ownership is subsidised through numerous tax breaks (see page 14). Each of these has only a minor impact on biodiversity, but in aggregate they have a significant impact.

Sum unknown



! Recommendation

The tax concessions favouring home ownership should be abolished. Where appropriate, the criteria for granting support for home ownership should be linked to biodiversity. This will involve a conversion of off-budget subsidies (tax concessions) into on-budget subsidies (direct money transfer). If the tax concessions are abolished, the entire system of support for home ownership must be realigned. To this end, tax systems which tax land according to its use – e.g. on the basis of housing space occupation and promotion of biodiversity – should also be examined.

Subsidy which is easy to reconfigure

Tax deduction for garden maintenance

In some cantons, expenses for garden maintenance can be deducted from income tax, e.g. value-maintaining measures such as repairs, or the care and replacement of long-standing plants. Some cantons also allow tax deduction of costs for fertilisers, pesticides, new garden equipment and complete renovations. This subsidises intensive garden maintenance up to a complete renewal of entire gardens.

Sum unknown



! Recommendation

Tax deductions for garden maintenance and redesign should be abolished or restricted to expenses for near-natural garden design. No deductions should be allowed for expenses incurred for ecologically problematic plants (e.g. invasive alien species) or for any complete renovation of a garden without the promotion of biodiversity. Deductible expenses for near-natural garden design should be listed in the relevant cantonal tax books or information sheets, similar to the current provisions.

Tourism

Tourist traffic and tourism infrastructure have a negative impact on biodiversity. The construction of roads, mountain railways, winter sports facilities (including reservoirs) and other leisure facilities lead to the disappearance, fragmentation and alteration of habitats. Even tourist activities that involve very little infrastructure can disturb wildlife across large areas – for example, hiking, ski touring, snowshoeing and biking.

In the tourism sector, the following biodiversity damaging subsidies were identified (Fig. 7):

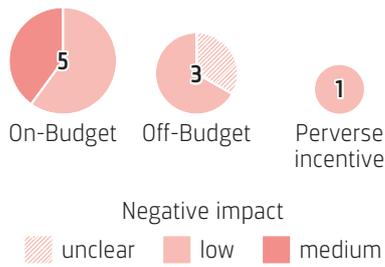


Figure 7. Number, type and impact of biodiversity damaging subsidies in tourism.

- On-Budget subsidies: subsidies in the context of locational marketing; promotion of tourism at the federal level
- Off-Budget subsidies: subsidies for tourism through loans or tax concessions
- Perverse financial incentive: earmarked charges for tourism

EXAMPLES

Subsidy with damaging effects on biodiversity

Promotion of tourism through the New Regional Policy

Within the framework of the New Regional Policy (NRP), the Confederation supports companies outside the main economic centres by means of financial assistance (A-fonds-perdu contributions) and interest-free or low-interest loans. For the 2016 to 2023 funding period, the total NRP support includes financial assistance of CHF 320 million and loans of CHF 400 million for cantonal, trans-cantonal and cross-border programmes. Around 25 percent of the financial assistance and around 70 percent of the loans benefit tourism. The subsidies are supplemented by the cantons as well as by private companies, thus creating a strong leverage effect. It can be assumed that the promotion of tourism through the NRP mainly supports tourism infrastructure and thus promotes more intensive use of the landscape, thereby damaging biodiversity.

CHF 34 million per annum (2016–2023)



! Recommendation

Any tourism promotion through NRP funds should make biodiversity compatibility an award criterion. This requires recognition of the fact that natural assets must be preserved intact as an important foundation for tourism in Switzerland.

Subsidy which is easy to reconfigure

Tourism levies

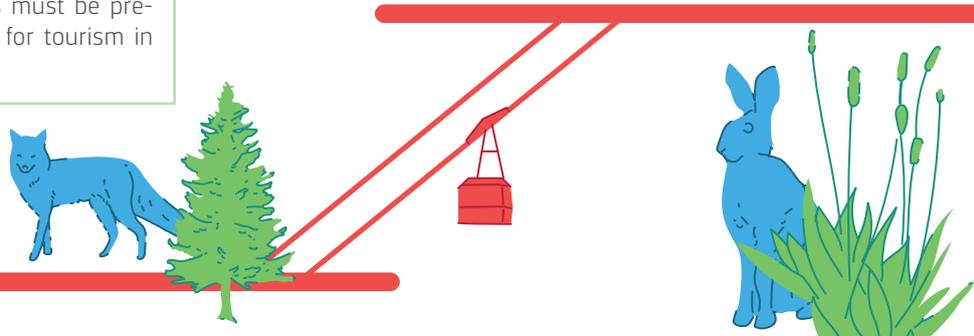
With the exception of Thurgau and Zurich, all the cantons have a visitor's tax and/or a tourism promotion charge that must be paid by guests. In most cases, the local authority determines the sum. As a rule, the revenue goes to the local tourism organisations and must be used for facilities or services that can be used by tourists. The levies lead to a perverse financial incentive, as their earmarking promotes the expansion of tourism infrastructure and cannot be used for other public tasks.

Estimated at CHF 67 million per annum (2018)



! Recommendation

Because nature is an important tourist resource, it is already possible today to use at least part of the levy for measures to promote biodiversity. This possibility should be used and extended.



Wastewater disposal

Wastewater pollutes water quality through the input of nutrients, increased oxygen depletion, raised temperatures and micropollutants, thereby damaging aquatic biodiversity. The diversion of rainwater from settlement areas reduces the local aquatic habitat. Furthermore, the centralisation of wastewater treatment plants can lead to the drying up of parts of watercourses.

The following biodiversity damaging subsidies were identified in the area of wastewater disposal (Fig. 8):



Figure 8. Number, type and impact of biodiversity damaging subsidies in wastewater disposal.

EXAMPLES

Subsidy with damaging effects on biodiversity

External costs due to material pollution of water bodies

Wastewater entails external costs because it pollutes water bodies with material contaminants and thereby damages flora and fauna as well as aquatic ecosystems. Combined sewer overflows (which discharge diluted wastewater directly into bodies of water during heavy rainfall), untreated urban and road wastewater and residual pollution downstream of wastewater treatment plants (WWTPs) introduce nutrients, biocides, endocrine disruptors and micropollutants into waterbodies.

External costs
(Sum unknown)



! Recommendation

The subsidy should be removed through the reduction and internalisation of external costs. This can be achieved by 1. increasing the retention volumes for stormwater or by new infiltration areas within settlements; 2. consistent purification treatment of urban and road wastewater; and 3. upgrading WWTPs (including smaller ones) by adding a fourth treatment stage (or connecting smaller WWTPs to larger plants). The costs are to be borne in accordance with the polluter-pays principle.

Subsidy which is easy to reconfigure

External costs caused by the draining of rainwater from residential areas

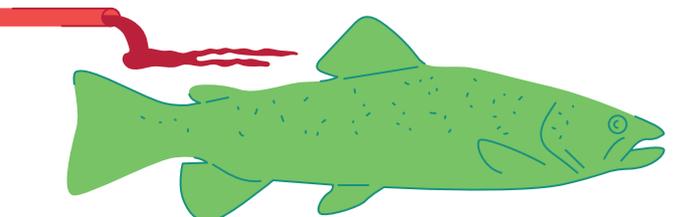
Due to the draining of rainwater into sewer systems, there are hardly any small or micro water bodies in settlements any more. Many species are also disappearing along with these habitats. External costs manifest themselves in biodiversity loss, but also in rising temperatures in settlement areas. In addition, there is a reduced retention capacity, as a result of which wastewater flows untreated into water bodies during heavy rainfall.

External costs
(Sum unknown)



! Recommendation

Sufficient infiltration areas should be created within settlements instead of further expanding the sewerage system. Therefore, it should be obligatory to provide such areas in proportion to the area of land owned, in accordance with the polluter-pays principle. Where this is not possible, local authorities should create areas for the retention of rainwater (financed through fees) within the settlement. Above-ground drainage systems (e.g. re-opened streams) should replace parts of the sewerage network.



Flood protection

Flood protection and the reclamation of cultivated land and settlement areas have massively reduced and damaged the country's water bodies over the last 150 years. Today, wherever possible, flood protection measures also seek to promote biodiversity: flood risks are reduced through spatial planning measures and by widening river courses. Where this is not possible, dams are still renovated or raised, new dams are built, or the river bed is lowered. This however, interrupts the necessary connections to tributaries and to the terrestrial water bodies, but also those between stretches of water which have been ecologically restored.

In the area of flood protection, the following biodiversity damaging subsidies were identified (Fig. 9):



Figure 9. Number, type and impact of biodiversity damaging subsidies in flood protection.

-  On-Budget subsidies: Federal and cantonal contributions towards flood protection measures
-  Covert subsidy: flood protection contributions, which enable the downzoning of hazard zones and thus the development of building land

EXAMPLES

Subsidies with damaging effects on biodiversity

Federal contributions towards flood protection

Today, protection measures in large watercourses in the Central Plateau and in the Alpine valleys are largely geared to once-in-a-century flood events. Flood protection must be geared towards increasingly stringent safety requirements. To this end, existing structures are being maintained, sections of rivers ecologically restored, but also new dams are constructed for extreme events (300-yearly peak flows). All this has an impact on biodiversity. Thereby, the Confederation supports the cantons within the framework of programme agreements with A-fonds-perdu-contributions for technical protection, the repair or replacement of protective structures, and for research into the underlying causes of risks. Individual large-scale projects are financed outside of the programme agreements.

 **Recommendation**

To ensure that flood protection does not damage biodiversity, it should, wherever possible, be combined with close to nature hydraulic engineering techniques. There should be an increased focus on whether buildings can be relocated instead of raising dams. Subsidies for flood protection should be rigorously and consistently linked to measures promoting biodiversity. Where possible, extensive meadows and pastures and the cultivation of wetland crops in the floodplain of watercourses should be promoted in order to avoid the need to raise or build new dams to protect cultivated land. Ideally, dams should be dismantled, the watercourse corridor enlarged and aquatic and terrestrial habitats connected.

CHF 110 million per annum (2018)    



List of identified biodiversity damaging subsidies

TRANSPORT

- Payments for regional and local transport • Funding of noise barriers* • Air traffic: Federal funding from special financing of air traffic, Cantonal and municipal contributions to air traffic infrastructure • Funding for electromobility* • Public expenditures for construction, expansion and maintenance of national highways and cantonal and municipal roads • Public expenditures for expansion, maintenance and renovation of rail network • Suburban Transport Programme*
- Emissions tax: exemption from CO₂ levy for fuels, low CO₂ compensation of fuel imports • Energy tax: reduction of the mineral oil tax • Air traffic: Tax exemption for insurance premiums, exemption from mineral oil tax for aviation fuels, exemption from CO₂ levy, integration of air traffic into ETS, VAT exemption for international air traffic • Significant depreciation allowance for private cars under wealth tax • Tax benefits: commuter deduction, reduction of cantonal vehicle tax • Transport charge: exemption from performance-related heavy vehicle charge, incomplete use of performance-related heavy vehicle charge
- External costs: air traffic, rail traffic, road traffic • Transport charge: charge for using national highways (regardless of distance)
- Earmarking of revenue from transport charges for funding of transport infrastructure

AGRICULTURE

- Promotion of sales of meat and eggs • Promotion of sales of milk • Administration of milk production and processing • Alpine pasture contribution* • Basic contribution • Contributions for disposal of animal by-products • Individual crop subsidies • Funding of accreditation • Support for animal husbandry • Grassland-based production of milk and meat* • Sloping area contribution* • Sloping vineyards contribution • Investment aid for structural improvements • Market support for meat, contributions for storage of veal and eggs • Open cropland • Contribution for maintaining open areas* • Contribution for production in difficult conditions* • Promotion of sales and quality of other agricultural products • Chocolate act resp. follow-up measures • Summer grazing contribution* • Steep slope areas contribution* • Animal welfare BTS • Animal welfare RAUS • Transition contribution • Cheese-making allowance • Implementation livestock for slaughter and meat • Other cantonal net expenditures • Allowance for silage-free feeding of dairy livestock*
- Exemption from performance-related heavy vehicle charge • Border control • Reimbursement of mineral oil tax • Vehicle tax reduction • Reduced VAT rate
- External ecological costs of nitrogen, phosphorus, pesticides, greenhouse gases • Insufficient consideration of biodiversity in agricultural consulting

FORESTRY

- Deficit guarantees* • Forestry investment loans* • Protective structures, hazard data and documentation*, forest management*, and forest protection programmes* • Other forestry sectors
- Reimbursement of mineral oil tax
- Insufficient consideration of biodiversity in forestry training

ENERGY PRODUCTION AND CONSUMPTION

- Feed-in remuneration system for small-scale hydropower* • Feed-in remuneration system for wind power* • Investment contributions for small-scale hydropower* • Investment contributions for MSWI plants* • Feed-in remuneration at cost for small-scale hydropower* • Additional cost financing for small-scale hydropower* • Additional cost financing for wind power* • Small-scale hydropower programme* • Suisse Eole Programme*
- Exemption from CO₂ levy for CHP plants • Exemption from CO₂ levy by integration into Emissions Trading Scheme (ETS) • Exemption from CO₂ levy without integration into ETS, with reduction agreement • Integration of MSWI plants into ETS* • Free allocation of emissions rights to oil refin-

eries • Added ecological value MSWI plants* • Reimbursement of mineral oil tax and grid surcharge for oil refineries • Liberalised electricity market for major consumers and energy supply companies • Waiver of reversion waiver compensation for license renewals* • Hydropower protected from competition* • Liability cover for nuclear plants too low* • Liability cover for water retaining facilities too low • Provision for decommissioning and waste disposal costs in nuclear power too small

→ External costs of hydropower

→ Water charge*

SETTLEMENT DEVELOPMENT

- Contributions for thermal insulation and retrofitting (Buildings programme)* • Geo-topographic indicator: compensatory payment for high-altitude and small settlements, compensatory payments for small, remote and sparsely populated communities • Improvement of living conditions in alpine regions
- Decreasing property gains tax with increasing length of ownership • Deduction of debt interest and maintenance costs from capital tax • Assessment of imputed rental value below market value of taxable objects • Lump-sum taxation • Loans for infrastructure projects within the NRP • Low value added tax • Commercial loan guarantee cooperatives: loan guarantee portfolio extends across whole district • Inter-cantonal tax competition • Property tax: assessment below market value and deduction from income tax • VAT exemption • Tax relief under the New Regional Policy (NRP) • Tax deduction of construction loan interest, garden maintenance costs, mortgage interest, costs of energy retrofitting*, maintenance costs of private property • Circumventing inheritance tax by means of gift tax and right of usufruct • Reduction of imputed rental value in cases of preferential rent • Reduced causal taxes: contributions for development of new or existing land • Tax deduction in case of underused living space
- Sale of municipal construction land below market value* • Higher land use thanks to energy-efficient construction*
- Postponement of property gains tax

TOURISM

- Innoutour • Switzerland Tourism • Major sports events and tourism-related sports infrastructure • Tourism promotion under the NRP
- Loans for lodging industry • Reduced tax rate for gambling casinos • Reduced VAT rate for lodging industry • Reimbursement of mineral oil tax for snow groomers
- Tourist tax

WASTEWATER DISPOSAL

- External costs of material pollution, physical stress and drainage of rain water from settlements • Need for future value-preserving investments not taken into account in charges (cross-subsidisation across generations) • Administrative costs for wastewater disposal (lack of implementation of polluter-pays principle)

FLOOD PROTECTION

- Federal and cantonal contributions for flood protection
- Potential land development via rezoning of hazard zones

* Internal conflict between ecological goals 

Some subsidies have been combined; this is why the total in this list does not correspond to the 162 subsidies identified in Gubler et al. (2020).



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What needs to be done?

In Switzerland, the financial resources for biodiversity promotion are outweighed by sums many times larger in the form of biodiversity damaging subsidies. The sum total of such quantifiable subsidies amounts to CHF 40 billion. It is 30 to 40 times higher than the sum total available for measures to promote biodiversity. The subsidies identified maintain or promote structures as well as production and consumption patterns that harm biodiversity.

In order to slow down the decline of biodiversity in Switzerland and to meet national and international targets, subsidies that are harmful to biodiversity must be abolished or reconfigured. If they are reconfigured, the subsidies must be designed and coordinated in such a way that they no longer damage ecosystems and habitats and threaten species. The economic costs of biodiversity loss are considerable: according to the Federal Office for the Environment, the annual costs of compensating for lost ecosystem services could amount to four percent of gross domestic product in 2050. Biodiversity is the foundation of all economic activity, indeed of human civilisation, and its intrinsic value is immeasurable.

Many subsidies have been in place already for decades and are perceived as normal by their recipients. This makes their abolition more difficult, which is why public finances generally recommend only temporary and decreasing subsidies. If it is not possible to abolish a subsidy, for example because it serves ecological or other politically desired goals, it should be reconfigured so that negative effects on biodiversity are avoided or biodiversity is positively promoted. This also requires that the objectives of sectoral policies are aligned across the board.

On the basis of this study, recommendations for policymakers can be summarised as follows:

1. Improving the information base

- a. **Review all subsidies in the various sectoral policies for their impact on biodiversity – at federal, cantonal and municipal level:** Biodiversity compatibility should become a criterion used in the periodic review of subsidies at federal, cantonal and municipal level.
- b. **Quantify biodiversity damaging subsidies:** All biodiversity damaging subsidies identified should be quantified in monetary terms.
- c. **Check subsidies for consistency:** Subsidies should be checked for conflicts of objectives and interaction with other political objectives and support measures, and jointly coordinated with them, with biodiversity as a priority.

2. Abolishing, dismantling or reconfiguring biodiversity damaging subsidies

- a. **Biodiversity damaging subsidies should be abolished, gradually dismantled or reconfigured** according to the following points:
- b. **Make subsidies conditional on the promotion of biodiversity:** Subsidies often damage biodiversity simply because of how they are implemented. In such cases, subsidies should be tied to conditions that promote biodiversity. If damage to biodiversity persists, sanctions are needed.
- c. **Put time limits on subsidies (sunset clause):** In accordance with the provisions of the Subsidies Act, subsidies should be time-limited if possible. If and when a subsidy is then renewed, the rationale and conditions can be reviewed and amended.
- d. **Convert Off-Budget to On-Budget subsidies:** If possible, Off-Budget subsidies should be converted into On-Budget subsidies. According to fiscal experts, Off-Budget subsidies, especially tax breaks, are less transparent than On-Budget subsidies in terms of their amount, extent and impact. Deadweight effects are high.

3. Taking account of context

- a. **Ensure that reliability of supply does not come at the expense of biodiversity:** In some cases, Switzerland's reliability of supply (especially in energy and agriculture) is the motivation for a subsidy. Reliability of supply must not be achieved by favouring or promoting activities that are harmful to biodiversity; otherwise the nature and method of what is supplied must be examined.
- b. **Allow old technologies to be phased out in parallel with the subsidisation of new practices and technologies (Exnovation):** If the objective of a subsidy is to make a new technical process marketable or a new consumption practice attractive and thus to replace existing ones (e.g. electromobility instead of fossil-fuelled mobility), it is important to verify whether this replacement is actually taking place. If this is not the case, alternative or additional measures need to be taken, because otherwise the damage to biodiversity will not decline. For example, in parallel with the promotion of renewable energy, the use of fossil and nuclear energy must be reduced.