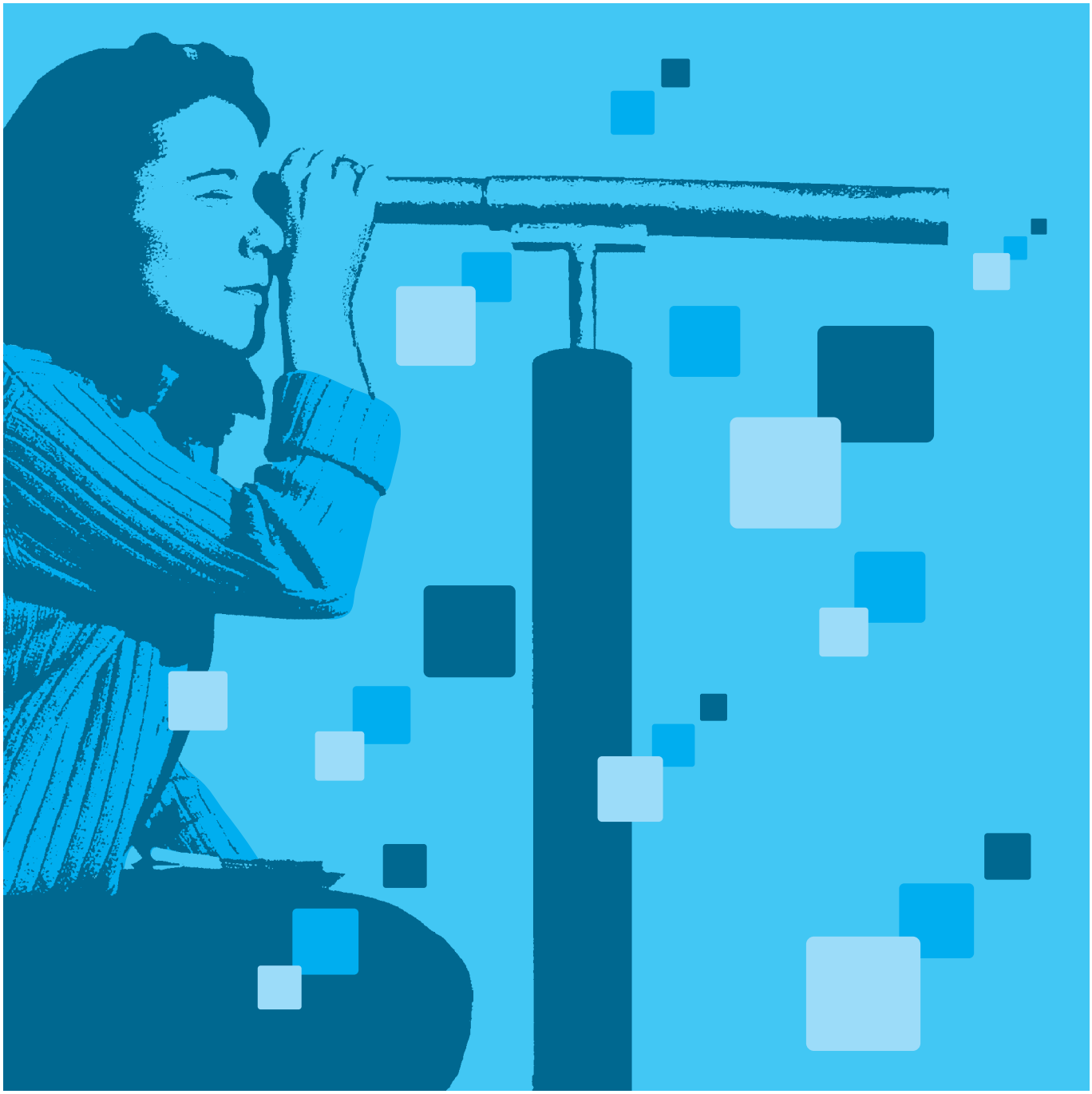
Sustainable development in Switzerland

Indicators and Comments



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Swiss Statistics

Sustainable Development in Switzerland

Indicators and Comments

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Preface

By accepting Agenda 21 and the Rio Declaration of 1992, Switzerland undertook to define and implement a Sustainable Development policy. The Swiss population endorsed this objective by incorporating an article on Sustainable Development into the revised Federal constitution in 1999. For the second time in spring 2002, the Federal Council proposed a strategy aimed at establishing this subject as an element in every area of policy; the strategy defines the Federal Council's policy in this field over the coming years and sets forth a plan of action comprising 22 specific measures. One of these (measure number 21) deals with monitoring of Sustainable Development, and it states the need for a measuring system based on indicators. Section 40 of Agenda 21 had already called for indicators to be defined and updated on a regular basis so as to provide information about progress made towards Sustainable Development.

With this objective in mind, the Swiss Federal Statistical Office (SFSO), the Swiss Agency for the Environment, Forests and Landscape (SAEFL) and the Federal Office for Spatial Development (ARE) have pooled their specialised resources to work towards one shared goal over the last three years – the monitoring of Sustainable Development. This constructive cooperation has led to the creation of the MONET system of indicators (the acronym stands for Monitoring of Sustainable Development in German). This system is primarily intended as an information platform serving the general public, politicians and the administrative sector. The MONET indicators aim to provide an overall picture of Sustainable Development in Switzerland and to indicate our country's position on a comparative international basis.

The MONET system was developed by a team of five employees taken from the three agencies. However, several phases of this work (especially the selection of the indicators) would have been very difficult to accomplish without the expertise and know-how of over 80 employees in some 20 Federal agencies and organisations. We would like to take this opportunity of expressing our sincere thanks to all of them. Our thanks are also due to the 24 experts who lent their support to the project in word and deed as members of the follow-through groups.

This document marks an important milestone now that more than three years' work has been completed, and it ushers in the implementation phase for the MONET system of indicators. The document offers an initial balance-sheet for Sustainable Development in Switzerland, accompanied by comments from both journalists and experts. These personal comments are intended to stimulate a broad-based discussion, and they solely reflect the opinions of their authors.

The MONET system of indicators is not engraved in stone. Like Sustainable Development itself, the system is a process which will undergo improvements and corrections. Knowing the importance of this undertaking, the three Federal agencies are committed to continuing their efforts so that they can offer the citizens of this country relevant and independent information about the advances made and difficulties encountered along the path towards Sustainable Development.

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Introduction

A report on the state and progress of Sustainable Development in Switzerland

This report examines the economic, social and ecological aspects of Sustainable Development in Switzerland with the help of a system of indicators that has been created for this purpose (see Section A).

However, the report is not restricted to a discussion of past developments and the present situation from the viewpoint of public statistics. On the contrary, it also includes comments and analyses by journalists and independent experts (see Section B) which highlight prospects and approaches to action for the future, as well as providing answers to some of the fundamental questions linked to Sustainable Development in Switzerland. The focus here is on the following questions in particular:

Answers to some basic questions…

- *Is Switzerland on the path towards Sustainable Development? What are Switzerland's strengths and weaknesses as it travels this path? What are the key factors, and what major obstacles are there?*
- *Why is Switzerland (not) on the path towards Sustainable Development? What are the positive and negative developments, the shortcomings and potentials at the levels of government, the economy and society?*
- *What needs to be done to move Switzerland onto the path towards Sustainable Development? Which measures take priority?*
- *How useful are systems of indicators to evaluate sustainability in a country?*

…thanks to the MONET system of indicators created for this purpose

The situation and the changes regarding Sustainable Development in Switzerland are described in relation to the three dimensions of society, the economy and the environment with the help of a system comprising 164 indicators; 117 of these indicators have been generated on the basis of data and methods that are already in existence. Section A of this publication gives a condensed presentation of these indicators. The list of indicators, together with a comprehensive presentation of all the indicators that have been generated, is available on the Internet at http://www.monet.admin.ch
The indicators are not suitable as a means of measuring sustainability with absolute values. However, they can be used to illustrate how it has developed up to now, and to assess it in terms of the direction that should be followed. This direction is – in turn – based on postulates (see Section A and the Final Report of the MONET Project for detailed explanations about the approach adopted[1]).

Established on an institutional and international basis

Many of the MONET indicators are based on definitions by international organisations such as the UN Commission on Sustainable Development (UN-CSD), the OECD or Eurostat (the Statistical Office of the European Communities). Almost every European country has its own tailor-made system of indicators to evaluate Sustainable Development. Despite their variety, the national systems display many similarities, due in particular to the intensive exchange of information and cooperation among various countries within the international organisations mentioned above. The work undertaken in Switzerland ties in excellently with the approaches adopted in other countries[2].

[1] SFSO/SAEFL/ARE, 2004: MONET Final Report – Methods and results
[2] OECD, 2003: Overview of sustainable development indicators used by national and international agencies. OECD statistics working paper 2002/2

Section A: Statistical information…

Section A contains explanations about the development and structure of the system of indicators, together with a comprehensive presentation of the 117 indicators that have been generated, classified according to the 26 subjects in the MONET system. The presentation scheme used in this report includes an evaluation of the way these indicators have developed in relation to the corresponding postulates. An evaluation of this sort is not primarily intended to provide an assessment of developments to date. Rather, this approach (which has so far been rarely used by strictly neutral statistical organisations) aims to offer a clear presentation in spite of the large number of indicators used.

… and the evaluation of development

In our case, the evaluation of the indicators is a first (but probably essential) step along the path towards a more comprehensive consideration of one or more different groups of indicators. Assuming that Sustainable Development calls for a cross-sectional approach, the indicators must not be considered in isolation. Instead, the objective should be to identify the interactions among the different (and sometimes contradictory) objectives for Sustainable Development.

Section B: Comments and analyses

Section B contains analyses and comments by four journalists and experts from the follow-through groups regarding Sustainable Development in Switzerland, on the basis of the indicators presented in Section A. The authors also comment on the four questions stated above (each of the experts deals with one of these questions). These comments represent the first specific interpretation of the MONET systems, and they differ both in terms of the priorities chosen and the vantage points from which the assessments have been compiled. The authors themselves are solely responsible for the content of their comments.

The basis for regular reporting

This report is being published simultaneously with the Final Report[3] of the MONET Project, which describes the methods selected to develop the system of indicators and the experience gained from this process. A detailed version of all the indicators published in the present report (with accompanying texts, graphics, data tables and meta-information) is available on the SFSO web site (http://www.statistik.admin.ch or http://www.monet.admin.ch)

The MONET project was launched in spring 2000 with the aim of compiling a system of indicators to measure Sustainable Development in Switzerland. Now that this project has been completed, the system of indicators is entering into its implementation phase, which includes developing and improving the system, updating the indicators and issuing publications at intervals.

More detailed information
on the principles and procedures
of the MONET Project is available in the **Final Report:**

MONET Final Report – Methods and Results
SFSO, SAEFL, ARE 2004

This report can be downloaded as a PDF file
at http://www.monet.admin.ch

[3] SFSO/SAEFL/ARE 2004: MONET Final Report – Methods and Results

Section A: Indicators for Sustainable Development

Measuring Sustainable Development

The concept of Sustainable Development is based on certain standards and values. It follows that the indicators used to describe Sustainable Development must be chosen in line with a clearly demarcated analytical framework, which in turn has to be derived from a specific definition and an interpretation of the term itself.

Definition

The term «Sustainable Development» originates from the report submitted in 1987 by the World Commission on Environment and Development (WCED) entitled «Our Common Future», also known as the «Brundtland Report». This document defines Sustainable Development as «development that meets the needs of the present without compromising the ability of future generations to meet their own needs». This globally recognised definition has also been taken as the basis for this system of indicators.

A valuable concept

In the same way as other «open» terms such as freedom or justice, Sustainable Development is a concept that can only be interpreted for limited periods of time and in relation to specific contexts. For this reason, the interpretation used in the present document should not be regarded as irrevocable, but rather as a continuation of the attempt to invest the term with meaning as far as Switzerland is concerned. The term «Sustainable Development» is gradually clarified and specified below (see the graphic on page 10). Corresponding «goal dimensions» are formulated in line with the interpretation of the term based on the Brundtland Report. Postulates are then used to define these goal dimensions more precisely (see pages 12-14).

Interpretation

The basic principle of Sustainable Development – maintaining the ability to meet the needs of all humans alive both now and in the future – is encapsulated in the following core concept:

Sustainable Development entails the indivisibility of human rights over time and space, with the aims of:

- creating and securing an existence that is fit for humans, for all people living now and in the future;
- maintaining and (in the long term) securing the ecological, material and cultural conditions for existence that are essential for the freedom to develop personality.

«Do unto others as you would have them do unto you»

Human rights provide an ethically justified framework for the right to a life that is fit for human beings and for the freedom to develop personally, as well as the duty to guarantee the same rights for our fellow human beings. If the idea of what is «ethically right» is restricted to the absolute minimum, and if «moral goodness» with its cultural and religious overtones is omitted, people throughout the world – regardless of their cultural origins – accept human rights, or at least the basic principles which underlie them. What is probably the most important of these principles – «Do unto others as you would have them do unto you» – is one of the most universal rules of all.

Freedom to develop one´s life, but fairness for all

The term «development» suggests that people's freedom to decide and act should not be restricted as we move towards sustainability. Maintaining options to meet everyone's needs calls for a fair division of the ecological, economic and social capital required for this purpose. In terms of ethics and the philosophy of law, this division will only be fair if the benefits for the most disadvantaged individuals are maximised. In every material consideration, this means that the highest priority must be given to meeting the needs of those who are most underprivileged. This explains why inequality of income is not a matter for concern provided that the renunciation of the «equal pay for all» principle allows a flourishing economy which also benefits the poorest sectors of the population. Likewise, North-South trade is in keeping with Sustainable Development if it benefits the poorer partner nations as well.

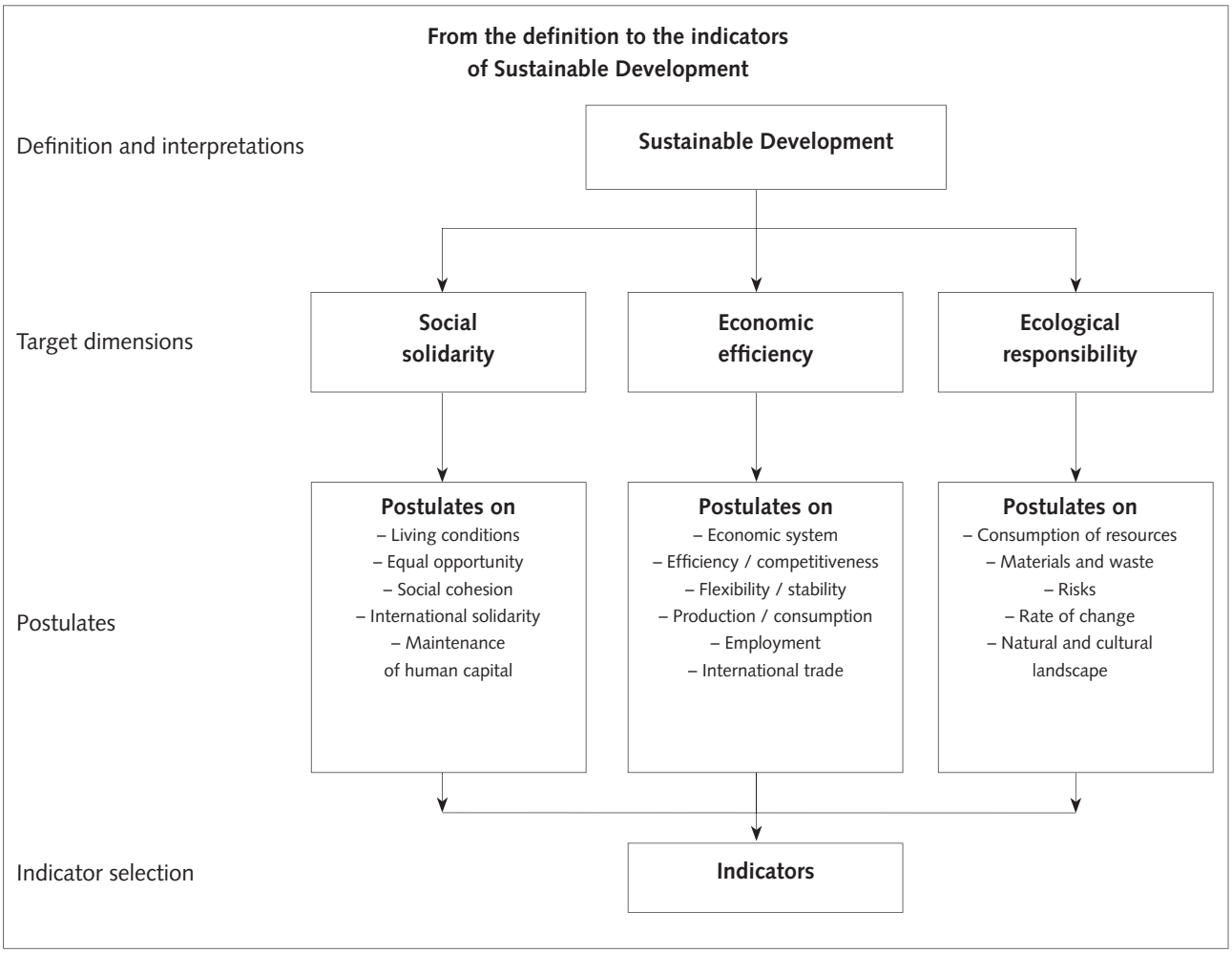
Limited resources

In order to implement the terms of reference cited above, capital must only be used in ways that will not compro-

mise the opportunities available to the most underprivileged members of present and future generations. However, the earth's natural resources are limited, so any consumption of resources must be linked to an equivalent investment in the future. In the case of bio-variety, the possibilities for replacement are restricted, making comprehensive protection essential in this respect.

Goal dimensions

Meeting needs in a balanced manner not only requires adequate natural resources, but also an efficient economy and a social environment that is fit for human life. It follows that Sustainable Development entails far more than merely protecting the environment, as is often assumed.



In harmony with «Rio» and the Swiss Constitution

The understanding of Sustainable Development that is outlined here corresponds to the basic values described in the official documents of the Earth Summit at Rio and in Agenda 21. It is also in harmony with the system of values enshrined in the Swiss Federal Constitution. Article 2 of the Constitution explicitly calls for the «promotion of Sustainable Development» and «durable preservation of the natural bases for life», while Article 73 stipulates «a permanently balanced relationship between nature and its ability to renew on the one hand, and the way it is utilised by humans on the other».

The three spheres of society, the environment and the economy are closely interlinked, and the interfaces and interactions between them are extremely important. For this reason, it makes little sense to regard these three areas as separate «columns». On the contrary, the concept calls for goal dimensions that emphasise the mutual dependencies between the three areas of «social solidarity», «economic efficiency» and «ecological responsibility». All three areas must be treated as equivalent, and each of them is valid in society just as much as in the economy and the environment. For example, this means that measures to protect the environment must be economically efficient, or that economic promotion also has to be socially just.

What does «Sustainable Development» mean? The definition used in MONET:

1. Sustainable Development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
2. Sustainable Development means enabling people to live in conditions that are adequate for them in terms of human rights, by creating and maintaining the maximum range of options to ensure that individuals are free to develop their designs for living. When using ecological, economic and social resources, consideration should be given to the principle of fairness among and between present and future generations, both in Switzerland and in relation to foreign countries.
3. Implementing these terms of reference requires comprehensive protection of bio-variety as the indispensable basis for life; this refers to the variety of ecosystems and species, and to genetic variety.
4. The goal dimensions are social solidarity, economic efficiency and ecological responsibility. The principle of equal priority applies to these three goal dimensions: neither the ecological, the economic nor the social goal must be attained at the long-term cost of either of the other goals.

Postulates to point the way

It is difficult to judge specific factual circumstances on the basis of goal dimensions alone because there is often too much leeway for interpretation. This is why postulates are added in order to arrive at a more specific definition of Sustainable Development and its goal dimensions. These postulates ultimately form the frame of reference that is used to assess the sustainability of observed developments. At the same time, the postulates allow the indicators to be chosen on a consistent and transparent basis: each indicator must refer to at least one postulate.

All the postulates have a clear and direct relation to the definition and the goal dimensions, and they are relevant over time and space. Given that they are geared to long-term validity, they do not include any current measures or paths towards solutions.

In terms of subject-matter, the postulates are assigned to the three goal dimensions of «social solidarity», «economic efficiency» and «ecological responsibility», and they are classified into 20 areas. The postulates provide information about meeting needs and preserving stocks of capital, and also about the efficiency and fairness with which needs are met and resources are used.

The postulates are largely based on Swiss Government publications. Although the selection has been carefully drawn up in the most balanced way possible, it is not free of value judgements. Nor do the postulates draw a complete picture of a «sustainable Switzerland».

The indicators

Indicators were selected for the individual subjects by means of a participative process involving about 20 Swiss government agencies and organisations. The indicators each illustrate one or more postulates of Sustainable Development, and they represent one of the five steps in the process modelled for the MONET system: the extent to which individual and social needs are met, the expenditure that is incurred to do so, the latest state of resources, the efficiency and fairness of their use, and the reactions of society[4].

The current list of indicators is an open system and it may undergo changes (indicators may be added, deleted or modified).

[4] For additional information on the structure and features of the system of indicators, see SFSO, SAEFL, ARE, 2004: MONET Final Report – Methods and Results

Postulates concerning social solidarity

General principle	**1a**	**Ensuring human rights**	**Each member of society has a right to the dignity of human life and to the free development of their personality. Democracy, legal stability and cultural diversity are guaranteed.**
	1b	**Limited individual freedom**	**The limits of individual development are set where the human dignity of other contemporary individuals or of future generations is compromised.**
Objective living conditions	2a	Meeting needs	The basic needs of the population must be met over the long term. Individuals should be permitted reasonable latitude in meeting material and non-material needs which extend beyond the basic needs.
	2b	Promoting health	Human health should be protected and promoted.
	2c	Fighting poverty	The dignity of human life requires freedom from poverty. Needy members of society shall benefit from solidarity in accordance with their needs.
Subjective living conditions	3a	Satisfaction and happiness	Possibilities for present and future generations to find satisfaction and happiness in life should be maintained and promoted.
	3b	Development that takes well-being into account	Socioeconomic and environmental change must not be achieved at the cost of the physical and psychological well-being of the individual.
Fairness of distribution, equality of opportunity	4a	Ban of discrimination	No-one shall be discriminated against on the basis of whatever external or internal characteristic.
	4b	Equal opportunities and fair distribution of wealth	Each member of society should have the same rights and opportunities. Society should strive to achieve a more just distribution of resources.
	4c	Integration of less fortunate	The integration of disadvantaged groups of the population and regions into economic, social, cultural and political life should be promoted.
Strenghtening of social cohesion	5a	Intercultural and interpersonal understanding	In recognition of the fact that the proper functioning and survival ability of society are substantially based upon the solidarity of its members, exchange and understanding between individuals and groups should be promoted.
	5b	Social and political participation	Social and political participation should be promoted.
International solidarity	6a	Development cooperation	In developing countries and transition countries sustainable development shall be promoted by way of poverty alleviation. Assistance shall be provided in particular to the poorest developing countries, regions and people.
	6b	Promoting peace and democracy	Peaceful coexistence of peoples and nations, respect for human rights and democracy should be promoted.
Development and maintenance of human capital	7a	Development of human capital	Collective knowledge and sociocultural heritage should be maintained and increased over the long term.
	7b	Access to information and freedom of opinion	There should be no restriction to the flow of information. Free formation and expression of opinion must be guaranteed.
	7c	Encouraging learning	The ability to absorb and process information should be promoted.
	7d	Child-friendly environment	Children and young people in particular should be able to live in an open, motivating and future-oriented environment.

Postulates concerning economic efficiency

General principle	**8**	**Economic order in favour of the communal good**	**Economic activity should effectively and efficiently meet the needs of the individual and of society. The economic framework should be shaped in such a manner that it promotes personal initiative, thus putting self-interest to the service of the common good and ensuring the welfare of the present and future population.**
Economic system	9a	Market as economic order	Goods allocation should primarily be by free market means. If the market fails or in the case of goods primarily in the public interest (merit goods), intervention in the free market is justified.
	9b	Genuine costs and principle of polluter-pays	Prices should reflect the scarcity of natural resources and sinks and include external costs. The «polluter pays» principle should be applied consistently (with the exception of merit goods).
	9c	Market intervention that conforms to the system	In the case of market intervention, market-economy tools should be chosen above all others.
Efficiency and competitivity	10a	Promotion of economic efficiency	The economic efficiency of a society and its productive, social and human capital must be at least maintained over time. The aim should not merely be to bring about an increase in quantity, but instead to ensure a constant improvement in quality.
	10b	Economic order that favours innovation and competition	The framework of the market system should be shaped in such a manner that innovation is encouraged and functional markets are maintained or improved. Competitivity and locational quality should be maintained and promoted.
	10c	Promotion of research	Research and development activities which support sustainable development should be promoted.
	10d	Limited public debt	Public-sector debt must be incurred only to the extent that it does not jeopardise the capability of future generations to meet individual and social needs.
Flexibility and stability	11a	Predictability of changes in the system	The framework of the market system should be shaped in such a manner that a long-term outlook is worthwhile and the social change necessary to adapt to future requirements is facilitated. New measures should be foreseeable.
	11b	Socially compatible rate of change	The rapidity or slowness of changes in the framework of the economic system must not jeopardise social peace.
Production and consumption of goods and services	12a	Ecologically acceptable production	Environmental impact and risks emanating from production plants should be minimised, while energy and material flows should be optimised.
	12b	Ecologically and socially acceptable consumption	Consumption of goods and services should be as environmentally compatible and socially just as possible.
	12c	Transparent business reporting for consumers	Within and outside manufacturing companies information should be made available that serves to ensure sustainable development and consumption, e.g. through environmental management systems.
Employment	13	Employment that is morally worthwhile and provides a decent living	The economic system should ensure that anyone desiring gainful employment is able to find meaningful work to support themselves.
International trade	14a	Environmentally and socially acceptable world trade	The multilateral trading system should take account of the need for careful management of natural resources and promote technologies which ensure efficient use of environmental resources and social justice.
	14b	World trade from which all parties can profit	The multilateral trading system should assist in ensuring that one nation's individual and social needs are met without consequently compromising the ability of other nations to meet their own needs.

Postulates concerning ecological responsibility

General principle	**15a**	**Preservation of natural resources**	**The natural foundations of life should be maintained in the long term and existing damage should be repaired.**
	15b	**Preservation of biodiversity**	**The dynamic diversity of nature must be preserved.**
Consumption of resources	16a	Limits for consumption of renewable resources	Consumption of renewable resources should be kept below the regeneration threshold.
	16b	Limits for consumption of non-renewable resources	Consumption of non-renewable resources should be kept below the development potential for renewable resources.
Materials and wastes	17a	Limits for degradable waste and toxins	Pollution of the environment with degradable waste and pollutants should be minimised. Contamination should on no account exceed the absorption capacity of the ecosystem.
	17b	Avoidance of non-degradable toxins	The emission of non-degradable pollutants into the environment should be prevented wherever possible.
Risks	18a	Ecological compensation	Any impairment to nature should be offset such that biodiversity is maintained and the quality and continuity of the ecosystem are ensured.
	18b	Minimisation of ecological risks	Accident risks with wide-ranging impact upon humans and the biosphere are permissible only insofar as, even in the worst case scenario, they do not cause any permanent damage for a subsequent generation.
	18c	Caution in the case of uncertainty	Severe or irreversible environmental damage should be prevented, even if the scientific community is not absolutely certain of the actual risk.
Rate of change	19	Taking into consideration the time needed for natural processes	The rate of anthropogenic intervention in nature must be in balance with the tempo of the natural processes of relevance to the environment's capacity to respond and regenerate.
Natural and agricultural landscape	20	Acceptable natural and agricultural landscapes	Development of the natural habitat of humans must be guided by the concept of human rights. Human dignity requires a decent natural and agricultural landscape.

Presentation scheme

So that readers can obtain a clear overview of the indicator system, the scope of this report is restricted to a condensed presentation of the Indicators for Sustainable Development. A complete presentation with detailed comments, definitions, data tables and methodological background material is available on the Internet at http://www.monet.admin.ch. The series of data and the accompanying texts on this site will be updated at regular intervals.

The observed trends have been evaluated in terms of their importance for Sustainable Development and they are shown by symbols (see Section 1). As a general rule, this evaluation refers to development since 1987 (the date when the «Brundtland Report» was published) or, in cases where data only began to be recorded at a later date, the evaluation relates to development since records started.

The reference framework for this evaluation comprises the postulates for Sustainable Development that have been developed in connection with the Monet project (see pages 12-14). The numbers and titles of the most important postulates relating to each indicator are provided.

A special symbol is used to denote indicators that have yet to be developed. For the foreseeable future, it will not be possible to generate the indicators shown in italics, since no measuring concepts or data are available and data recording has not even been started or planned as yet.

T1: Symbols

Trend *		**Assessment**	
↗	Increase	+	Positive (toward sustainability)
↘	Decrease	–	Negative (away from sustainability)
→	No significant change	≈	Neutral
~	Erratic		Not applicable
…	Not applicable (1 record only)		

Other symbols

The indicator has yet to be developed

1a, 1b etc.: Number of postulates (see pages 12-14)

* since 1987 or since records started (if later than 1987)

1 Social security and prosperity

One of the principles of Sustainable Development states that every member of society has the right to a life that is fit for human beings. For this reason, the aim should not only be to meet basic needs but also to grant appropriate scope for the satisfaction of material and non-material requirements above and beyond those basic needs. This will only be possible if needy members of society receive solidarity benefits. A redistribution of this sort takes place under the auspices of social welfare activities.

The richest 20% of the population earn 4.6 times more than the poorest 20%

Income level is the decisive factor when it comes to meeting material needs. Between 1998 and 2000, the monthly income for a household (1.1) saw a nominal rise of 4.1%, bringing it to an average of 8,696 francs. This total comprises the incomes of all members of the household from all sources, including items such as pensions, maintenance payments, interest revenues and gifts as well as earned income. In real terms, given that the index of consumer prices only rose by 2.3% in the same period, this development actually corresponds to an increase in the average income for a household. However, the distribution of incomes is unequal: in the year 2000, the 20% of households with the highest income (weighted on the basis of the size and composition of the household) earned 4.58 times more than the 20% with the lowest income (1.2). This inequality has continued virtually unchanged since 1998.

9 out of 100 people of working age are afflicted by poverty

The proportion of people living below the poverty line (1.3) rose from 7.9% to 10.8% between 1992 and 2000, after which it fell again to 9.3% (2002). However, these figures only refer to people of working age, i.e. those between 20 and 59. Women are somewhat more frequently afflicted by poverty than men (1.4).

Transfer payments are arranged in order to alleviate poverty and to reduce inequalities. On average, transfer income of this sort (1.5) accounts for about one fifth of household income; it includes benefits from social insurance organisations, social aid and other types of transfer. However, the percentage of transfer income not only reflects society's solidarity; it is also influenced by demographic change, the level of unemployment and other changes of a social or economic nature. In the longer term, it will only be possible to maintain the level of social insurance benefit if the premiums and the support benefits are balanced. The last 15 years have seen fluctuations in the annual net balance of income minus expenditure for the social insurance organisations (1.6), excluding occupational benefit.

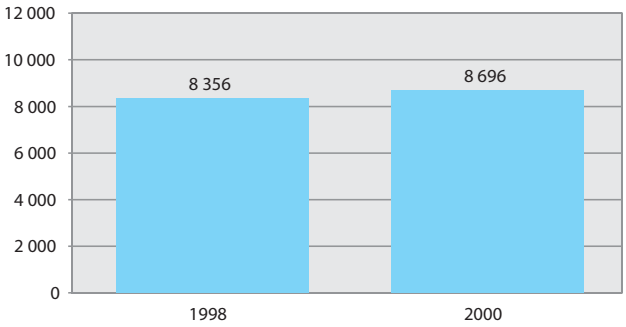
Indicators		Postulates of Sustainable Development	Trend/ Assessment
1.1	Household income	1a Ensuring human rights, 2a Meeting needs, 2c Fighting poverty	↗ +
1.2	Inequality of income distribution	4b Equal opportunities and fair distribution of wealth	→ ≈
1.3	Population living below poverty line	1a Ensuring human rights, 2a Meeting needs, 2c Fighting poverty	↗ –
1.4	Population living below poverty line by sex	2c Fighting poverty, 4a Ban on discrimination, 4b Equal opportunities and fair distribution of wealth	…
1.5	Transfer income of private households	2a Meeting needs, 2c Fighting poverty	…
1.6	Net financial flow of social security	2a Meeting needs, 2c Fighting poverty	~ ≈

Explanation of symbols on page 15

1 Social security and prosperity

1.1 Household income

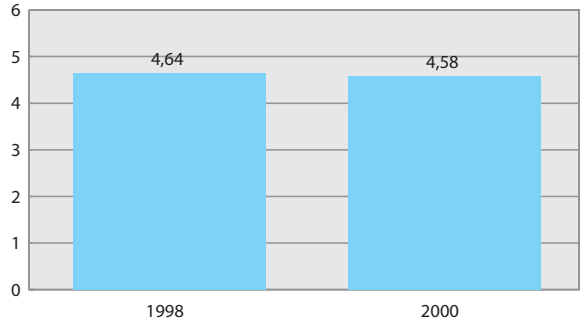
Average gross monthly household income (running prices) in Swiss Francs



Swiss Federal Statistical Office

1.2 Inequality of income distribution

Ratio of combined income of the top 20% to that of the bottom 20% of households*

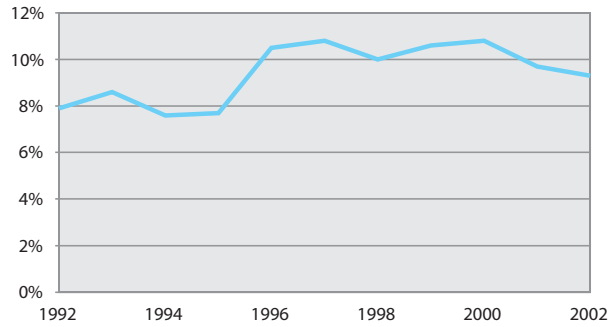


* equivalent net household income after social transfers

Swiss Federal Statistical Office

1.3 Population living below poverty line

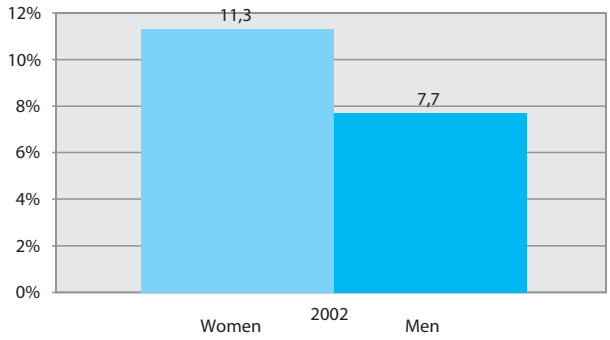
Percentage of people aged 20 to 59 who live below the poverty line (according to Swiss Conference for Social Aid)



Swiss Federal Statistical Office

1.4 Population living below poverty line, by sex

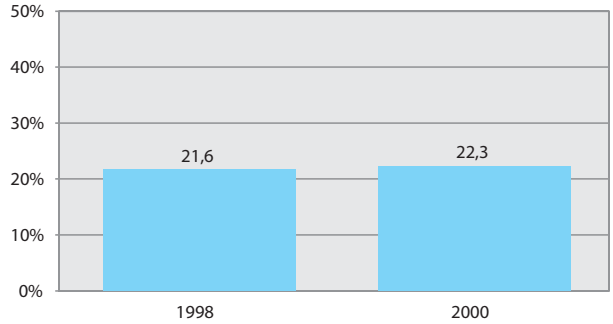
Percentage of people aged 20 to 59 who live below the poverty line (according to Swiss Conference for Social Aid)



Swiss Federal Statistical Office

1.5 Transfer income of private households

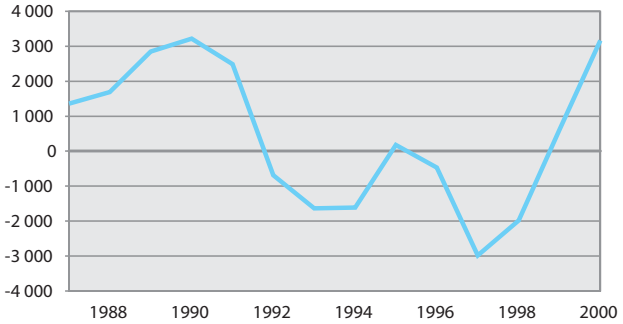
Share of household income



Swiss Federal Statistical Office

1.6 Net financial flow of social security

Income minus expenditure (excluding professional provision), in million Swiss Francs



Swiss Federal Statistical Office

© Swiss Federal Statistical Office (SFSO)

2 Health

People's state of health has a major influence on their quality of life, and it is an important factor as regards economic efficiency. This is why the protection and promotion of health are accorded high priority in Sustainable Development. Both physical and psychic health are significant in this context.

High life expectancy, mediocre psychic well-being

Probably the most suitable indicator to illustrate the population's physical health would be «healthy life expectancy» (2.1), but this indicator is still being developed. In its place, a look at life expectancy in general shows that Switzerland's figure is one of the highest in the world (86.2 years for women and 76.9 years for men in 1999/2000). Another indicator which also has to be developed in the future, the «social gradient of healthy life expectancy» (2.7) would be able to show whether and to what extent life expectancy is the same for all social strata.

Half of the respondents rate their psychic well-being (2.2) as only moderate or poor. Nevertheless, there is an increase in the percentage of people who feel well.

More smokers of both sexes, less exercise

A person's state of health depends on his or her individual behaviour. Physical activity (2.3) is one of the factors that have a positive effect. Measured by the frequency of activities that produce perspiration or heavier breathing, over one third of the population does not take enough exercise. Smoking has a damaging effect on health (2.4). Within five years, the proportion of regular smokers of both sexes has risen from 28% to 30%; this increase is most marked among adolescents and young adults, and it is more pronounced among the women in this group than the men.

Expenditure is high on curative medicine, but low for prevention and health-promotion

Preventive measures would be needed in order to change health-related behaviour. The expenditure on prevention (2.6) only accounts for a minimal proportion of total costs in the health sector; the constant figure of about 2.5% includes such items as measures to combat addictive and infectious diseases, accident prevention and health promotion.

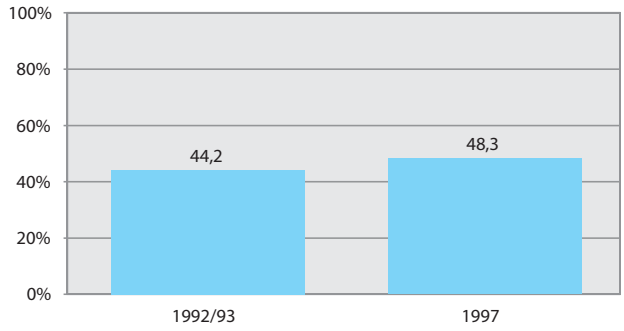
On the other hand, society is very ready to invest in restoring and maintaining health, or in increasing life expectancy. In real terms, health expenditure (2.5) has risen by half over the last 15 years, significantly outstripping the overall development of prices and wages. On a comparative international basis, Switzerland has one of the world's most expensive health systems.

Indicators		Postulates of Sustainable Development	Trend/ Assessment
2.1	Healthy life expectancy	2b Promoting health	
2.2	Psychic well-being	2b Promoting health, 3a Satisfaction and happiness	↗ +
2.3	Health behaviour: physical exercise	2b Promoting health	…
2.4	Smoking habit	2b Promoting health	↗ –
2.5	Expenditure on health	2a Meeting needs, 2b Promoting health	↗
2.6	Expenditure on prevention and health-promotion	2b Promoting health	→ ≈
2.7	*Social gradient of healthy life expectancy*	*2b Promoting health*	

Explanation of symbols on page 15

2.2 Psychic well-being

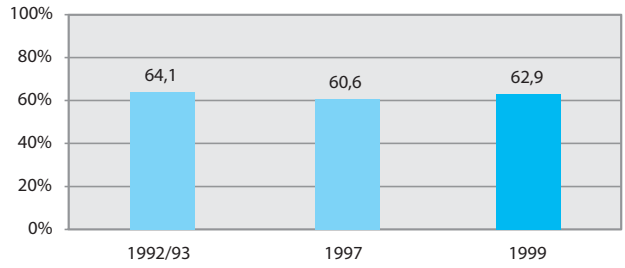
Percentage of population aged 15 and over with high level of psychic well-being



Swiss Federal Statistical Office

2.3 Health behaviour: physical exercise

Percentage of population aged 15 and over who take enough physical exercise



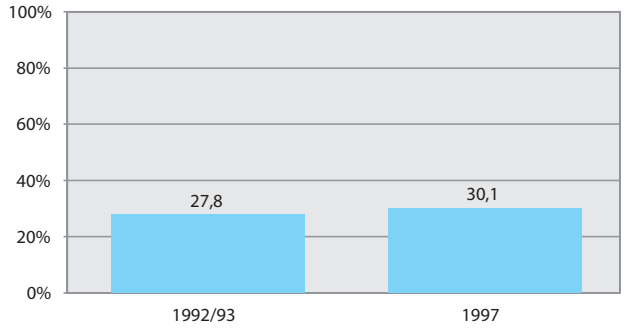
Percentage of people who take physical exercise in their spare time at least once a week which causes them to perspire

Percentage of people who take physical exercise every day which causes them to get out of breath for at least 30 minutes, or who take physical exercise at least 3 times a week which causes them to perspire for 20 minutes

Swiss Federal Statistical Office; Swiss Federal Office of Sports; Swiss Federal Office of Public Health; Swiss Health and Exercise Network

2.4 Smoking habit

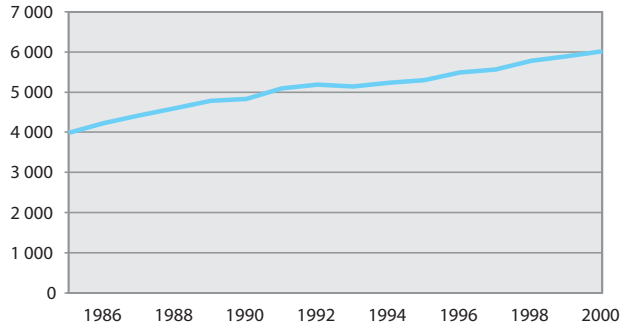
Percentage of population aged 15 and over who smoke regularly



Swiss Federal Statistical Office

2.5 Expenditure on health

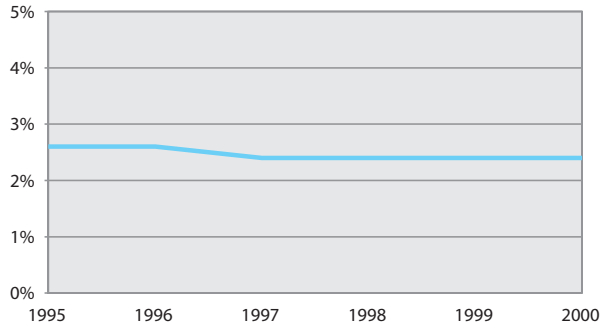
Expenditure on health per inhabitant (constant prices in 2000), in Swiss Francs



Swiss Federal Statistical Office

2.6 Expenditure on prevention and health-promotion

Percentage of total expenditure on health



Swiss Federal Statistical Office

© Swiss Federal Statistical Office (SFSO)

3 Subjective living conditions

As we all know, prosperity on its own does not make people happy. The quality of life depends not only on meeting basic material needs, but also on a subjective judgment of living conditions or well-being. Every human being has a need for happiness and satisfaction, and Sustainable Development should also accommodate these requirements.

The level of contentment with life in Switzerland is high with some age- and income-related differences

6% of the population have nobody they can rely upon

Based on an international comparison, the suicide rate in Switzerland is very high

In overall terms, four fifths of the Swiss population are satisfied or very satisfied with their lives (3.2), although some differences can be seen in the various age categories (3.3). The lowest quota of satisfied individuals is found in the age group from 25 to 39 years, whereas older people are significantly more satisfied. The percentage of satisfied to very satisfied individuals even rises to more than 86% among women over 62 and men over 65.

The level of contentment also varies according to income category (3.4). 82% of affluent people say that they are satisfied, whereas only 75% of poor people make this statement. Accordingly, the generally high level of satisfaction should not obscure the fact that one quarter of poor people are not satisfied or are only «fairly» satisfied.

Being able to talk over personal problems with someone close at any time is an important factor in well-being. The very fact that there is someone to rely upon (3.5) can make it far easier to cope with personal crises, and this factor is directly related to good health. Nevertheless, more than 6% of the people interviewed have nobody to rely upon. This percentage did not change between 1992 and 1997.

Suicide is an expression of mental illness and the suicide rate allows something to be said about the psychosocial situation of the population. Following an increase in the 1970s, there was a noticeable drop in the suicide rate (3.1) after 1980, but it is still very high on a comparative international basis. Suicide is actually the most frequent cause of death among individuals aged between 15 and 44.

An environment that fosters a sense of identity (3.6) should play a part in subjectively good living conditions, but there is no indicator for this purpose as yet.

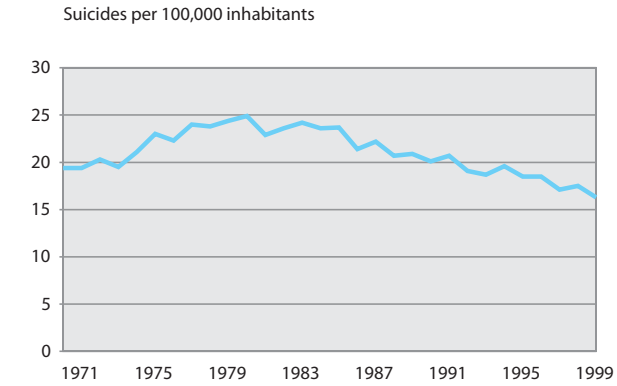
Indicator 2.2, «psychic well-being» in topic 2 «Health», also gives an idea of subjective living conditions.

Indicators		Postulates of Sustainable Development	Trend Assessment
3.1	Suicide rate	2b Promoting health, 3a Satisfaction and happiness, 3b Development that takes well-being into account	↘ +
3.2	Contentment with life	2a Meeting needs, 3a Satisfaction and happiness	…
3.3	Contentment with life by age	2a Meeting needs, 3a Satisfaction and happiness, 4b Equal opportunities and fair distribution of wealth	…
3.4	Contentment with life by income	2a Meeting needs, 2c Fighting poverty, 3a Satisfaction and happiness	…
3.5	Availability of a person to rely upon	2b Promoting health, 3a Satisfaction and happiness	→ ≈
3.6	*Identity creating environment*	*20 Acceptable natural and agricultural landscapes*	

Explanation of symbols on page 15

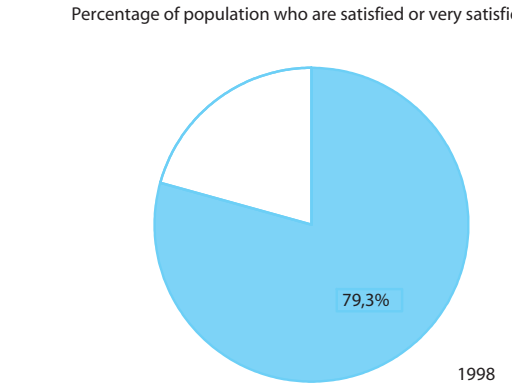
3 Subjective living conditions

3.1 Suicide rate



Swiss Federal Statistical Office

3.2 Contentment with life



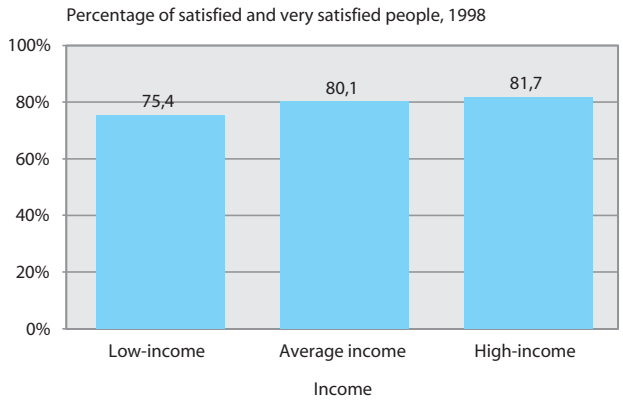
Swiss Federal Statistical Office

3.3 Contentment with life by age



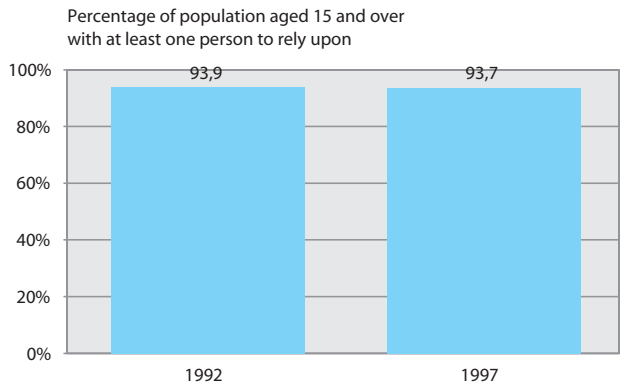
Swiss Federal Statistical Office

3.4 Contentment with life by income



Swiss Federal Statistical Office

3.5 Availability of a person to rely upon



Swiss Federal Statistical Office

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4 Housing

Living accommodation is a fundamental need and its quality plays a major part in an individual's personal well-being and quality of life. Sustainable Development should aim to meet fundamental needs in this area, and adequate scope should also be allowed for the non-material needs that go beyond them. At the same time, however, the natural bases for life should be preserved in the long term. In particular, this calls for a more economical approach to the use of land as a resource.

The floor area per person is increasing

Living is taking up more and more space. Within ten years, the average floor area per person (4.1) has risen by 5 m^2 to 39 m^2. One reason for this is the growing number of small households. Although an extended living area may well mean an increase in the quality of life for the individuals who benefit from it, this development is also a factor in expanding the populated area, largely at the cost of the area available for agricultural use (see topic 23, «Land use»). This would make it expedient to invest more in preserving or improving buildings that already exist instead of putting up new ones. As yet, no indicator has been developed to quantify the percentage of the total investment in residential building that is spent on renewal activities (4.4).

77% are satisfied with their housing conditions and environment

Not everyone has the same amount of space available to live in. 5.8% of the residential population have less than one «living» room (excluding kitchens, bathrooms and storage rooms) per person available to them in their own households. This kind of shortfall in living space (4.5) affects people with lower incomes a good deal more often than the wealthy. Apart from the size of accommodation, there are other aspects that also play a major part in living quality: about 77% of the population indicate that they are satisfied or very satisfied with their housing conditions and environment (4.2). People who live in the countryside are more satisfied than those living in urban areas, and the same is true of older people as compared with younger ones.

One fifth of income is spent on housing

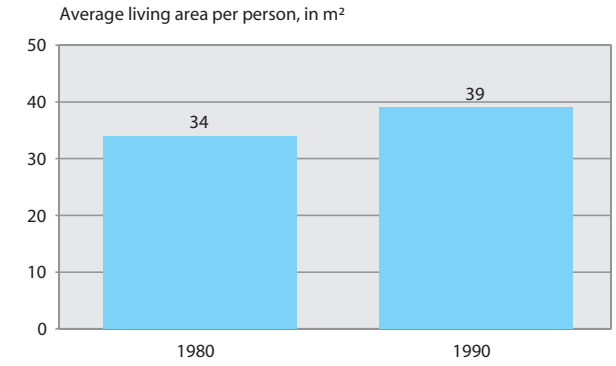
The level of living costs often decides how much money is left over to meet other needs. Measured by the gross income per household, housing costs account for an average of about 20% (4.3). This puts them in first place after consumer expenditure. In low-income households, the percentage spent on accommodation costs is 36%, and this sometimes leads to restrictions in other important areas of life.

Indicators		Postulates of Sustainable Development	Trend/ Assessment
4.1	Floor area per person	2a Meeting needs, 16b Limits for consumption of non-renewable resources	↗
4.2	Contentment with housing conditions	2b Promoting Health, 3a Satisfaction and happiness, 3b Development that takes well-being into account	…
4.3	Housing costs	2a Meeting needs, 4b Equal opportunities and fair distribution of wealth	…
4.4	Renovation activities	16b Limits for consumption of non-renewable resources, 17a Limits for degradable waste and toxins	
4.5	Shortfall in living space	2a Meeting needs	…

Explanation of symbols on page 15

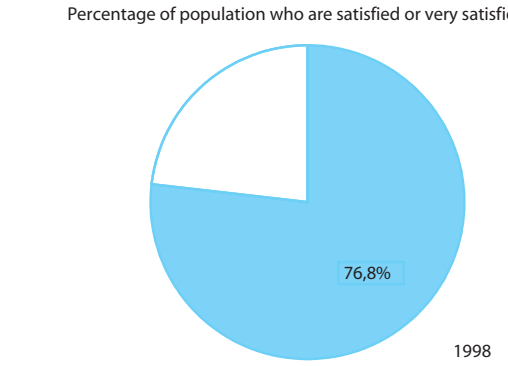
4 Housing

4.1 Floor area per person



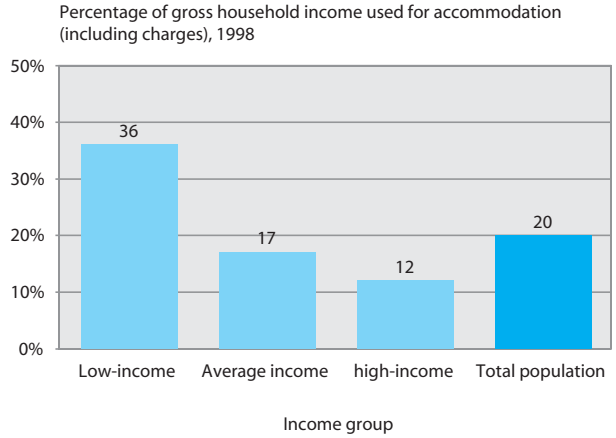
Swiss Federal Statistical Office

4.2 Contentment with housing conditions



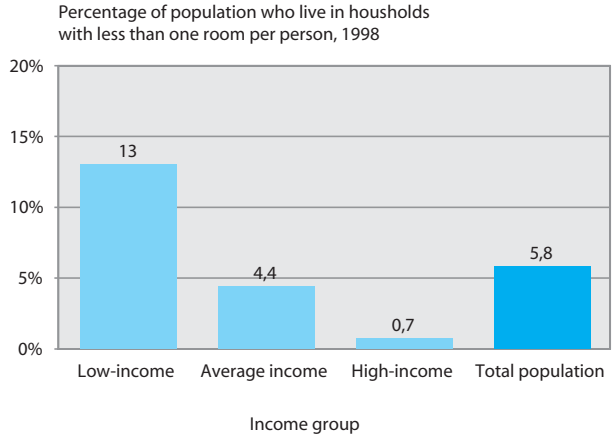
Swiss Federal Statistical Office

4.3 Housing costs



Swiss Federal Statistical Office

4.5 Shortfall in living space



Swiss Federal Statistical Office

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5 Culture and leisure

Sustainable Development should also allow adequate scope for people's non-material needs. It is important for people's well-being that they should have free time to use as they think fit, and for them to be able to engage in cultural activities. Cultural variety should be ensured and the socio-cultural heritage should be preserved for the same reasons. However, leisure activities must not ignore nature or the environment.

One in five people regularly speaks a second national language

1.5% of all public expenditure goes on promoting culture

Cars are the most frequent means of transport during spare time

The four national languages are a key element in Switzerland's cultural variety. A knowledge of one or more national languages other than one's own plays a part in appreciating this variety. On a regular basis, 21% of the population use at least two of the national languages colloquially in everyday life or at work (5.1).

The status accorded to cultural promotion in general is reflected by the percentage of public expenditure allocated to cultural institutions and events, and to preserving historic monuments or buildings and protecting heritage (5.2). This figure fell after 1990 and has remained more or less steady at about 1.5% since 1993. It would also be interesting to see figures about usage of the available range of cultural activities (5.7), but an indicator for this purpose still has to be developed.

About two thirds of the population state that they have sufficient spare time (5.3). This percentage is about equal for men and women. On the other hand, some differences between the age groups are evident: the 25 to 39 age group has the lowest percentage of individuals with sufficient spare time (about 50%). The shortage of spare time tends to increase as people's level of education improves and their income rises.

Being able to use leisure time as people think fit also creates a requirement for mobility. The dominant means of transport in the leisure sector was the car, with 68% of distances travelled, followed by the railway with 11%. In 2000, the percentage of distances covered on foot or by cycle was 9.5% of the total distance travelled for leisure purposes (5.5). Given that these ways of travelling have a positive effect on health and protect the environment, an increase in their percentage would be desirable. Air travel puts a particularly heavy burden on the environment and on resources. The average distance travelled by air per person and per year (5.4) including business trips is 5,285 kilometres, roughly equivalent to a flight from Switzerland to the North Cape and back.

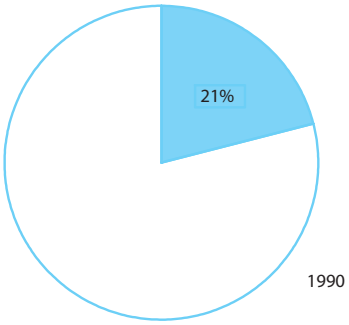
Indicators		Postulates of Sustainable Development	Trend Assessment
5.1	Regular use of a second national language	1a Ensuring human rights, 5a Intercultural and interpersonal understanding, 10a Promotion of economic efficiency	…
5.2	Public expenditure on culture	2a Meeting needs, 7a Development of human capital, 7d Child-friendly environment, 10a Promotion of economic efficiency, 10d Limited public debt	→ ≈
5.3	Population disposing of sufficient spare time	3a Satisfaction and happiness	…
5.4	Journeys by air	16a Limits for consumption of renewable resources, 16b Limits for consumption of non-renewable resources, 17a Limits for degradable waste and toxins, 17b Avoidance of non-degradable toxins	…
5.5	Share of human powered mobility in recreational traffic	2b Promoting health, 16a Limits for consumption of renewable resources, 16b Limits for consumption of non-renewable resources, 17a Limits for degradable waste and toxins	…
5.6	*Recreation opportunities in vicinity of residential area*	*2a Meeting needs, 2b Promoting health, 3a Satisfaction and happiness*	
5.7	*Attendance at cultural events*	*5a Intercultural and interpersonal understanding, 7a Development of human capital*	

Explanation of symbols on page 15

5 Culture and leisure

5.1 Regular use of a second national language

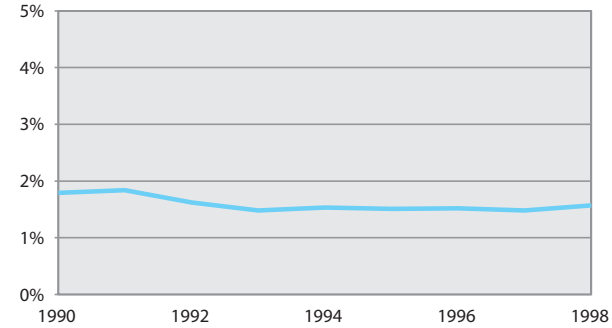
Proportion of population who use at least two national languages on an everyday basis



Swiss Federal Statistical Office

5.2 Public expenditure on culture

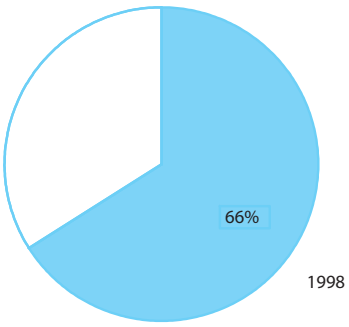
Proportion of total federal, cantonal and local expenditure



Swiss Federal Statistical Office; Federal Finance Administration

5.3 Population disposing of sufficient spare time

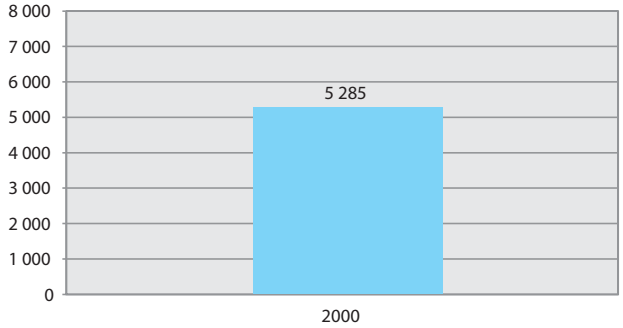
Percentage of population



Swiss Federal Statistical Office

5.4 Journeys by air

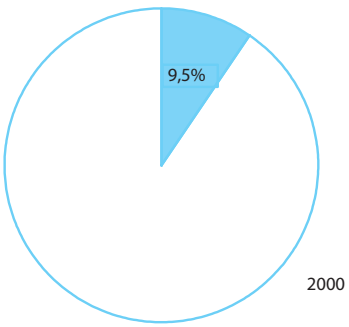
Mean distance flown by people aged 6 and over per year, in kilometres



Federal Office for Spatial Development; Swiss Federal Statistical Office

5.5 Share of human powered mobility in recreational traffic

Share of distances made on foot or by bicycle in total recreational traffic



Federal Office for Spatial Development; Swiss Federal Statistical Office

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6 Social cohesion and participation

Acting in solidarity is a fundamental requirement if a society is to be capable of functioning and surviving. For this reason, Sustainable Development places special emphasis on promoting social cohesion and on the participation of all social groups and regions in economic, political and social life. The principle of «equal rights and equal opportunities» is a key factor here.

The percentage of adults entitled to vote is falling

The right to vote in elections and referendums is the legal requirement for people to participate in the political decision-making process. The percentage of the entire residential population aged over 18 who are entitled to vote in elections and referendums (6.2) has tended to decline in the last 20 years. In the longer term, this trend could be broken by naturalising more individuals, since the right to vote in elections and referendums presupposes that the individual has Swiss citizenship. The naturalisation rate (6.8) has easily doubled since 1992, but it is still lower than in most EU countries. No indicator is yet available regarding possibilities for participation in local processes (6.9).

Unpaid or honorary commitments provide one way of determining how much use people make of the opportunities for participation. In 1997, the percentage of people undertaking voluntary work (6.3) was just below 47%, and it was still 41% in 2000. Men prefer to become involved in organisations or to take on political posts, while women engage in more informal activities such as neighbourhood assistance schemes. In 1998, 45% of all individuals stated that they were actively involved in at least one club or organisation (6.1).

23.5% of National Council members are women

Acting in solidarity also entails equal opportunities for all groups of the population, as well as solidarity among the regions. The representation of women in the national parliament is one way of seeing how far sexual equality has been achieved. Since the first elections to the National Council after women's voting rights were introduced (in 1971), the proportion of women has continuously risen to reach 23.5% (in 1999) (6.4). The education system performs an important function as far as equal opportunities are concerned. An indicator for the expected period of schooling for Swiss males and females and foreign males and females (6.7) still has to be developed.

Major regional differences in the tax burden

Inequalities in regional economic strength lead to differences in the tax burden (6.6). In 2002, the tax burden in the canton of Obwalden was 2.8 times higher than in Zug, the canton with the most favourable tax conditions. Tax disparities of this sort heighten an unequal distribution of affluence. Another indicator to monitor the regional distribution of the burden (6.5) is being prepared.

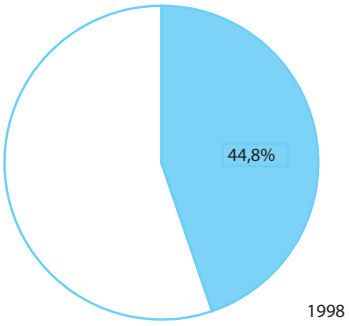
Indicators		Postulates of Sustainable Development	Trend/ Assessment
6.1	Active membership in associations and organisations	5a Intercultural and interpersonal understanding, 5b Social and political participation	…
6.2	Population eligible to vote	4c Integration of the less fortunate, 5b Social and political participation	↘ –
6.3	Voluntary work	2a Meeting needs, 5a Intercultural and interpersonal understanding, 5b Social and political participation, 10a Promotion of economic efficiency	↘ –
6.4	Women in the National Council	4a Ban on discrimination, 4b Equal opportunities and fair distribution of wealth, 4c Integration of the less fortunate, 5b Social and political participation	↗ +
6.5	Index of socio-demographic burden of cantons	4c Integration of the less fortunate	
6.6	Inequality of tax burden	4b Equal opportunities and fair distribution of wealth, 4c Integration of the less fortunate, 5a Intercultural and interpersonal understanding, 5b Social and political participation	~ ≈
6.7	School life expectancy of foreigners an Swiss citizens	4a Ban on discrimination, 4b Equal opportunities and fair distribution of wealth, 4c Integration of the less fortunate	
6.8	Naturalisation quota	4c Integration of the less fortunate, 5b Social and political participation	↗ +
6.9	*Opportunity for participation in local processes*	*5a Intercultural and interpersonal understanding, 5b Social and political participation*	

Explanation of symbols on page 15

6 Social cohesion and participation

6.1 Active membership in associations and organisations

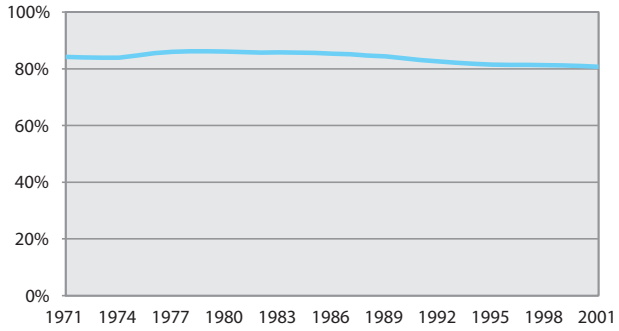
Share of persons who are active in at least one association or one organisation, in total population



Swiss Federal Statistical Office

6.2 Population eligible to vote

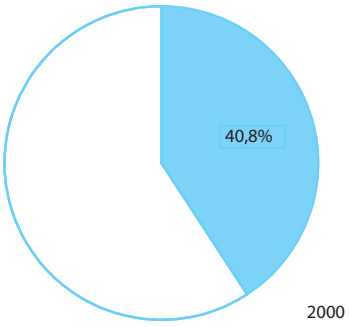
Share of persons in population eligible to vote up from age 18 (before 1991: up from age 20)



Swiss Federal Statistical Office

6.3 Voluntary work

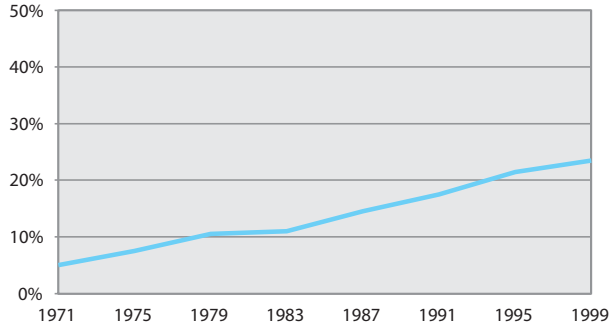
Share of persons in population who offer voluntary work up from age 15



Swiss Federal Statistical Office

6.4 Women in the National Council

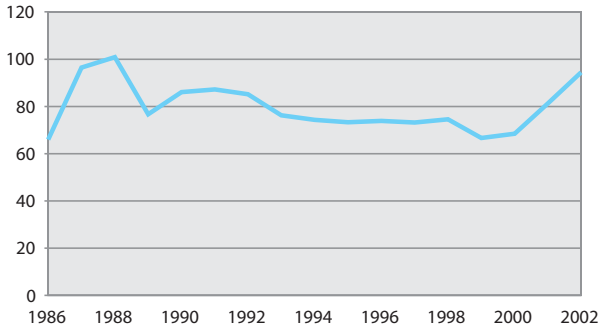
Share of women in all elected



Swiss Federal Statistical Office

6.6 Inequality of tax burden

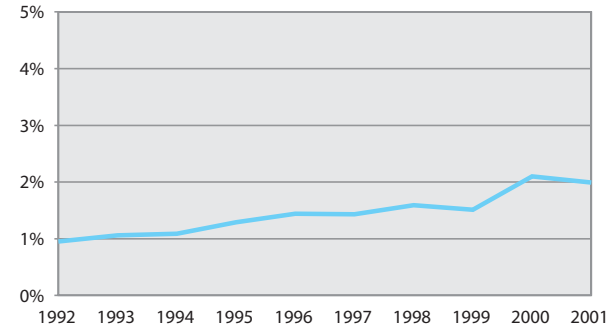
Difference between Canton with highest and Canton with lowest index of tax burden, in index points



Swiss Federal Tax Administration

6.8 Naturalisation quota

Share of persons naturalised in relevant year in total foreign population



Swiss Federal Statistical Office

© Swiss Federal Statistical Office (SFSO)

7 Development cooperation

As a wealthy country, Switzerland is morally obliged to support the implementation of Sustainable Development in poorer countries. One of the most important tasks here is to assist the fight against poverty in developing and threshold countries.

Switzerland spends 0.34% of its GNP on development cooperation – the UN calls for 0.7%

The percentage of public development funding in relation to gross income at market prices, or gross national product (7.1) shows how much money Switzerland is prepared to spend on development cooperation. This figure has constantly risen since the 1960s, and it has remained more or less steady at about 0.34% since the start of the 1990s. The country's 700th anniversary led to a one-off maximum of 0.45%. This leaves Switzerland's contribution well under the figure of 0.7% called for by the UN, and slightly below the average percentage for the OECD countries of 0.39%. The OECD ranking table is headed by Denmark with 1.06%, while the USA comes bottom with 0.10% (figures for 2000). The indicator does not allow any statements about the effectiveness of the expenditure undertaken, and it only takes account of public development funds, but not of commitments by private aid organisations or the private economic sector.

One person in four advocates increasing development aid

Readiness to increase development aid given by Switzerland (7.3) has fluctuated considerably over recent years: in the second half of the 1980s, a good third of those entitled to vote backed an increase, but only one in five were in favour by 1999. Nevertheless, the proportion rose to one quarter in 2001. The future will show whether this figure means that the negative trend has been broken. However, refusal to approve an increase in development funding is not necessarily motivated by reasons related to development policy: other factors include the fear of tax increases, a general call for more thrift, a preference for direct investments by private industry, or similar reasons.

Development aid should primarily benefit the poorer developing countries. Recent years have seen a constant decline in the proportion of development aid funding that has gone to poor countries according to the UN definition (7.2). This is primarily due to an increase in commitments in countries with moderate income levels and in threshold countries. Aid to combat poverty is also important in these countries even though they are not «poor» according to the definition.

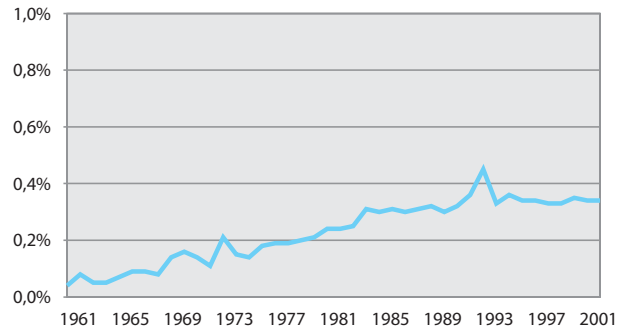
Indicators		Postulates of Sustainable Development	Trend/ Assessment
7.1	Total official development assistance (ODA)	6a Development cooperation	→ ≈
7.2	ODA to least developed countries	6a Development cooperation	↘ –
7.3	Attitude towards development assistance	6a Development cooperation	↘ –

Explanation of symbols on page 15

7 Development cooperation

7.1 Total official development assistance (ODA)

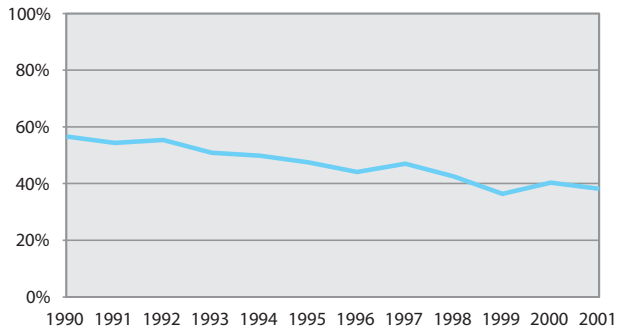
ODA in proportion to gross national income at market prices (before GNP)



Swiss Agency for Development and Cooperation;
State Secretariat for Economic Affairs

7.2 ODA to least developed countries

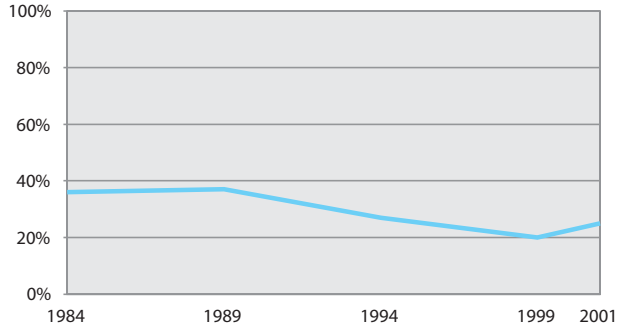
Share of bilateral ODA diverted along poor countries (according to definition of UN)



Swiss Agency for Development and Cooperation;
State Secretariat for Economic Affairs

7.3 Attitude towards development assistance

Share of persons willing to increase ODA



GfS-Forschungsinstitut

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8 Education and science

Education is one of the keys that enable people to develop personally, and it gives them the ability to cope with social and economic changes. However, a high level of education is also important in terms of economic efficiency, innovative strength and competitive ability. This is why Sustainable Development should allow for adequate basic education as well as ongoing advanced training, regardless of sex or social origins.

One fifth of 15-year-olds have a low level of reading ability

The ability to understand written text is essential if people are to absorb and process the majority of information. Almost 80% of 15-year-olds can accomplish basic to demanding reading tasks (8.1). The remainder (about 20%) only have rudimentary reading skills. This percentage is high in comparison with other countries, and it represents a problem because in some cases, these young people are substantially disadvantaged in terms of career opportunities and other areas of personal development and social integration.

Almost all young people start a training course after their compulsory schooling

It follows that part of the population does not have an adequate school education. It would be interesting to know the influence of the family and social environments here, and this could in turn be portrayed by the «social gradient of reading skills»; however, this indicator (8.2) has not yet been developed. Nevertheless, the period of time that young people will probably spend in education (8.3) has increased by about two years over the last 20 years. At present, almost all young people embark on a training or education course after their compulsory schooling. About two thirds of young people obtain a professional qualification. There is a trend in favour of colleges offering general education here, as can be seen from the constant increase in the percentage of young people with a leaving certificate from secondary school or vocational college. In tertiary education, the rate of increase in the numbers of individuals qualifying at technical colleges is greater than for universities. On average, men spend a good 7 months more in education than women (8.4). However, women's participation in education is moving constantly closer to the rate for men, and the figures are already equal for the secondary-school leaving certificate.

Over 60 hours of further education per year

Time spent on further education (8.6) fell from 67 to 61 hours per person and per year between 1996 and 1999. It may be that more and more people are using self-teaching methods, for example with the help of computer-aided learning programmes.

Adequate education for everyone requires a corresponding commitment from the government. After a brief rise at the start of the 1990s, the percentage of the gross domestic product allocated to expenditure on public education (8.5) has been falling again since 1993. In absolute terms, however, real expenditure on public education has been rising regularly except between 1994 and 1997.

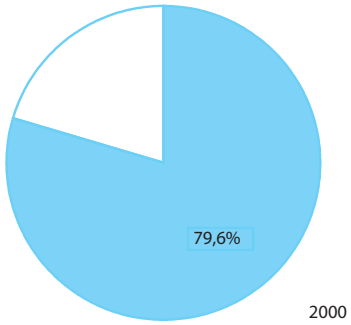
Indicators		Postulates of Sustainable Development	Tendenza/ Valutazione
8.1	Reading skills of 15-year-olds	5b Social and political participation, 7a Development of human capital, 7c Encouraging learning, 7d Child-friendly environment, 10a Promotion of economic efficiency, 10b Economic order that favours innovation and competition	…
8.2	Social gradient of reading skills of 15-year-olds	4a Ban on discrimination, 4b Equal opportunities and fair distribution of wealth, 4c Integration of the less fortunate, as well as all postulates of 8.1	
8.3	School life expectancy	5b Social and political participation, 7a Development of human capital, 7c Encouraging learning, 7d Child-friendly environment, 10a Promotion of economic efficiency	↗ +
8.4	School life expectancy by sex	4a Ban on discrimination, 4b Equal opportunities and fair distribution of wealth, 4c Integration of the less fortunate, as well as all postulates of 8.1	↘ +
8.5	Public expenditure on education	5b Social and political participation, 7a Development of human capital, 7c Encouraging learning, 7d Child-friendly environment, 10a Promotion of economic efficiency	→
8.6	Hours spent on further education	5b Social and political participation, 7a Development of human capital, 7c Encouraging learning, 10a Promotion of economic efficiency	↘ –

Explanation of symbols on page 15

8 Education and science

8.1 Reading skills of 15-year-olds

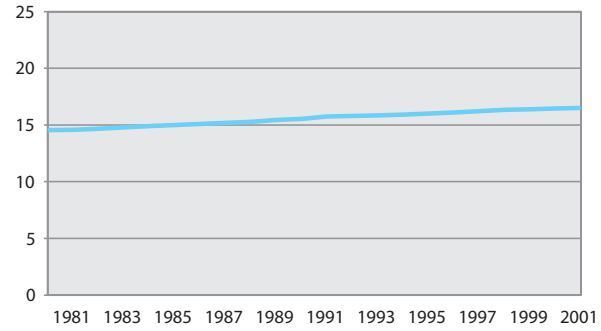
Quota of 15-year-olds reaching at least reading skills level 2
(scale 1 to 5)



Swiss Federal Statistical Office

8.3 School life expectancy

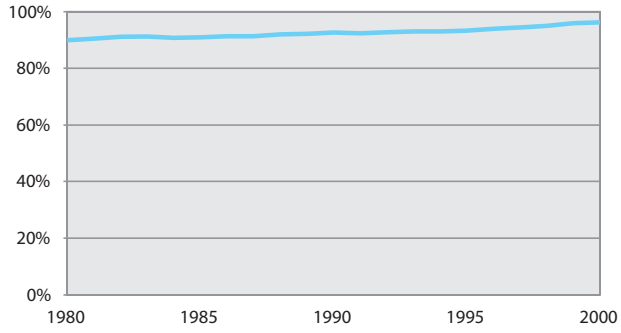
Expectancy of school life per 5 year old child, in years



Swiss Federal Statistical Office

8.4 School life expectancy by sex

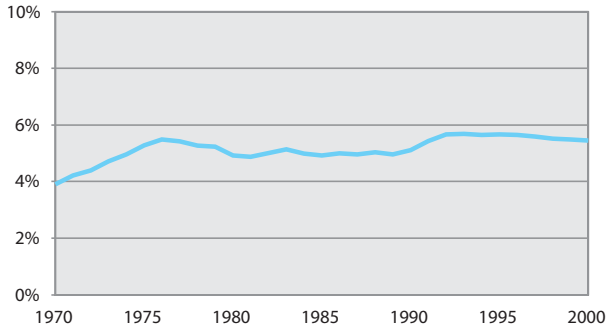
School life expectancy of women in proportion to the one of men



Swiss Federal Statistical Office

8.5 Public expenditure on education

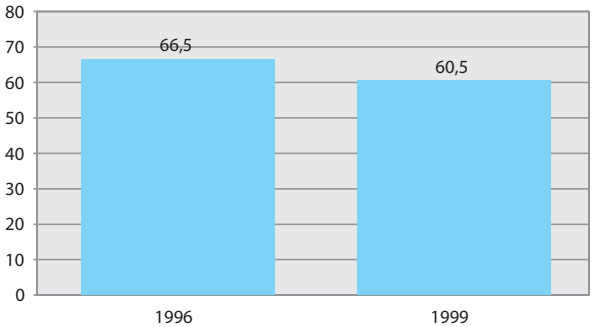
Share in GNP



Swiss Federal Statistical Office

8.6 Hours spent on further education

Annual hours spent on courses in further education
(resident population 20 to 74 years of age), per person



Swiss Federal Statistical Office

© Swiss Federal Statistical Office (SFSO)

9 Information

The tasks of Sustainable Development include maintaining and developing human capital. Sustainable Development also calls for knowledge so that we can develop our behaviour patterns in appropriate ways. Both of these goals require an unimpeded flow of information, the possibility of expressing opinions freely and the promotion of empowerment to absorb and process information.

The Internet has not yet supplanted the traditional media

From the viewpoint of sustainability, it is desirable to have a variety of means of access to information; concentrating on one single medium would amount to cultural impoverishment. Usage of the so-called «traditional» media of radio, television and the printed media (9.1) continues to be high. The traditional media have evidently not yet been supplanted by the new information technologies.

The trend is towards a concentration of the press – less diversity among newspapers

Nonetheless, the Internet is constantly becoming more important as a source of information: in 1997, only 15% of the population were using the Internet at least on an occasional basis, whereas more than half were already doing so by 2002 (9.2). Anyone without access to this new technology because he or she does not have the necessary equipment or know-how is under increasing threat of exclusion. The differences between the sexes are striking: in 2002, the percentage of regular male Internet users was 21 percentage points higher than the corresponding figure for women (56% as compared with 35%). This difference has increased since 1997 (9.3). Reasons for this may include access as well as differing preferences for specific sources of information.

A trend towards concentration can be seen in the press sector (9.4), leading to reduced diversity of content. More and more titles share a common editorial section, so together they form a single «media unit», as it is known. Newspaper readers are offered a narrower selection than they were 20 years ago.

Information about how consumer goods are produced is becoming more important

Information about how consumer goods are produced allows consumers to behave in keeping with Sustainable Development. In this context, labels and certificates help to communicate complex factual information in a simplified manner. There is a steady increase in the number of companies certified to the ISO-14001 standard, which commits them to environmental management within their operations (9.5). Although this certification as such provides no guarantee that their products are more environment-friendly than any others, the companies are nevertheless committed to a transparent information policy both inside and outside their firms.

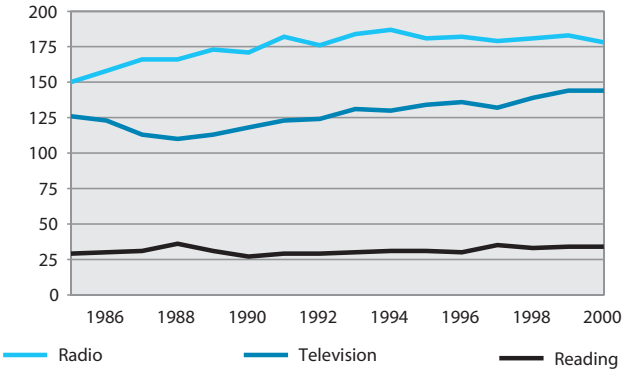
Indicators		Postulates of Sustainable Development	Trend/ Assessment
9.1	Media use	7a Development of human capital, 7b Access to information and freedom of opinion, 7c Encouraging learning, 10a Promotion of economic efficiency	↗ +
9.2	Internet use	7a Development of human capital, 7b Access to information and freedom of opinion, 7c Encouraging learning, 10a Promotion of economic efficiency	↗ +
9.3	Internet use by sex	4a Ban on discrimination, 4b Equal opportunities and fair distribution of wealth, 4c Integration of the less fortunate	↗ –
9.4	Concentration of press	7a Development of human capital, 7b Access to information and freedom of opinion	↗ –
9.5	Environmental management systems	12a Ecologically acceptable production, 12b Ecologically and socially acceptable consumption, 12c Transparent business reporting for consumers	↗ +

Explanation of symbols on page 15

9 Information

9.1 Media use

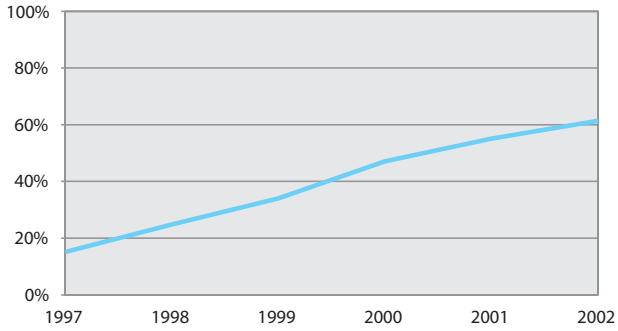
Mean time spent per day and person, in minutes
(radio and reading: monday to friday; television: monday to sunday)



SRG; Swiss Federal Statistical Office

9.2 Internet use

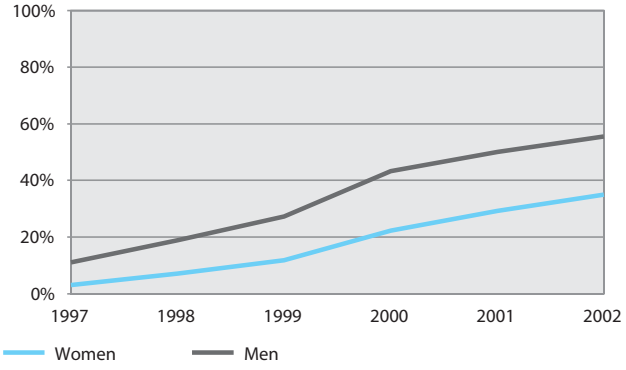
Share of population up from age 14 who used the internet
at least one time during 6 months before questioning



Swiss Federal Statistical Office; WEMF

9.3 Internet use by sex

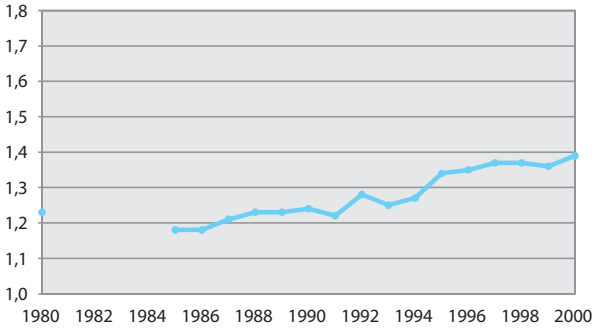
Share of population up from age 14 who regularly uses the internet



Swiss Federal Statistical Office; WEMF

9.4 Concentration of press

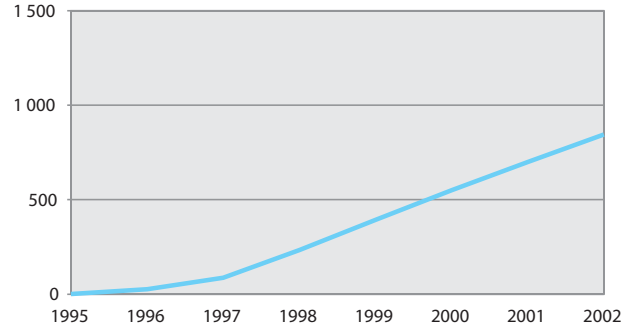
Mean number of titles per editorial unity



Swiss Federal Statistical Office

9.5 Environmental management systems

Enterprises certified ISO-14001 in Switzerland



Institute for Economy and the Environment, University of St. Gallen

© Swiss Federal Statistical Office (SFSO)

10 Physical security

An individual's physical safety is one of the fundamental requirements that has to be ensured in Sustainable Development. The extent to which this need is met can be gauged by the numbers of casualties and victims, accidents, disasters and hazard potentials that are present.

Serious violent crimes are stagnant, but bodily harm and robbery are constantly increasing

Fewer road deaths – more accidents and injuries

Threats to physical safety may have natural or man-made causes. The latter include violent crimes and road accidents as well as industrial incidents.

The number of violent crimes registered by the police (10.1) has risen since 1982. There have been increases in incidents involving bodily harm and robberies, while the numbers of murders and rapes have remained virtually stable. This development has to be interpreted with caution: a growing awareness of the problem may have led to an increase in the numbers of certain violent crimes being reported nowadays. With specific regard to rape, however, it is still assumed that large numbers of cases are not reported to the police. The same applies to domestic violence (10.6), and there are still no reliable figures on the scale of this type of crime.

The probability of being injured on the roads is higher than the risk of being the victim of a violent crime, even though the number of people injured and killed on the roads each year (10.3) fell between 1971 and 1996. Reasons for this decrease include a range of preventive actions such as speed limits, technical improvements to vehicles and regulations on wearing safety helmets and belts. However, the number of accidents involving personal injuries has started to rise again slightly since 1996. Although the number of people killed continues to fall, the number of people injured is increasing again.

Switzerland has large numbers of firms where there is a hazard potential for people and the environment. These include companies that use or store dangerous chemicals, and those working with genetically modified or pathogenic micro-organisms (10.4). The growth observed in companies of this sort can partly be attributed to the gradual registration of existing companies due to the implementation of the Decree on Accidents and Incidents, which is why the indicator will only show effective development in the longer term. As yet, no pan-Swiss data are available on the number of incidents (10.2) taking place in firms of this sort or during the transport of hazardous substances.

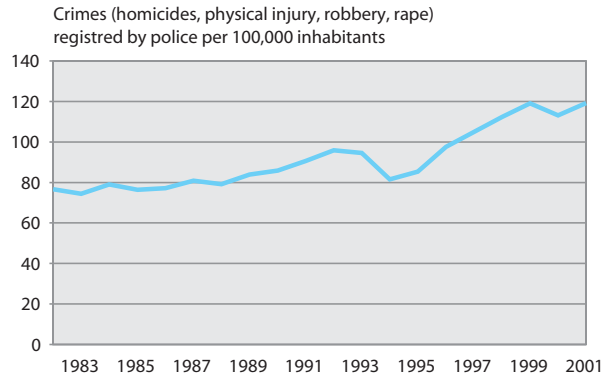
An indicator to quantify the frequency of damage due to natural events (10.5) still has to be developed.

Indicators		Postulates of Sustainable Development	Trend/ Assessment
10.1	Violent crime	2a Meeting needs, 2b Promoting health	↗ –
10.2	Hazardous incidents	2a Meeting needs, 2b Promoting health, 18b Minimisation of ecological risks, 18c Caution in the case of uncertainty	
10.3	Killed and injured persons in road traffic	2a Meeting needs, 2b Promoting health	↘ +
10.4	Hazardous factories / plants	2b Promoting health, 15a Preservation of natural resources, 18b Minimisation of ecological risks, 18c Caution in the case of uncertainty	…
10.5	Accident events caused by natural disasters	2a Meeting needs, 2b Promoting health, 3b Development that takes well-being into account	
10.6	*Domestic violence*	*2b Promoting health, 3a Satisfaction and happiness*	

Explanation of symbols on page 15

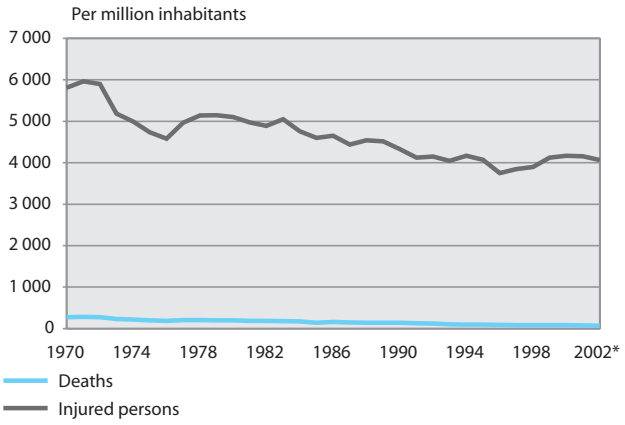
10 Physical security

10.1 Violent crime



Swiss Federal Office of Police; Swiss Federal Statistical Office

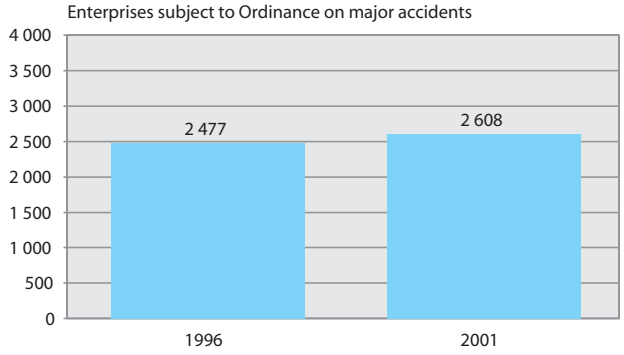
10.3 Killed and injured persons in road traffic



*provisional value

Swiss Federal Statistical Office

10.4 Hazardous factories/plants



Swiss Agency for the Environment; Forests and Landscape

© Swiss Federal Statistical Office (SFSO)

11 International trade and competitivity

In order to ensure that the population's basic needs are met in the long term, an economy that is able to perform efficiently is required. This also entails promoting competitiveness. At the same time, sustainable development calls for the multilateral trading system to make sparing use of natural resources and not to detract from the satisfaction of the needs of populations in other countries.

Other OECD countries are able to maintain better positions on the global market

International interdependence is increasing

One of the factors that can be used to assess Switzerland's competitive ability is how well it is able to maintain its position on the international markets. Switzerland's share of the total exports from the OECD countries (11.2) has fallen since 1994, because exports in the other industrialised nations have shown stronger growth than in Switzerland. At the same time, however, the proportion of Swiss production that is exported has been rising since 1996, and increasing quantities of goods are imported from abroad – meaning that international interdependence (11.1) is growing. Another aspect which fosters international exchange is the reduction of trade barriers. Customs procedures have been continuously scaled down in recent years so that about three quarters of all imports were duty-free (11.7) by 2001.

Factors that can detract from competitive ability may include ailing government finances, a heavy tax burden, inefficient production methods and corruption. In terms of the national budget, periods with deficits are in the majority (11.4). The cumulative debt burden of public budgets (11.3) was 50% of the gross domestic product in 2001, which is relatively low as compared with the other OECD countries. The burden of taxes and social insurance contributions has risen by almost half in relation to the GDP (11.5) since 1970. At 35.1% (1999), the Swiss fiscal quota is still among the lowest in the OECD region. The efficiency of labour deployment in the production process (11.6) has risen: between 1997 and 2000, the value added by one hour's labour climbed from CHF 49.20 to CHF 51.30. As regards corruption (11.8), Switzerland has occupied the eighth to twelfth best positions in the international comparison since 1995.

Figures on world trade tell us nothing about the social conditions under which the goods were produced, or the ecological consequences their production might cause. An indicator to quantify the market share of products from fair trade (11.9) has still to be developed. If poor countries are also to be able to benefit more from the advantages of global trade, they need a certain amount of support – in the form of promoting their trading capacities (11.10), for instance. In 2001, 1.3% of public development aid funds were used for this purpose.

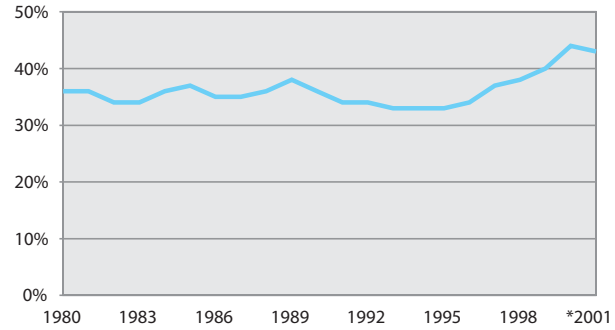
Indicators		Postulates of Sustainable Development	Trend/ Assessment
11.1	Integration in international market	10b Economic order that favours innovation and competition,14a Environmentally and socially acceptable world trade, 14b World trade from which all parties can profit	↗
11.2	Swiss share in OECD exports	10b Economic order that favours innovation and competition,14a Environmentally and socially acceptable world trade, 14b World trade from which all parties can profit	↘ –
11.3	Level of public-sector debt	10b Economic order that favours innovation and competition, 10d Limited public debt	↗ –
11.4	Deficit/GDP ratio	10b Economic order that favours innovation and competition, 10d Limited public debt	~ ≈
11.5	Tax revenue per GDP	10b Economic order that favours innovation and competition	↗ –
11.6	Labour productivity	2a Meeting needs, 10a Promotion of economic efficiency, 13 Employment that is morally worthwhile and provides a decent living	↗ +
11.7	Duty-free import quota	8 Economic order in favour of the communal good, 9a Market as economic order, 10b Economic order that favours innovation and competition,14a Environmentally and socially acceptable world trade, 14b World trade from which all parties can profit	↗ +
11.8	Corruption	8 Economic order in favour of the communal good, 10b Economic order that favours innovation and competition	~ ≈
11.9	Consumption of products from fair trade	12b Ecologically and socially acceptable consumption, 14a Environmentally and socially acceptable world trade	
11.10	ODA provided to help build trade capacity	6a Development cooperation, 14b World trade from which all parties can profit	↗ +
11.11	*Capital stock*	*10a Promotion of economic efficiency*	

Explanation of symbols on page 15

11 International trade and competitivity

11.1 Integration in international market

Mean of exports and imports of goods
and services in proportion to GDP

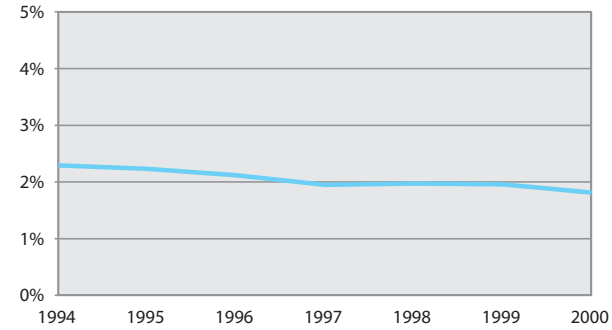


* provisional values as of 1999

Swiss Federal Statistical Office

11.2 Swiss share in OECD exports

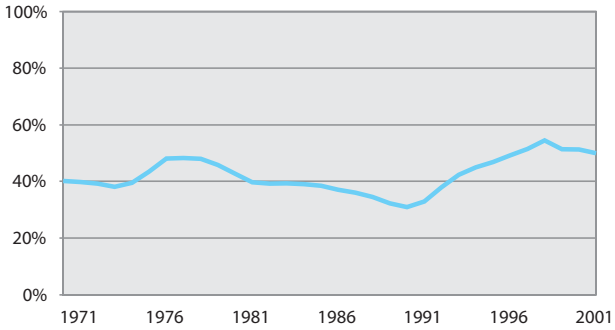
Swiss share of goods exported from OECD countries



OECD

11.3 Level of public-sector debt

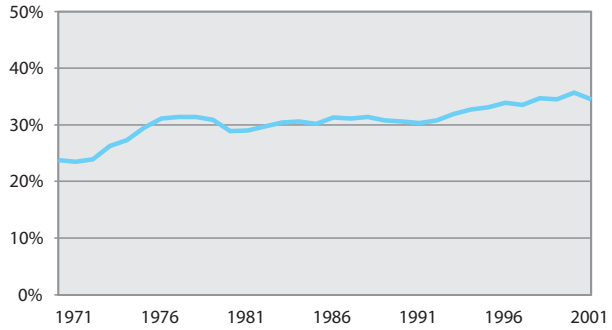
Gross debt of Confederation, cantons, and municipalities
(without social insurances) in relation to GDP



Swiss Federal Financial Administration

11.5 Tax revenue per GDP

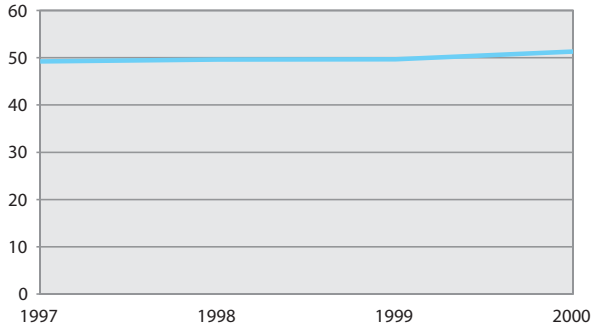
Tax revenues including compulsory contributions to social insurances
in relation to GDP



Swiss Federal Financial Administration

11.6 Labour productivity

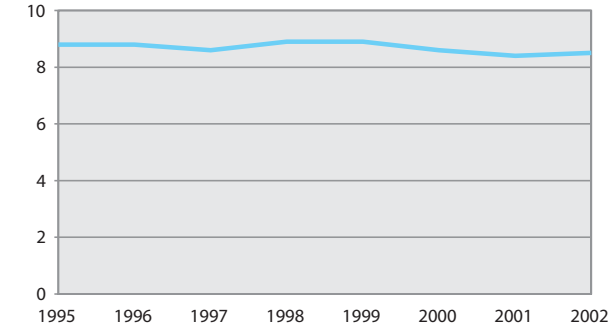
Gross added value in relation to working hours,
in Swiss Francs per hour



Swiss Federal Statistical Office

11.8 Corruption

Corruption Perceptions Index CPI:
10 = highly clean, 0 = highly corrupt



Transparency International

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12 Domestic markets

To ensure that the population's basic requirements are met in the long term, an economy that is capable of performing efficiently is needed. Market restrictions and distortions of competition are especially detrimental to this efficiency. This is why corrections are needed as soon as the market mechanism fails, for instance if the scarcity of natural resources is not reflected in their prices, or if external costs have to be borne by third parties. However, government interventions are also justified when they involve commodities that are predominantly of public interest.

Competitive distortions reduce economic efficiency

One of the first indicators of market restrictions is the price level for consumer goods as compared with neighbouring countries (12.1). In 2001, this index was 42 percentage points above the EU average. Important reasons for this are probably price agreements, import monopolies and bans on parallel imports, because these factors lead to excessively high prices. However, the difference is brought about by factors other than competitive distortions, such as higher rents or a strong Swiss franc.

In 2000, the proportion of goods and services produced under market conditions (12.2) was about 83%. The remaining 17% are accounted for by government services, including public administration and the social insurance organisations. Even though the proportion has only declined slightly in the last five years, it shows the trend for the government to leave more and more up to the market.

Environment-related taxes account for 5.8% of all taxes and social charges.

One approach to rectify the absence of scarcity prices for natural resources is to apply environment-related taxes. These are levied on goods that have demonstrably negative effects on the environment. Their importance has grown continuously over the last ten years, and revenue from taxes of this sort was running at well over 2% of the GDP (12.3) in 2001, equivalent to CHF 8.83 billion. Most of this originated from the energy and transport levies (91.8%) and – to a lesser extent – from the levies on resources (5.8%) and emissions (2.4%). Nevertheless, it is undesirable for the total tax burden to increase as a result of these charges. The objective should therefore be to ecologise the tax system, i.e. to replace existing taxes by environment-based ones. The extent to which this aim is implemented can be seen from the proportion of environment-related taxes to total revenue from taxes and social charges (12.4). This figure has also risen, and it was running at about 5.8% in 2000. However, increasing revenue from environment-based taxes could also be attributable to an increase in environmentally damaging activities and products.

It would be beneficial to have an indicator that shows the extent to which costs are borne by third parties rather than by the originator of the problem, for example in the case of fossil fuel consumption (12.5). However, the data required for this purpose are not available; nor are those for subsidies which harm or are related to the environment (12.7 and 12.8).

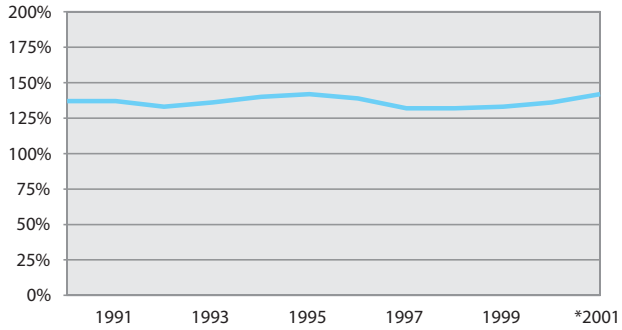
Indicators		Postulates of Sustainable Development	Trend/ Assessment
12.1	Level of prices	2c Fighting poverty, 9a Market as economic order	~ ≈
12.2	Share of market in GDP	9a Market as economic order	→
12.3	Environment-related taxes	9b Genuine costs and principle of polluter-pays, 9c Market intervention that conforms to the system, 12a Ecologically acceptable production, 12b Ecologically and socially acceptable consumption	↗ +
12.4	Greening of the tax system	9a Market as economic order, 9b Genuine costs and principle of polluter-pays, 9c Market intervention that conforms to the system, 13 Employment that is morally worthwhile and provides a decent living	↗ +
12.5	*Degree of internalisation of external costs of fossil fuel*	*9b Genuine costs and principle of polluter-pays*	
12.6	*Degree of regulation of markets*	*9a Market as economic order, 9c Market intervention that conforms to the system*	
12.7	*Subsidies harmful to the environment*	*9b Genuine costs and principle of polluter-pays*	
12.8	*Environment-related subsidies*	*9b Genuine costs and principle of polluter-pays, 9c Market intervention that conforms to the system*	

Explanation of symbols on page 15

12 Domestic markets

12.1 Level of prices

Price-level index on expenditure of private households
in relation to European average (EU15=100%)

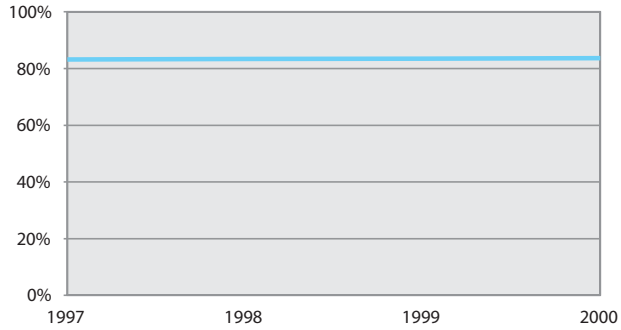


* provisional value

EUROSTAT

12.2 Share of market in GDP

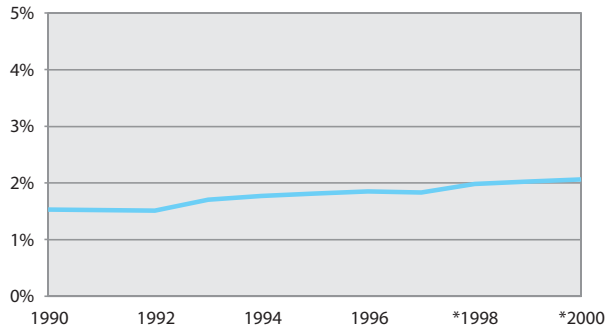
Share of market-generated gross added value



Swiss Federal Statistical Office

12.3 Environment-related taxes

Percentage of taxes (Confederation, cantons and municipalities)
for environment-damaging elements in relation to GDP

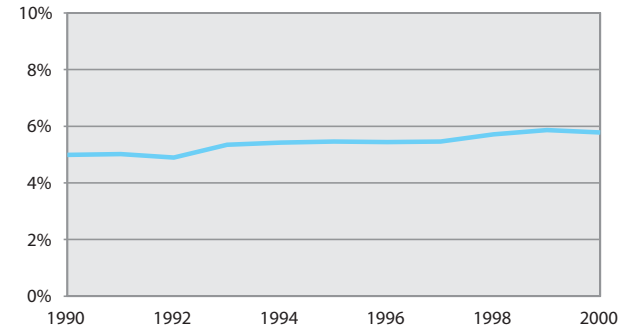


* provisional GDP value

Swiss Federal Statistical Office

12.4 Greening of the tax system

Percentage of taxes (Confederation, cantons and municipalities)
for environment-damaging elements in relation to total taxes
and social contributions



Swiss Federal Statistical Office

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13 Work

As part of sustainable development, people who want to be gainfully employed should be able to find reasonable work from which they can support themselves. Also, an adequate supply of labour is a requirement for an economy that is able to perform efficiently. Women and men should have equal opportunities on the labour market.

Unemployment is again on the rise

Between 2.5 and 4.1% of the population were not in gainful employment over the last decade, although they would have liked to have a job (13.1). Until the start of the 1990s, the number of unemployed was running at a significantly lower level. This can be attributed to the fact that more jobs were created than lost (13.4) every year, except in 1975/76 (the petroleum crisis and the crisis in the clock and watch industry). By contrast, the 1990s featured recurrent phases of negative employment growth, and a deterioration phase is now re-emerging after a recovery phase around the turn of the millennium.

One in 13 gainfully employed individuals is a member of the Working Poor

Unemployment is sometimes a reason for poverty, even though it is not the only one. Even people who engage in paid work may live in poverty. The percentage of Working Poor (13.5), as they are known, rose during the 1990s. This proportion is particularly high among women, people of foreign nationality, single parents and families with numerous children. Nevertheless, most people in gainful employment (91%) say that they are very or completely satisfied with their work (13.2).

The average percentage of people in gainful employment (13.3) is stable at 68%, a high figure compared to the rest of Europe; this is due to the large number of part-time employees and the high rate of employment among the 50-64 age group. However, the figure is considerably lower for women than men (59% as compared to 77% in 2002), but the rates are moving closer to each other over the long term.

Pay discrimination against women continues

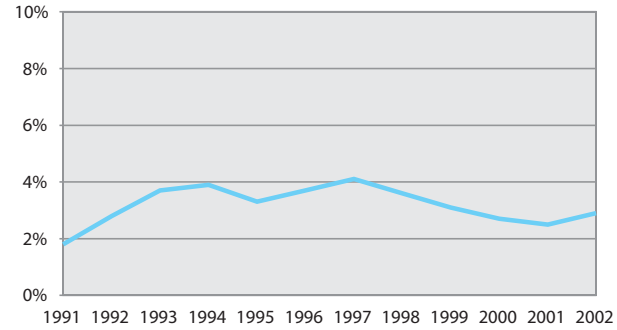
Inequality between the sexes is particularly evident in terms of pay (13.6), because rates for women are still more than a fifth less than those for men, and the gap is only being closed slowly. On the one hand, women are much less often employed in managerial posts than men (27% as compared to 48%) (13.7). On the other, women earn less than men even if their education and professional status are identical. The fact that women do unpaid work more often than men also heightens the differences in income: in households consisting of couples with children, the workload of both parents is equally large, but the mothers do the majority of the unpaid work while the fathers do the majority of the paid work (13.8).

Indicators		Postulates of Sustainable Development	Trend/ Assessment
13.1	Unemployment rate	2a Meeting needs, 2c Fighting poverty, 11b Socially compatible rate of change, 13 Employment that is morally worthwhile and provides a decent living	↗ –
13.2	Contentment with work	3a Satisfaction and happiness, 3b Development that takes well-being into account, 13 Employment that is morally worthwhile and provides a decent living	…
13.3	Activity rate	10a Promotion of economic efficiency	→ ≈
13.4	Job creation	2a Meeting needs, 2c Fighting poverty, 11b Socially compatible rate of change, 13 Employment that is morally worthwhile and provides a decent living	~ ≈
13.5	Working Poor	2a Meeting needs, 2c Fighting poverty, 11b Socially compatible rate of change, 13 Employment that is morally worthwhile and provides a decent living	↗ –
13.6	Wage disparities by sex	4a Ban on discrimination, 4b Equal opportunities and fair distribution of wealth, 4c Integration of the less fortunate, 13 Employment that is morally worthwhile and provides a decent living	↘ +
13.7	Vertical segregation in the labour market	4a Ban on discrimination, 4b Equal opportunities and fair distribution of wealth, 4c Integration of the less fortunate, 10a Promotion of economic efficiency	→ ≈
13.8	Total time spent on paid labour and domestic/family work by sex	3a Satisfaction and happiness, 4b Equal opportunities and fair distribution of wealth, 7d Child-friendly environment	→ ≈

Explanation of symbols on page 15

13.1 Unemployment rate

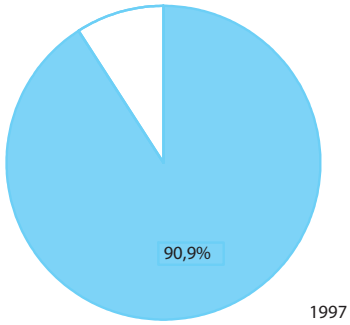
Percentage of unemployed in relation to total working population



Swiss Federal Statistical Office

13.2 Contentment with work

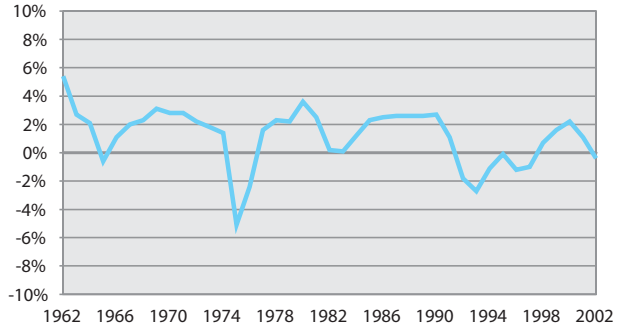
Percentage of satisfied or very satisfied persons of 15 years or more in working population



Swiss Federal Statistical Office

13.4 Job creation

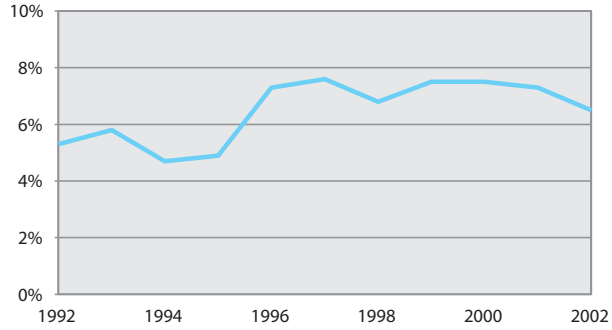
Percentage of annual occupational growth rate in second and third sector



Swiss Federal Statistical Office

13.5 Working Poor

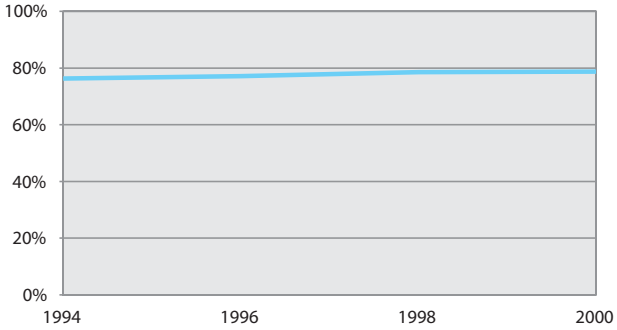
Percentage of working poor in working population of 20 to 59 years



Swiss Federal Statistical Office

13.6 Wage disparities by sex

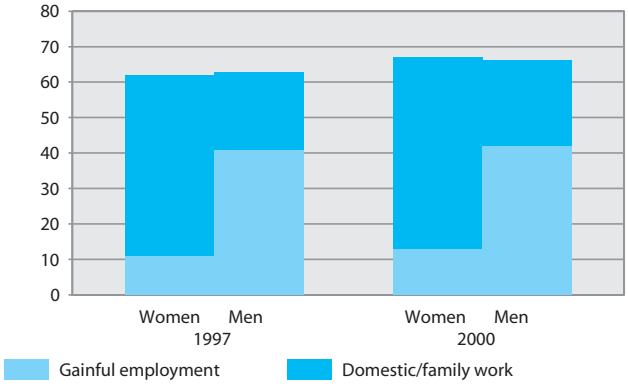
Women's monthly gross wage as a percentage of men's monthly gross wage



Swiss Federal Statistical Office

13.8 Total time spent on paid labour and domestic/family work by sex

Weekly time spent by women and men in joint households with at least one child under 15, in hours



Swiss Federal Statistical Office

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14 Research, development and technology

Research, development and technology are regarded as important motors for a society's innovative activity and competitiveness. It follows that they are important conditions for the maintenance of economic efficiency. Sustainable development also calls for productive and human resources to be maintained and qualitatively improved.

Switzerland leads in patent applications

One fifth of people in gainful employment work in science and technology

Expenditure on research and development is falling in relation to the GDP

The scope of technological innovation can be gauged from factors such as the number of inventions that are documented by patents. Since 1996, patent applications (14.1) have been registering an upward trend again after an initial surge of growth in the 1980s followed by a stagnant phase at the start of the 1990s. 1998 saw the highest ever number (325 patent applications per million inhabitants). Compared with the average of 115 for the EU countries and 82 for the OECD nations, this corresponds to a leading position. Nevertheless, patent applications only indicate one area of innovative activity, since inventions can be exploited in other ways such as keeping them secret, launching them onto the market quickly, or low pricing.

If innovation is to take place, suitably trained specialists and appropriate financial resources are essential. Except in 1995, the percentage of scientists in the gainfully employed population (14.2) has risen constantly since the start of the 1990s (from 13.5% in 1991 to 19.3% in 2001). This development has created an important condition for Switzerland to maintain its position amid the more intense competition in an increasingly globalised economy.

Expenditure on research and development (14.3) amounted to 2.64% of the gross domestic product in 2000. Following a climb to 2.83% in the 1980s, the percentage dropped again from 1989 onwards, even though effective expenditure rose by an average of 1% per year in real terms. More than two thirds of the funds were contributed by the private sector of the economy, and they are used to finance more than 98% of research and development in that sector. Public-sector funds go mainly to colleges and universities. Their percentage has been declining since 1992 and by 2000, the figure was less than a quarter of total research and development expenditure – a low figure on the international scale. On the other hand, there has been an increase in other national and foreign sources of finance apart from the private sector of the economy.

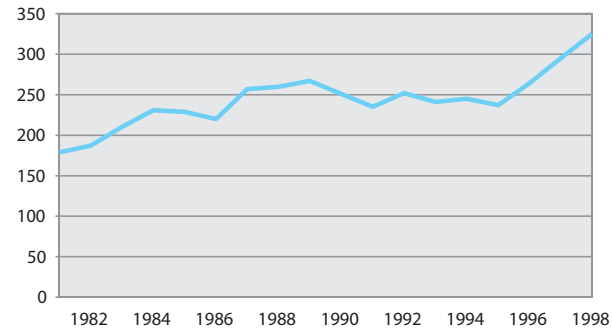
Indicators		Postulates of Sustainable Development	Trend/ Assessment
14.1	Patent applications	10a Promotion of economic efficiency, 10b Economic order that favours innovation and competition, 10c Promotion of research	↗ +
14.2	Human resources in science and technology	10a Promotion of economic efficiency, 10b Economic order that favours innovation and competition, 13 Employment that is morally worthwhile and provides a decent living	↗ +
14.3	Expenditure on research and development	10a Promotion of economic efficiency, 10b Economic order that favours innovation and competition, 10c Promotion of research	↘ –

Explanation of symbols on page 15

14 Research, development and technology

14.1 Patent applications

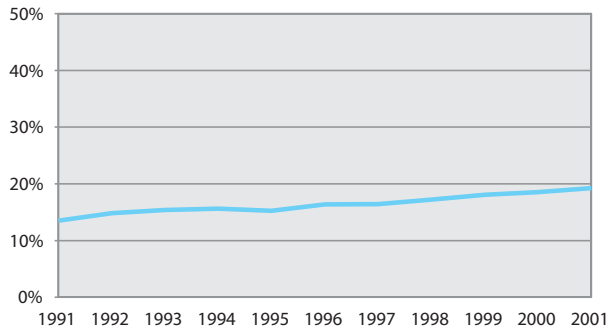
Number of applications to European Patent Office
by Swiss residents per million inhabitants



OECD

14.2 Human resources in science and technology (S+T)

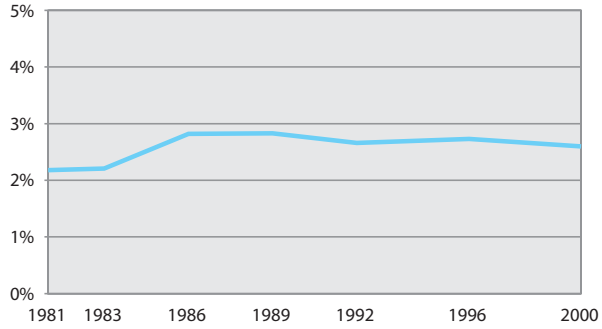
Percentage of educated persons active in S+T
in relation to total working population



Swiss Federal Statistical Office

14.3 Expenditure on research and development

in relation to GDP



Swiss Federal Statistical Office

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15 Production

An economy that is able to perform efficiently is a condition for the ability to meet people's requirements. The economy is often measured by the amount it produces over a certain period. But in terms of sustainable development, the way in which production takes place is just as critical. Efficient use of the resources deployed and a careful approach to the environment are indispensable.

Gross domestic product per capita is increasing

The most commonly used indicator for the scope of production from an economy is the gross domestic product, or GDP (15.1). This figure measures the market value of all end products and services which a country produces on its home territory within one year. GDP per capita increased by 17.5% in real terms between 1980 and 2001. An increase in GDP is generally regarded as positive and desirable, but the GDP only measures monetary variables, laying no claim to reflect ecological or social aspects not covered by the market.

Energy consumption is rising despite improved efficiency

Investments in buildings, equipment and means of transport (15.3) are prerequisites for production. A large proportion of investment expenditure in relation to the gross domestic product indicates that companies are identifying potentials for development, and that they are not only ready to make new investments but that they also have the financial resources needed to do so. There have been fluctuations in the investment quota since the start of the 1980s, but it has always been above the average for the European Union.

Like the European Union, Switzerland reports a downward trend for the energy intensity of production (15.5). This means that less and less energy is needed to produce goods and services of a specified value. Viewed in absolute terms, however, energy consumption for production has increased over the same period (15.4). It follows that technological advances in energy utilisation were only partially able to compensate for the increased consumption induced by economic growth.

9% of the useful agricultural area is under biological cultivation

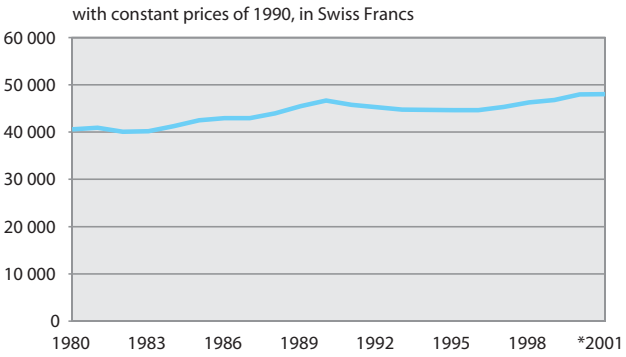
The cultivated land (15.2) is the natural basis for the production of foods. Within twelve years, there has been a decrease of 3.1% in the useful agricultural area. If the loss of cultivable land were to continue at the same pace, the reserves of land available for agriculture would be exhausted after about 380 years. Organic farming (15.6) is an especially environment-friendly form of production with strict guidelines. There has been a continuous increase in the proportion of biologically cultivated land since 1993, and by 2001 this figure was just under 9% of the useful agricultural area. According to the European Environment Agency, this places Switzerland above the European average of 2.5%.

Indicators		Postulates of Sustainable Development	Trend/ Assessment
15.1	GDP per capita	2a Meeting needs, 10a Promotion of economic efficiency	↗
15.2	Cultivated land	2a Meeting needs, 15a Preservation of natural resources, 16b Limits for consumption of non-renewable resources, 20 Acceptable natural and agricultural landscapes	↘ –
15.3	Investment rates in GDP	10a Promotion of economic efficiency	~ ≈
15.4	Energy consumption in the industrial and services sector	12a Ecologically acceptable production, 16a Limits for consumption of renewable resources, 16b Limits for consumption of non-renewable resources	↗ –
15.5	Energy intensity in the industrial and services sector	12a Ecologically acceptable production	↘ +
15.6	Organic farming	12a Ecologically acceptable production, 12b Ecologically and socially acceptable consumption, 17a Limits for degradable waste and toxins, 17b Avoidance of non-degradable toxins, 18a Ecological compensation	↗ +
15.7	*Material efficiency of economy*	12a Ecologically acceptable production	

Explanation of symbols on page 15

15 Production

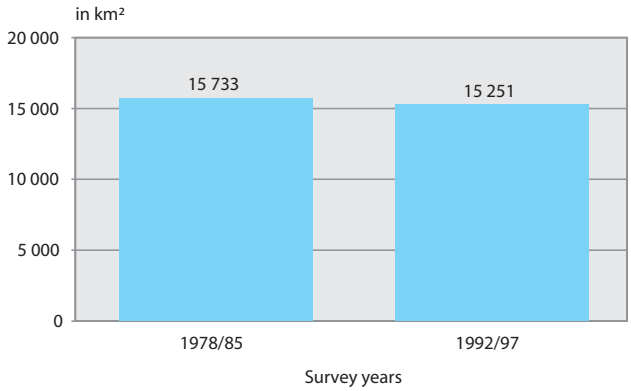
15.1 GDP per capita



* provisional values as of 2000

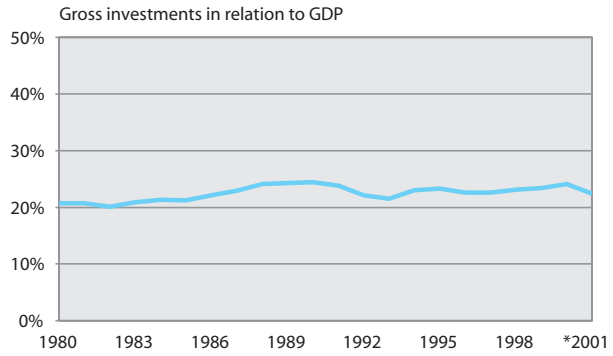
Swiss Federal Statistical Office

15.2 Cultivated land



Swiss Federal Statistical Office

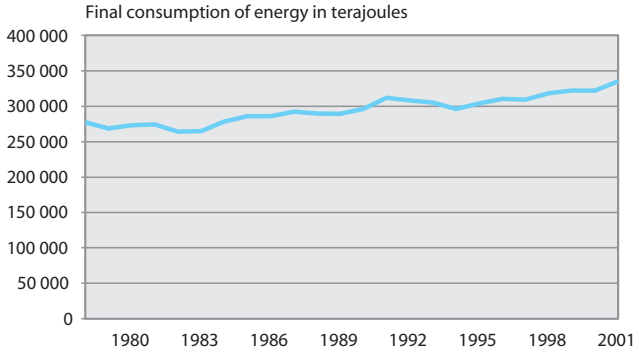
15.3 Investment rates in GDP



Provisional values as of 2000

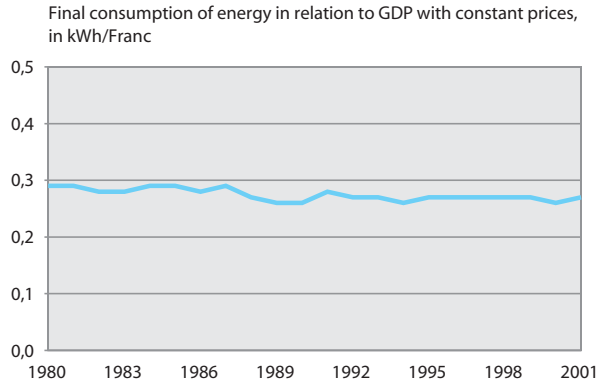
Swiss Federal Statistical Office

15.4 Energy consumption in the industrial and services sector



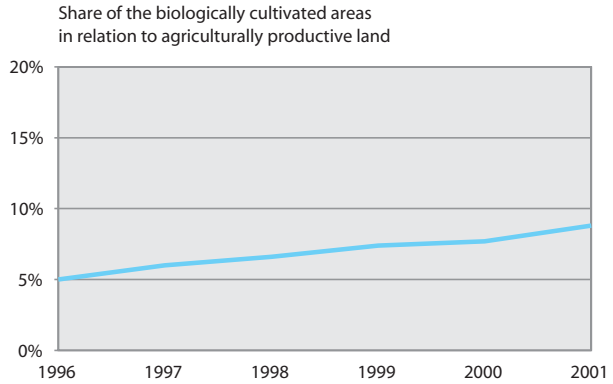
Swiss Federal Office of Energy

15.5 Energy intensity in the industrial and services sector



Swiss Federal Office of Energy; Swiss Federal Statistical Office

15.6 Organic farming



Swiss Federal Statistical Office

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16 Consumption

Our consumer behaviour shapes society, the economy and the environment. Who consumes what, and how much of it, are decisive questions for sustainable development. There is a potential conflict here between meeting individual consumer requirements and the ecological consequences this entails, and also the scope for disadvantaged groups to meet their particular needs.

Consumer expenditure is rising hesitantly

The amount of consumer expenditure by private households (16.1) gives a pointer to the average level of material affluence that the population can afford. During the 1980s, consumer expenditure per capita rose constantly in real terms. Following a decline at the start of the 1990s, a regular increase has emerged again since 1996. However, the percentage of consumer expenditure has risen less sharply than the GDP since 1980 (+12.1% as compared with +17.5%). Other indicators provide information about the distribution of material affluence (see topic 1 «Social security and prosperity»).

5% of food and beverage expenditure goes on bio-products

Rising consumer expenditure is not just a sign of increased affluence; it may also lead to higher consumption of resources and more environmental pollution. This means that the level of environmental compatibility of this consumption is an important factor. Expenditure by private households on organic products (16.2) has risen in relation to total expenditure on food and beverages. On average, 5.1% of this expenditure went on bioproducts in 2000, according to information from households. Two years earlier, the figure was still only 4.2%. The level of household income has no significant influence on this figure: in 1998, households with the lowest incomes spent the same percentage on bioproducts as those in the top income categories. No data are available as yet about the percentage of expenditure on non-food items produced in a manner than meets ecological and social standards (16.4).

Knowledge of the proportion of environment-based taxes and charges to total consumer expenditure (16.3) would indicate how far the «polluter pays» principle has been implemented, but this indicator has not yet been developed.

Other indicators which provide information on consumer behaviour can be found in topics 5 «Culture and leisure», 17 «Mobility», 18 «Materials, wastes and immissions» and 25 «Energy».

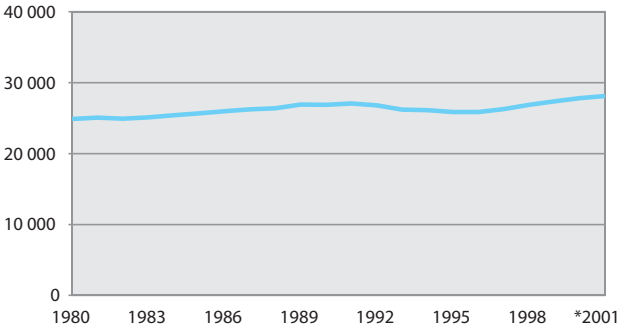
Indicators		Postulates of Sustainable Development	Trend/ Assessment
16.1	Consumer expenditure	2a Meeting needs	↗ +
16.2	Consumption of organic products	12b Ecologically and socially acceptable consumption	↗ +
16.3	Environment-related levies	9b Genuine costs and principle of polluter-pays, 12b Ecologically and socially acceptable consumption	
16.4	*Market share of non-food goods with eco-labels*	12b Ecologically and socially acceptable consumption	

Explanation of symbols on page 15

16 Consumption

16.1 Consumer expenditure

Consumer expenditure of private households with constant prices in 1990 (Swiss Francs/person)

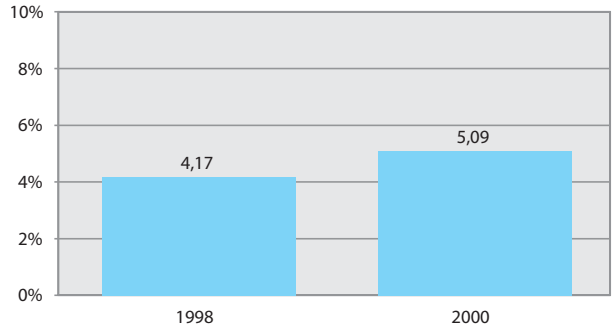


*provisional values as of 2000

Swiss Federal Statistical Office

16.2 Consumption of organic products

Share of expenditure on organic products in relation to total expenditure on food and drinks



Swiss Federal Statistical Office

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17 Mobility

Since time immemorial, mobility has fulfilled a human need and it is an important requirement for an economy that can perform efficiently. At the same time, mobility often entails noise, air-polluting substances, greenhouse gas emissions and the use of energy and space. For these reasons, sustainability requires a transport system that allows access to mobility for all groups of the population and all parts of the country; however, such a system must also cope efficiently with the transport that is necessary for the economy to function without destroying the natural foundations of life or exceeding the limits on the use of non-renewable resources.

Strong growth in passenger and goods transport

The years since the Second World War have seen an increase in mobility, particularly in the road and aviation sectors. Land passenger transport services (17.1) have grown by 37% within two decades (1977-97), and the increase in goods transport (17.3) is as much as 115%. The growth in air transport is the most marked: the number of flight movements at the three national airports (17.5) rose by 140% between 1980 and 2000 to reach an annual total of 509,584 landings or take-offs.

Higher energy consumption in spite of increased efficiency

Growth on this scale is not without its effects on the environment and resources. Energy consumption for traffic per capita (17.8) rose by 41% between 1980 and 2001, despite the continuous improvement in energy efficiency. By far the largest proportion of this energy is used for road transport, so it comes as no surprise that 95% of the energy required for transport originates from petroleum products.

The problem is aggravated because transport services in the goods sector are growing far more quickly than the economy. In other words, the ratio of transport services to the GDP, or the intensity of mobility (17.9), is visibly increasing.

For these reasons, it will only be possible to overcome the dilemma if traffic flows are handled in a more efficient and environment-friendly manner. A decisive factor here is the split between road and rail transport, known as the «modal split» (17.2 and 17.4). The car is the most important means of passenger transport. On the other hand, the proportion of public transport has been declining since the 1970s, and now it is just one fifth (17.2). The fact that 80% of households have at least one car at their disposal (17.6) plays a major part as far as the choice of transportation is concerned. The importance of the railways has decreased even more sharply in the goods transport sector: by 1997, only one third of goods transport services were undertaken by rail, compared with almost 60% in 1970.

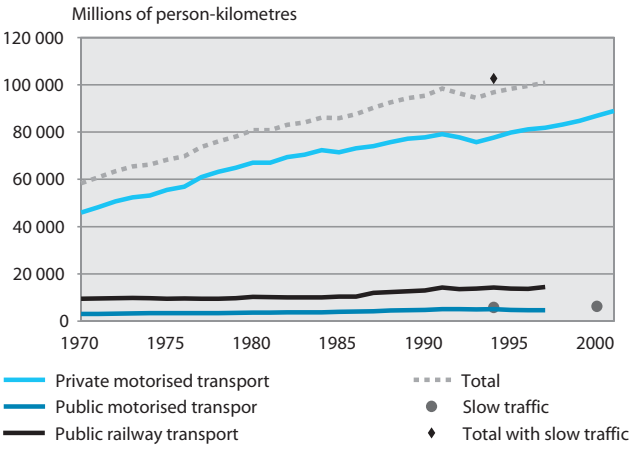
The data situation is still inadequate for other important indicators such as total cost of traffic including external environmental and social costs (17.10) and people's ability to reach public transport (17.7).

Indicators		Postulates of Sustainable Development	Trend/ Assessment
17.1	Performance of passenger traffic	2b Promoting health, 10b Economic order that favours innovation and competition, 16b Limits for consumption of non-renewable resources, 17a Limits for degradable waste and toxins	↗
17.2	Modal split in passenger transport		→ ≈
17.3	Performance of goods traffic		↗ –
17.4	Modal split in goods traffic		↘ –
17.5	Number of landings / take-offs		↗ –
17.6	Number of households with a car	12b Ecologically and socially acceptable consumption, 16b Limits for consumption of non-renewable resources, 17a Limits for degradable waste and toxins	↗ –
17.7	*Accessibility of public transport*	*4b Equal opportunities and fair distribution of wealth, 4c Integration of the less fortunate, 16b Limits for consumption of non-renewable resources*	
17.8	Final energy consumption of traffic	12a Ecologically acceptable production, 16b Limits for consumption of non-renewable resources, 17a Limits for degradable waste and toxins	↗ –
17.9	Intensity of goods traffic per GDP	2a Meeting needs, 2b Promoting health, 10a Promotion of economic efficiency, 12a Ecologically acceptable production, 12b Ecologically and socially acceptable consumption	↗ –
17.10	*Total costs of traffic*	*9b Genuine costs and principle of polluter-pays*	

Explanation of symbols on page 15

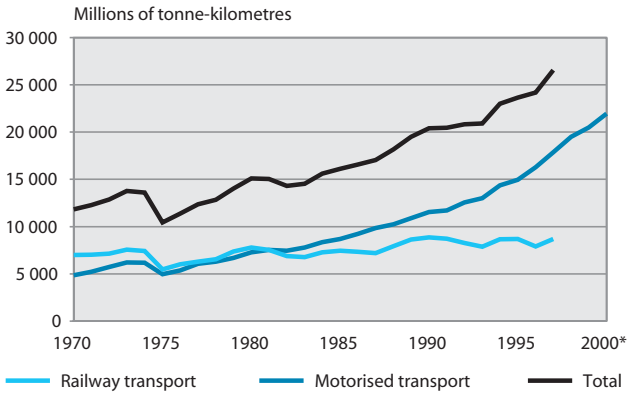
17 Mobility

17.1 Performance of passenger traffic



Swiss Federal Statistical Office; Federal Office for Spatial Development

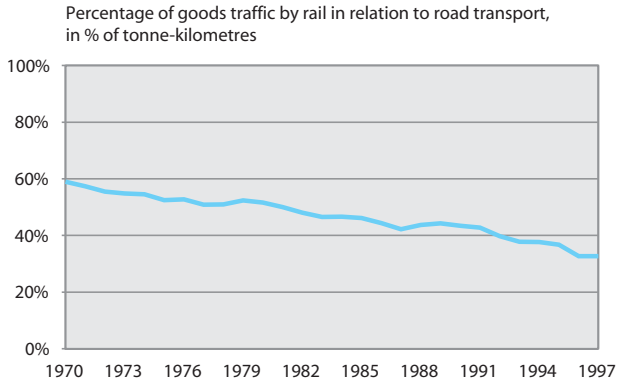
17.3 Performance of goods traffic



* Extrapolation as of 1999

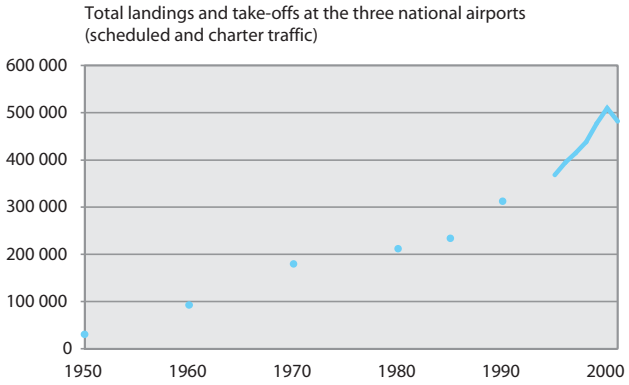
Swiss Federal Statistical Office

17.4 Modal split in goods traffic



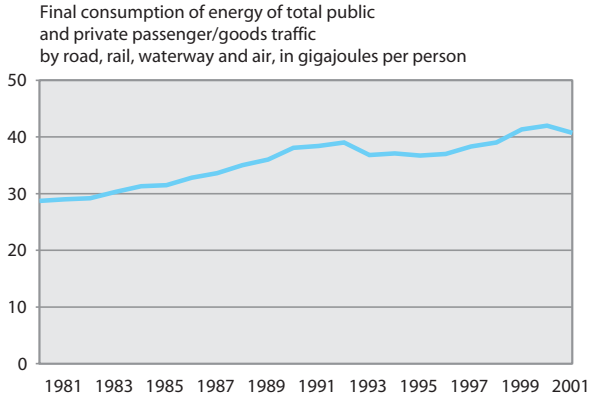
Swiss Federal Statistical Office

17.5 Number of landings/take-offs



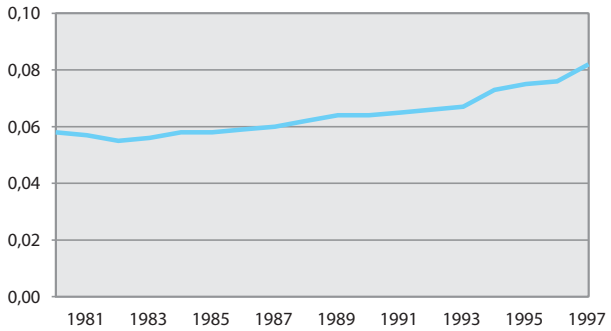
Federal Office for Civil Aviation

17.8 Final energy consumption of traffic



Swiss Federal Office of Energy; Swiss Federal Statistical Office

17.9 Intensity of goods traffic per GDP



Swiss Federal Statistical Office

© Swiss Federal Statistical Office (SFSO)

18 Materials, wastes and immissions

With sustainable development, the population should be protected from factors that could be harmful to their health, and environmental pollution due to the use of non-degradable toxic substances should be prevented wherever possible. At the same time, the consumption of renewable energy sources should be kept below the regeneration level. These basic principles should be respected in the production, consumption and disposal of consumer goods.

Each person produces 350 kg of household waste annually

Recycling is increasing

The volume of hazardous waste is increasing owing to the fact that contaminated sites are now being dealt with

The consumption of resources can be kept in check by reducing or avoiding the production of waste and environmental pollution, and risks caused by waste disposal can be attenuated. Up until the end of the 1980s there was a steady rise in the volume of household waste (18.4). The first half of the 90s saw a decrease and since 1996 the volume of domestic waste produced per person per year has remained at around 350 kg. The downward trend is due among other things to the introduction of various charges (e.g. a charge on each bag of waste) and the fact that the population has been encouraged to sort their waste. The total volume of waste per head of the population has not fallen, however. On the contrary, it is continually rising, despite a growing tendency to recycle whatever possible (18.6). By weight, the proportion of total domestic waste recycled (glass, paper, PET bottles, etc.) has been rising since 1970 and had reached a figure of 46% in 2001.

Hazardous waste (18.5) is waste that requires special measures for environmentally friendly disposal. There is a degree of risk to general health and the environment in producing, transporting and disposing of special waste. The total volume of special waste remained stable between 1992 and 1996; since then it has increased owing to the fact that old deposits of waste have been dealt with and consequently large quantities of polluted earth have had to be disposed of.

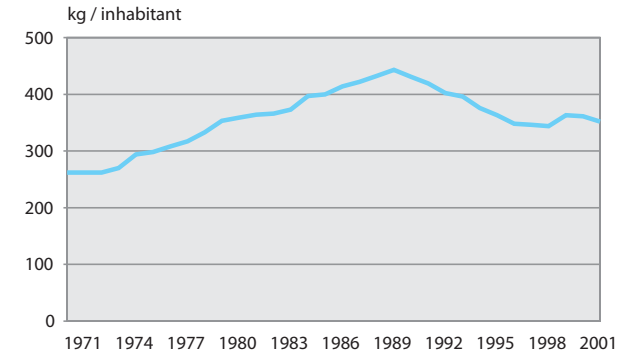
Radioactive waste (18.3) is also a potential health and environmental hazard. At present, however, there is no corresponding indicator.

Noise is not only a nuisance but can also affect people's health. Data on the «population exposed to noise» indicator (18.1) will be available shortly. An indicator for pollution through non-ionising radiation (18.7) must first of all be devised, however.

Indicators		Postulates of Sustainable Development	Trend/ Assessment
18.1	Population exposed to noise	2b Promoting health	
18.2	Heavy metal contamination of sewage sludges	15a Preservation of natural resources, 17b Avoidance of non-degradable toxins	
18.3	Radioactive waste stocks	15a Preservation of natural resources, 17b Avoidance of non-degradable toxins	
18.4	Disposed household waste	12a Ecologically acceptable production, 12b Ecologically and socially acceptable consumption, 16a Limits for consumption of renewable resources, 16b Limits for consumption of non-renewable resources, 17a Limits for degradable waste and toxins, 17b Avoidance of non-degradable toxins	↘ +
18.5	Generation of hazardous waste	2a Promoting health, 12a Ecologically acceptable production, 12b Ecologically and socially acceptable consumption, 17a Limits for degradable waste and toxins, 17b Avoidance of non-degradable toxins	↗ ≈
18.6	Waste recycling	12a Ecologically acceptable production, 12b Ecologically and socially acceptable consumption, 16a Limits for consumption of renewable resources, 16b Limits for consumption of non-renewable resources, 17a Limits for degradable waste and toxins, 17b Avoidance of non-degradable toxins	↗ +
18.7	Non-ionising radiation	2b Promoting health	

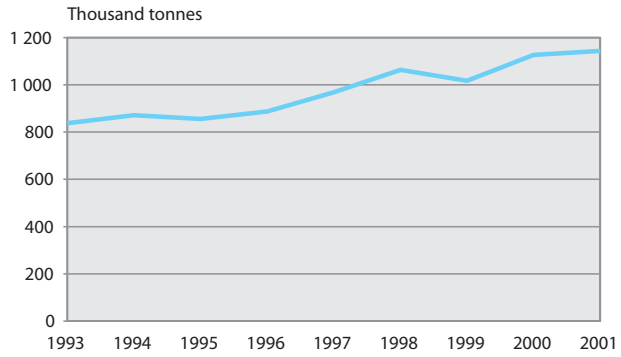
Explanation of symbols on page 15

18.4 Disposed household waste



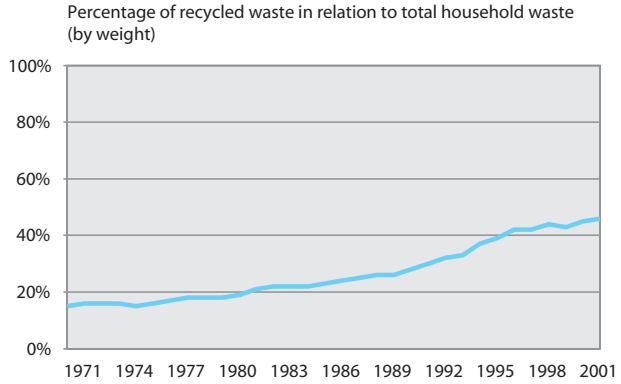
Swiss Agency for the Environment; Forests and Landscape

18.5 Generation of hazardous waste



Swiss Agency for the Environment; Forests and Landscape

18.6 Waste recycling



Swiss Agency for the Environment; Forests and Landscape

© Swiss Federal Statistical Office (SFSO)

19 Soil

Healthy soil is a prerequisite for covering the most elementary basic requirement: the supply of food. In sustainable development it is therefore essential that the loss of agricultural land be avoided and the fertility of the soil be maintained. Erosion, soil compaction and the introduction of pollutants must be prevented and land that is of special agricultural value must be protected from being converted into building zones or being used for other, non-agricultural purposes.

The fertility of the soil is under threat in many places through heavy metal pollution

The fertility of the soil is under threat in particular from pollution through heavy metals and polycyclic aromatic hydrocarbons. According to the results of a survey carried out between 1990 and 1994, official acceptable levels of total heavy metals (copper, cadmium and/or zinc; 19.1) were exceeded at 16% of the measuring points within the National Soil Observation Network (NSON), implying that at those sites the long-term fertility of the soil is endangered. There is no longer any soil that is completely devoid of pollutants. Since the first survey was carried out in 1985-89 the number of sites where acceptable levels are exceeded has risen by one percentage point. It is difficult to interpret this finding, since the level of pollutants in the soil is also dependent on soil dynamics and the condition of the soil at the time the samples are taken. An indicator of polycyclic aromatic hydrocarbon pollution (19.2) and one for annual accretion of pollutants (19.4), which would complete the picture of chemical effects, are not available at present. Neither are representative data series likely to be available in the foreseeable future for indicators concerning soil compaction (19.5) and the risk of erosion (19.6), which would give an indication of mechanical soil damage.

Cropable land is sealed off for building purposes

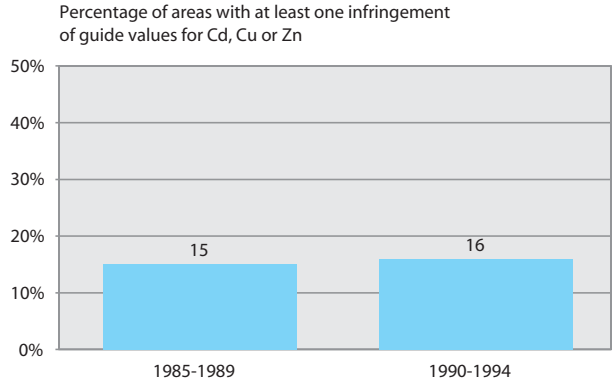
Agricultural land is also at risk of decreasing in total acreage. Cropable land is especially important for ensuring the supply of food (19.3). Within a period of twelve years (between the regional statistics drawn up for 1979/85 and 1992/97) the total area of cropable land shrank by 2.1% or 10,352 ha. This corresponds to almost half the area of Lake Neuchâtel. Almost all the land lost to agriculture has been built over, which means that the surface is to a large extent hermetically sealed and the land can never be used again for agricultural purposes. Since in any case cropable land constitutes barely one-third of total agricultural land and only 12% of the surface of Switzerland, sacrificing areas of cropable land for construction purposes is contrary to the principles of sustainable development.

Indicators		Postulates of Sustainable Development	Trend/ Assessment
19.1	Heavy metal contamination	2a Meeting needs, 2b Promoting health, 17b Avoidance of non-degradable toxins, 18c Caution in the case of uncertainty	…
19.2	*Contamination with PAH (polycyclic aromatic hydrocarbons)*	2a Meeting needs, 2b Promoting health, 17b Avoidance of non-degradable toxins, 18c Caution in the case of uncertainty	
19.3	Cropable land	2a Meeting needs, 15a Preservation of natural resources, 16b Limits for consumption of non-renewable resources, 20 Acceptable natural and agricultural landscapes	↘ –
19.4	*Pollutants input into the soil*	2a Meeting needs, 2b Promoting health, 17b Avoidance of non-degradable toxins, 18c Caution in the case of uncertainty	
19.5	*Soil compaction*	2a Meeting needs, 16b Limits for consumption of non-renewable resources, 18a Ecological compensation, 18c Caution in the case of uncertainty	
19.6	*Soil erosion*	2a Meeting needs, 16b Limits for consumption of non-renewable resources, 18a Ecological compensation, 18c Caution in the case of uncertainty	

Explanation of symbols on page 15

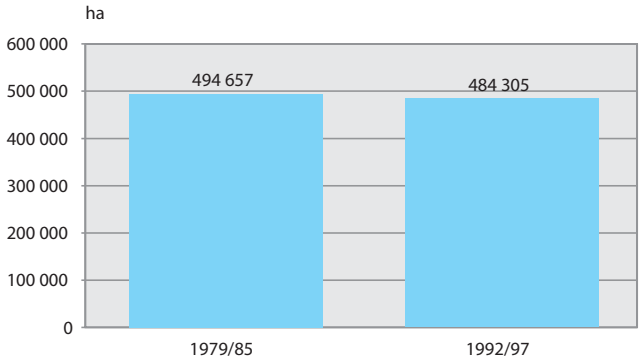
19 Soil

19.1 Heavy metal contamination



Swiss Federal Research Station for Agroecology and Agriculture (FAL)

19.3 Cropable land



Swiss Federal Statistical Office

© Swiss Federal Statistical Office (SFSO)

20 Water

Economic use of resources is essential for sustainable development. Good quality water is a valuable resource that, on a worldwide scale, is rare. Economic use of water is also to be recommended since a large amount of energy and technical know-how is necessary in order to provide drinking water as well as for treating waste water. Rivers and lakes provide a valuable habitat for flora and fauna alike and are therefore to be protected from pollution.

In the home each person uses 160 litres of drinking water every day

Since the mid-1980s the quantity of water used (20.1) has been falling and has now reached a figure of around 400 litres per person per day. Around 40% of this, i.e. some 160 litres, is used within the home. The rest is accounted for by industry, commerce, public use and fountains, as well as loss through leaky installations. The drop in water consumption per inhabitant in the home can be explained by growing awareness among the population and the use of more economic fittings and plumbing. In industry, the creation of closed water circuits within factories has also resulted in lower consumption.

An indirect indication of the volume and the degree of pollution of waste water is provided by expenditure on waste water treatment (20.4). During the 1990s this rose nominally by 20% to reach CHF 1.82 billion in the year 2000. Although expenditure in this category has thus increased less than that for overall environmental protection or total public expenditure, it still represents a good half of the total amount spent by the authorities on environmental protection.

The amount of phosphorus in lakes is decreasing but is still too high in many places

Despite the treatment of waste water, rivers and lakes are still subject to pollution, be it because it is not possible to achieve a 100% level of purification, or because pollutants seep directly into rivers and lakes from agricultural land or through rainfall. A key indicator for the pollution of the country's waterways is the phosphorus level (20.3). After rising during the 1960s, levels of this element fell in most Swiss lakes thanks to the installation of chemical purification units in waste-water treatment plants and the ban on phosphorus in washing powders. The level of phosphorus in lakes in areas of intensive cattle farming is still far too high, despite the fact that farmers have reduced the amount of excessive phosphorus by using fewer mineral fertilisers. The level of nitrates in ground water (20.2) is also an important indicator; in this case figures will be available in the near future.

The quality of rivers and lakes from the point of view of habitats for flora and fauna is a matter of some concern. Today there is hardly a single river whose course has not been modified. It would be possible to observe this phenomenon through the use of a specially devised indicator that visualises the spatial requirements for rivers (20.5).

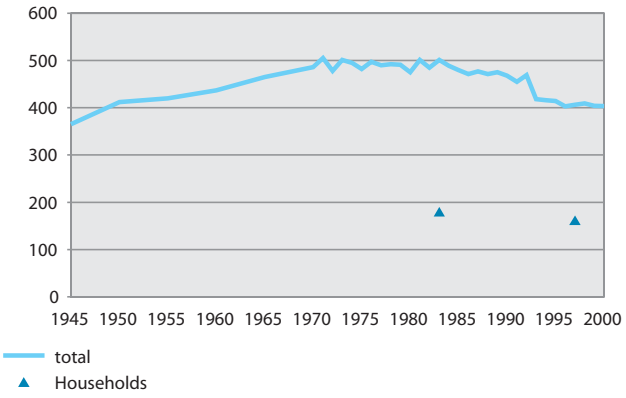
Indicators		Postulates of Sustainable Development	Trend/ Assessment
20.1	Water use	2a Meeting needs, 16a Limits for consumption of renewable resources	↘ +
20.2	Nitrate concentrations in groundwater	17a Limits for degradable waste and toxins	🏭
20.3	Phosphorous concentrations in lakes	17a Limits for degradable waste and toxins	↘ +
20.4	Public expenditure on wastewater treatmen	12a Ecologically acceptable production, 17a Limits for degradable waste and toxins, 17b Avoidance of non-degradable toxins	↗
20.5	Space requirement of flowing waters	18a Ecological compensation, 18b Minimisation of ecological risks, 20 Acceptable natural and agricultural landscapes	🏭

Explanation of symbols on page 15

20 Water

20.1 Water use

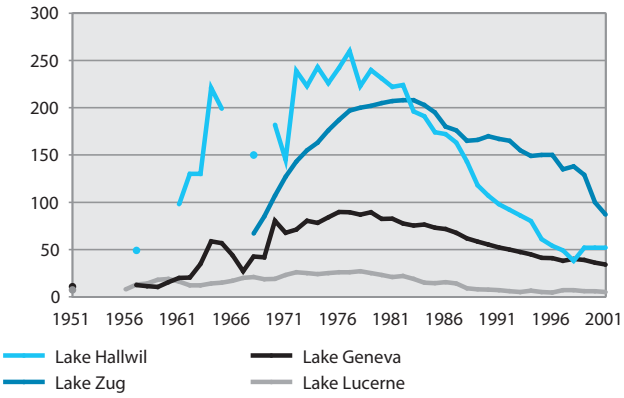
Quantity of water supplied by water services
in litres per inhabitant per day



Swiss Agency for the Environment, Forests and Landscape;
Swiss Gas and Water Industry Association (SGWA)

20.3 Phosphorus concentrations in lakes

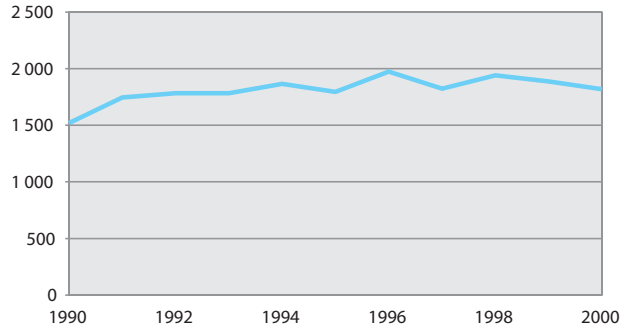
Total concentration of phosphorus in µg/litre



Swiss Agency for the Environment, Forests and Landscape

20.4 Public expenditure on wastewater treatment

Expenditure by the Confederation, cantons and municipalities
on pipework and treatment of wastewater with running prices,
in million Swiss Francs



Swiss Federal Statistical Office; Federal Finance Administration

© Swiss Federal Statistical Office (SFSO)

21 Air

Sustainable development requires that human health be protected and promoted. Clean air for people to breathe is a basic condition for fulfilling this requirement. Air pollutants can damage health and have a negative impact on the ecosystem, for example in the form of acid rain. Many air pollutants are products of combustion processes in industry, vehicles and households.

Success in reducing the level of oxides of nitrogen

4.3 million people are exposed to high concentrations of dust particles

The ozone level is frequently too high

Although the level of pollutants in the air has fallen over the past few decades, the limits set are continually being exceeded. Improvements have been seen with regard to nitrogen dioxides (21.2), in particular as a result of the introduction of catalytic converters and modifications made to industrial installations. Excessive levels of concentrated pollutants are still being observed along main roads and in urban areas, however.

The concentration of dust particles that penetrate the lungs (21.4) is also decreasing. Nevertheless, set limits are still being exceeded, in some cases massively. In 1996 some 4.3 million people, or 61% of the population, were exposed to excessive air pollution where they live (21.1). Dust particles constitute a major danger to health and can be considered a principal indicator of the total load of air pollutants to which people are exposed.

No success has been seen with regard to ozone (21.3), which is mainly a summer problem in the form of smog. Low-level ozone is produced from nitrous oxide and volatile organic compounds, sunlight being the catalyst. The frequency with which set levels are exceeded is high all over the country. The problem is at its worst in higher rural areas such as on the Rigi. This can be accounted for by the complex reactions between different types of air pollutants.

The situation with regard to air pollution can only be improved by attacking the problem at its roots. A large proportion of noxious air pollutants are produced by the combustion of fossil fuels. During the 1990s the consumption of fossil fuels (21.6) stabilised at around 75 gigajoules per year per head of the population.

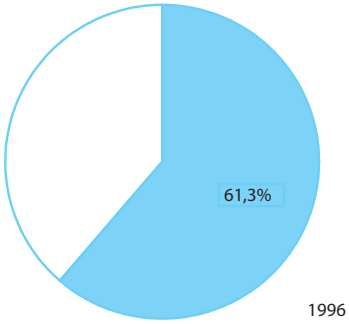
In contrast, it has been possible to reduce emissions of oxides of nitrogen and volatile organic compounds (NMVOCs) from industry, households and vehicles, as can be seen from the index of oxides of nitrogen (NO_x), ammonia (NH_3) and NMVOCs (21.5). This is of major importance for various reasons, including the fact that NMVOCs and oxides of nitrogen are precursors to the build-up of low-level ozone and that nitrogen compounds cause acid rain.

Indicators		Postulates of Sustainable Development	Trend/ Assessment
21.1	Population exposed to excessive immissions	2b Promoting health	…
21.2	Concentration of nitrogen dioxides	2b Promoting health, 17a Limits for degradable waste and toxins	↘ +
21.3	Concentration of ozone	2b Promoting health, 17a Limits for degradable waste and toxins	~ ≈
21.4	Concentration of respirable fine particles	2b Promoting health, 17a Limits for degradable waste and toxins	↘ +
21.5	Emissions of NO_x, NH_3, NMVOCs	2b Promoting health, 17a Limits for degradable waste and toxins	↘ +
21.6	Consumption of fossil fuels	2b Promoting health, 16a Limits for consumption of renewable resources, 17a Limits for degradable waste and toxins, 18c Caution in the case of uncertainty	→ ≈

Explanation of symbols on page 15

21.1 Population exposed to excessive immissions

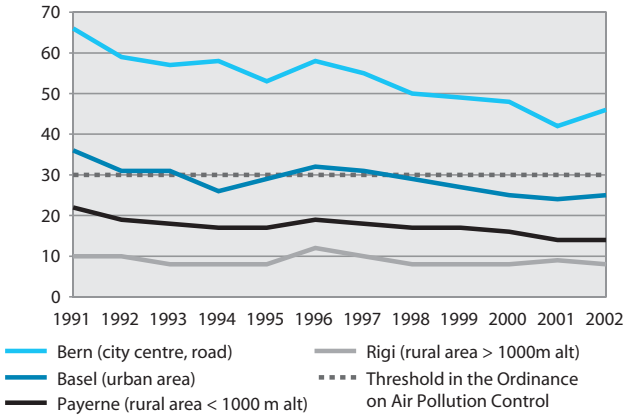
Share of population exposed to concentrations of fine particles of more than 20 µg/m³ in their living area



World Health Organization, 1999

21.2 Concentration of nitrogen dioxides

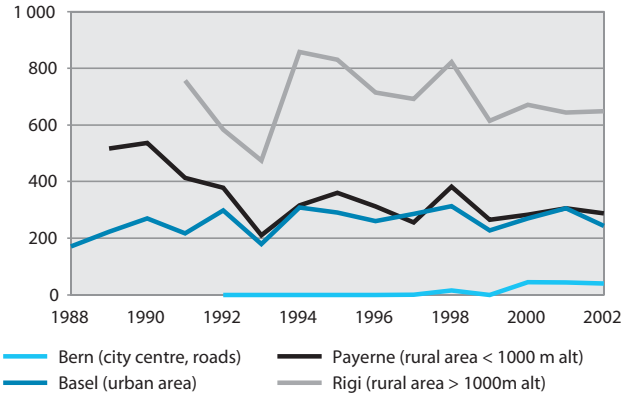
Annual average in µg/m³



Swiss Agency for the Environment, Forests and Landscape

21.3 Concentration of ozone

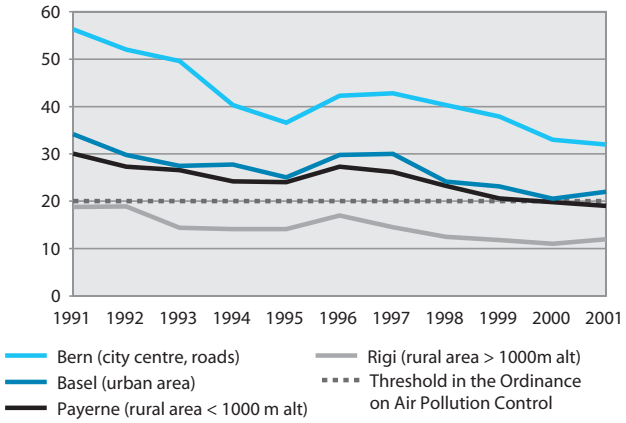
Number of threshold exceedances (mean value over one hour)



Swiss Agency for the Environment, Forests and Landscape

21.4 Concentration of respirable fine particles

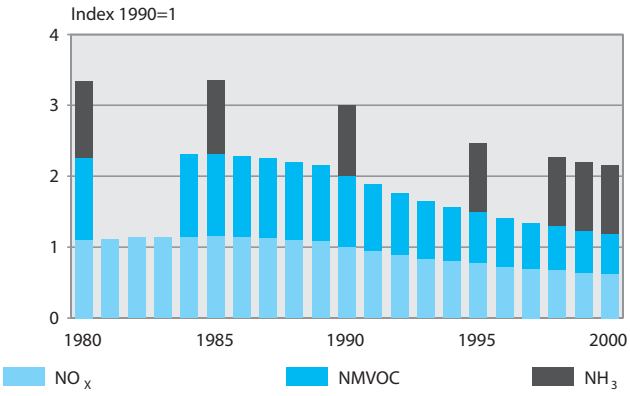
Average annual concentration of PM10 in µg/m³
(before 1997 calculated by means of TSP suspension particles)



Swiss Agency for the Environment, Forests and Landscape

21.5 Emissions of NO_X, NH_3, NMVOCs

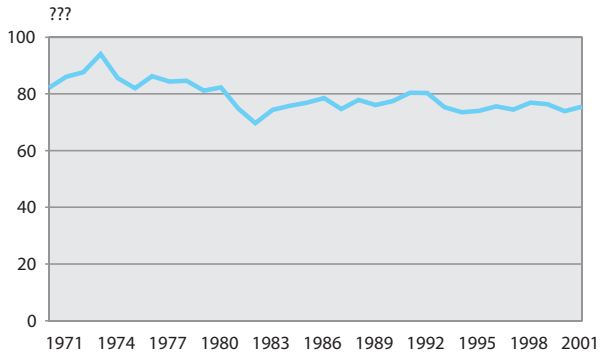
Index 1990=1



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21.6 ???

???



???; Swiss Federal Statistical Office

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22 Climate

According to the principles of sustainable development, serious or irreversible damage to the environment should be avoided, even if no incontrovertible scientific proof of effective risks exists. Greenhouse gases constitute a considerable danger since they most probably cause climatic change with consequences that are difficult to estimate at present. The emission of such gases must therefore be avoided as far as possible.

Emission of greenhouse gases in the 1990s almost unchanged

The warming of the planet which has been observed since the 1970s is a unique phenomenon during the past 1000 years. Since measurements were started in 1864, the trend in mean annual temperatures in Switzerland (22.1) has shown a warm phase in all areas in the 1940s and an almost uninterrupted rise since the end of the 1970s.

It is thought that this warming is due in particular to the rise in the concentration of greenhouse gases in the atmosphere. In nature, the presence of greenhouse gases in the atmosphere ensures temperatures that enable life to survive on our planet. The unstable balance between the natural emission and the breakdown of greenhouse gases is being upset to a great extent through human activities, however, and mainly by the release of carbon dioxide when fossil fuels are burnt. In Switzerland the level of greenhouse gases produced through human activities (22.2) remained more or less unchanged between 1990 and 2000. In 2000 it was slightly below the figure for 1990 (52.7 as compared with 53.3 million tonnes). The reasons for this drop include a less healthy economy during the 1990s and mild winters, as well as political measures.

The level of greenhouse gases emitted can be reduced through «clean» production and consumption. In relation to the GDP, which takes into account production and consumption levels, the quantity of CO_2 emissions has fallen overall since 1991 (22.4). It was only between 1994 and 1996 that a slight rise was observed. The general trend indicates that the intensity of CO_2 produced mechanically is decreasing and that resources are therefore being used more efficiently. It could also mean, however, that processes that produce an especially high amount of CO_2 are being transferred to other countries or that the service sector, which produces less CO_2, is expanding, or indeed that winters have been milder in more recent times.

Technological improvements do not compensate for the increase in traffic

The increase in the efficiency of motor engines is of particular interest since they produce one-third of all greenhouse gases. Since 1993 the amount of CO_2 produced per person per kilometre (22.3) has been steadily falling. This may be explained by improvements in motor technology (lighter vehicles, engines that consume less fuel) or more efficient use of the vehicles themselves. This drop in the production of CO_2 per person is not enough to compensate for the 15% growth in traffic between 1990 and 2000, however. Within the same period total CO_2 emissions generated by private vehicles rose by 5%.

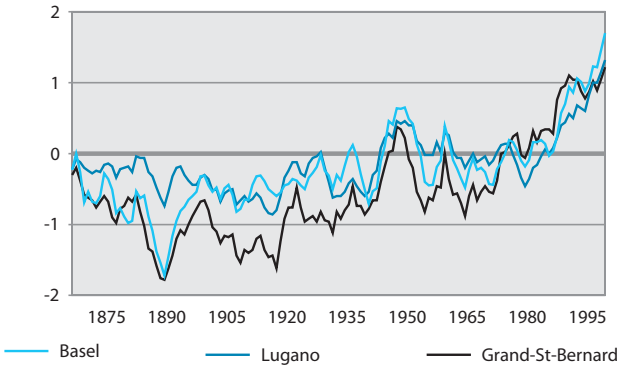
Indicators		Postulates of Sustainable Development	Trend/ Valutazione
22.1	Annual mean temperature in Switzerland	18c Caution in the case of uncertainty, 19 Taking into consideration the time needed for natural processes	↗
22.2	Emission of greenhouse gases	17a Limits for degradable waste and toxins, 18c Caution in the case of uncertainty, 19 Taking into consideration the time needed for natural processes	~ ≈
22.3	Carbon intensity of individual motorised traffic	12a Ecologically acceptable production, 12b Ecologically and socially acceptable consumption, 17a Limits for degradable waste and toxins, 18c Caution in the case of uncertainty, 19 Taking into consideration the time needed for natural processes	↘ +
22.4	Carbon intensity of economy	12a Ecologically acceptable production, 12b Ecologically and socially acceptable consumption, 17a Limits for degradable waste and toxins, 18c Caution in the case of uncertainty, 19 Taking into consideration the time needed for natural processes	↘ +

Explanation of symbols on page 15

22 Climate

22.1 Annual mean temperature in Switzerland

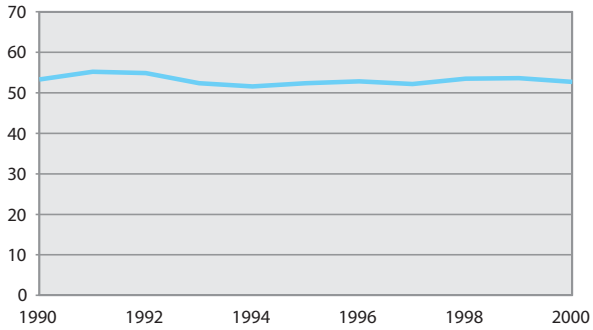
Annual deviations from temperature (anomalies) in relation to long-term mean 1961-1990 (gliding mean), in centigrade



MétéoSuisse

22.2 Emission of greenhouse gases

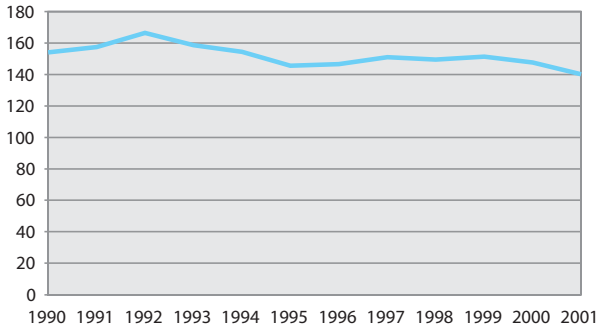
Equivalents CO_2 in million tonnes



Swiss Agency for the Environment, Forests and Landscape

22.3 Carbon intensity of individual motorised traffic

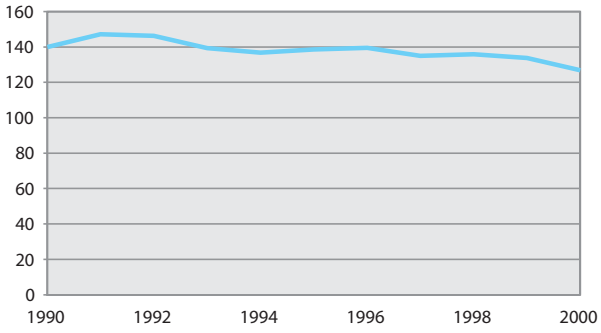
CO_2 emissions in relation to traffic performance, in grammes/person-kilometre



Swiss Federal Statistical Office;
Swiss Agency for the Environment, Forests and Landscape

22.4 Carbon intensity of economy

CO_2 emissions by GDP unit at constant prices, in grammes/Swiss Franc



Swiss Federal Statistical Office;
Swiss Agency for the Environment, Forests and Landscape

© Swiss Federal Statistical Office (SFSO)

23 Land use

For man, animals and plants, land is an essential resource that must be maintained and be made available to future generations. In particular in countries such as Switzerland, where the usable surface area is limited owing to the topography, economic use of land is essential to ensure sustainable development. This means first and foremost that the amount of land used for housing, transport routes, industrial installations, etc. must be strictly controlled.

Per person 400 m^2 of land is built-up area

Increase in urbanisation at the expense of valuable farmland

Today around 400 m^2 of land per head of the population is built on, i.e. used for buildings (including their surroundings), facilities and roads (23.1). This figure rose by 3.8% within a period of 12 years (regional surveys carried out in 1979/85 and 1992/97). More and more land is being sacrificed for housing (see indicator 4.1), owing to a change in the structure of the population and the demand for a higher standard of living.

In absolute terms, the total area of built-up land (23.3) has increased by 327 km^2 over the period of observation in question. This corresponds to a rise of 0.86 m^2 per second. The central lowlands have a particularly high proportion of built-up land. Around 80% of new residential developments have been built on valuable farmland. Since the amount of land covered by forest (see indicator 26.1) has grown over the same period, it comes as no surprise that the amount of land that is farmed (see indicator 15.2) and can be used for arable farming (see indicator 19.3) is steadily falling.

Land-use plans are drawn up in an attempt to limit the further expansion of built-up areas and to avoid spoiling the landscape through the indiscriminate spread of low-density settlements. The size of the resulting building zones (23.5) shows how much land is reserved for construction purposes. Up-to-date figures for the whole of the country are not available, however.

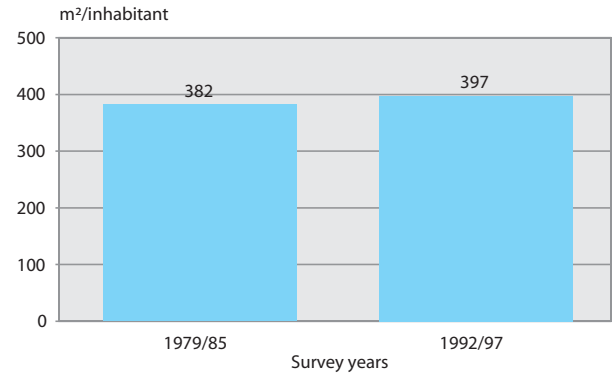
Instead of developing new zones it would make more sense to use existing residential areas more efficiently, for example by high-density building or by converting existing buildings. The rate of exploitation (23.4), i.e. the ratio of total surface area of all the storeys to the area of land built on, indicates how efficiently a plot is used. In this respect, data is available only for a few communes.

Indicators		Postulates of Sustainable Development	Trend/ Assessment
23.1	Built-up area per capita	2a Meeting needs, 15a Preservation of natural resources, 16b Limits for consumption of non-renewable resources, 20 Acceptable natural and agricultural landscapes	↗ –
23.2	Landscape diversity	20 Acceptable natural and agricultural landscapes	
23.3	Built-up area	2a Meeting needs, 15a Preservation of natural resources, 16b Limits for consumption of non-renewable resources, 19 Taking into consideration the time needed for natural processes, 20 Acceptable natural and agricultural landscapes	↗ –
23.4	Extent of utilisation	2a Meeting needs, 16b Limits for consumption of non-renewable resources	
23.5	*Area identified for settlement*	*2a Meeting needs, 16b Limits for consumption of non-renewable resources*	
23.6	*Urban sprawl*	*16b Limits for consumption of non-renewable resources, 20 Acceptable natural and agricultural landscapes*	

Explanation of symbols on page 15

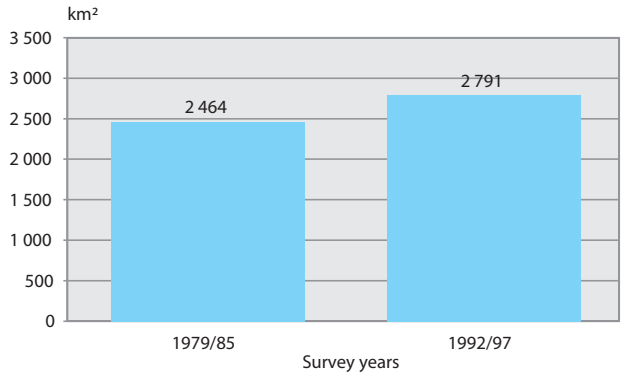
23 Land use

23.1 Built-up area per capita



Swiss Federal Statistical Office

23.3 Built-up area



Swiss Federal Statistical Office

© Swiss Federal Statistical Office (SFSO)

24 Biodiversity

Biodiversity is an asset to humans from many points of view: flora and fauna constitute our basic source of food, providing important substances as nutrients, roughage and medicinal substances. The combination of various species serves to maintain the balance of the ecosystem. Ensuring biodiversity is therefore a key aspect of sustainable development and involves maintaining genetic diversity as well as a variety of species and habitats.

Still many gaps in our knowledge concerning the existence and distribution of many species

There are many gaps in our knowledge as to the existence and distribution of species in Switzerland. In the future, the Swiss Biodiversity Monitoring Programme, whose purpose is to document biodiversity as well as monitoring it in the long term, will provide data on the three indicators «biodiversity» (24.1), «net change in the threatened status of species» (24.2) and changes in the number of domesticated animal species and commercial plant varieties (24.4).

Variety of habitat is an important element of biodiversity and has a direct influence on the variety of species that are found. A mosaic made up of various habitats, for example forests, meadows and arable land, offers a suitable home for more species than a one-sided landscape. Furthermore, the transition zones between the various types of habitat are particularly rich in different species. Varied land-use (24.3) can be considered a good basis for ensuring a variety of habitats. Within the past 12 years, there has been a small but significant improvement in variation of land-use.

3% of Swiss territory is under strict protection

Nature reserves play a role in maintaining biodiversity. To a certain extent, however, they serve primarily to protect the landscape. Since 1961 the proportion of national nature reserves (24.5) has considerably increased. Including protected landscapes and natural heritage sites, the total area of protected land constitutes around 23% of the country at present. It must be said, however, that only a small proportion of all nature reserves, namely 3.3% of Swiss territory, represents areas under strict protection, i.e. governed by laws that ensure unrestricted protection.

Ecological balance areas are increasing

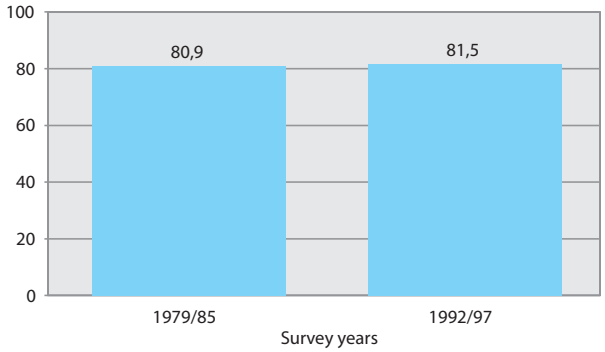
Over the course of many decades a large number of areas that are important for biodiversity, such as natural river courses, flowery meadows and hedgerows, have been destroyed. As a response to this the federal authorities began to encourage farmers to establish and maintain ecological balance areas (24.6) through direct payments. Since 1993 the total area of such zones has almost doubled. In 2001 around 9% of all agricultural land in Switzerland, in other words some 93,000 hectares, constituted ecological compensation areas, the proportion in mountain areas being above and the proportion in lowland areas below this national average. The rise that was observed after 1996 can be partly explained by the fact that all direct payments were made conditional upon a minimum proportion of the total farmland being devoted to ecological compensation.

Indicators		Postulates of Sustainable Development	Trend/ Assessment
24.1	Biodiversity	15b Preservation of biodiversity, 18a Ecological compensation, 19 Taking into consideration the time needed for natural processes, 20 Acceptable natural and agricultural landscapes	
24.2	Net change in the threatened status of species	15b Preservation of biodiversity, 18a Ecological compensation, 19 Taking into consideration the time needed for natural processes, 20 Acceptable natural and agricultural landscapes	
24.3	Diversity of habitats	15b Preservation of biodiversity, 18a Ecological compensation, 19 Taking into consideration the time needed for natural processes, 20 Acceptable natural and agricultural landscapes	↗ +
24.4	Livestock races and agricultural plant varieties	15b Preservation of biodiversity, 18a Ecological compensation, 19 Taking into consideration the time needed for natural processes, 20 Acceptable natural and agricultural landscapes	
24.5	Protected areas	15b Preservation of biodiversity, 18a Ecological compensation, 19 Taking into consideration the time needed for natural processes	↗ +
24.6	Ecological balance areas	15a Preservation of natural resources, 15b Preservation of biodiversity, 18a Ecological compensation	↗ +

Explanation of symbols on page 15

24.3 Diversity of habitats

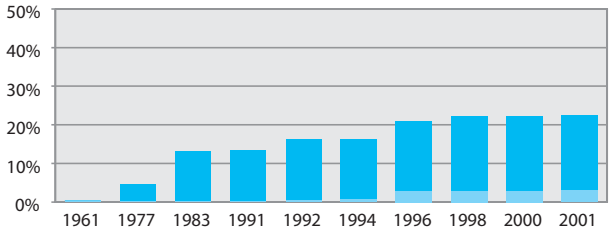
Mean number of transitions between different types of land utilization per km^2 (min.= 0, max. = 200)



Biodiversity Monitoring Switzerland; Swiss Federal Statistical Office

24.5 Protected areas

In relation to national area*



Strictly protected areas: National parks, nationally important biotops (moor and fen, meadow areas, areas of amphibian reproduction), mog areas

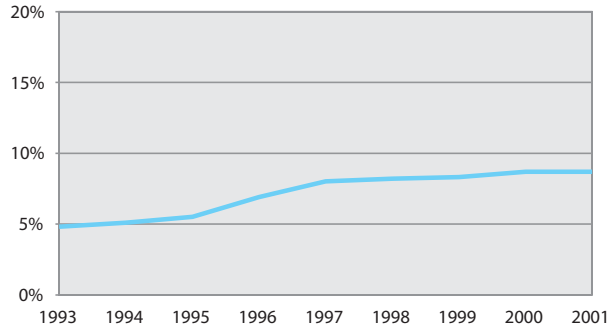
Protected areas: water and migratory bird reserves, districts francs fédéraux, landscapes and natural curiosities of national importance

* Areas which are subject to various protection regulations are counted only once.

Swiss Federal Office of Environment, Forests and Landscape

24.6 Ecological balance areas

Areas with right to contributions (excluding high stem fruit trees) in relation to total agriculturally usable area



Swiss Federal Statistical Office; Swiss Federal Office for Agriculture

© Swiss Federal Statistical Office (SFSO)

25 Energy

Sufficient supplies of energy are essential for maintaining our standard of living. By far the largest part of our energy comes from non-renewable sources, however, which compromises the ability of future generations to cover their needs. Furthermore, energy consumption is one of the main causes of environmental pollution. According to the principles of sustainable development, the level of use of non-renewable resources should be kept below that of the development potential of renewable sources, and the production of non-degradable pollutants should be avoided whenever possible.

Energy consumption per inhabitant is continually rising

Our rising standard of living and increasing mobility, as well as the continual automation and electronisation of our lifestyle, require more and more energy. Accordingly, the final energy consumption has increased since the 1970s (25.3). In comparison with Switzerland's neighbours, Germany, France and Austria, energy consumption per head is equally high, although around 16% lower than the average figure for all OECD countries. Figures for useful energy consumption (25.1), i.e. the performance actually achieved by the end-user of energy, excluding losses for conversion, are not available at present. Switzerland also imports energy in the form of finished goods. The figure for this indirectly consumed, so-called «grey energy» (25.7), should be added to national consumption. There are no reliable figures available at the moment, however.

Around one-sixth of the energy used comes from renewable sources

The consumption of fossil fuels is linked to the emission of CO_2 and other substances. Furthermore, these energy sources are finite. Replacing fossil fuels through renewable energy sources, for example water, sun, wind or wood, is therefore an important element of sustainable development. Since 1990 the proportion of renewable energy sources involved in final energy consumption (25.5) has increased by some 2 percentage points and represented one-sixth in 2001.

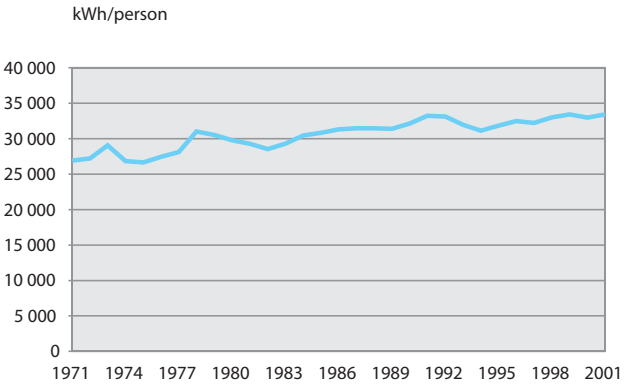
Growth rate exceeds drop in national energy consumption rate

It is only possible to cover expanding needs without damaging the environment by using natural resources more efficiently. Since 1980 energy consumption in relation to the production of the whole economy (25.4) has been slightly decreasing. It is impossible to estimate to what extent the drop in the rate of energy consumption is compensated for by increased imports of finished goods for which energy has been consumed in the production process. The fact that in absolute terms energy consumption is rising (25.3) indicates that economic growth exceeds the drop in the national energy consumption rate. An example of efficient use of energy is «Minergie» houses (25.6) which use far less energy than «normal» buildings. An indicator for the number of such buildings still needs to be developed.

Indicators		Postulates of Sustainable Development	Trend/ Assessment
25.1	Useful energy consumption	2a Meeting needs, 12a Ecologically acceptable production, 12b Ecologically and socially acceptable consumption, 16a Limits for consumption of renewable resources, 16b Limits for consumption of non-renewable resources, 17a Limits for degradable waste and toxins	
25.2	Output of power stations	2a Meeting needs, 10a Promotion of economic efficiency	
25.3	Final energy consumption	2a Meeting needs, 12a Ecologically acceptable production, 12b Ecologically and socially acceptable consumption, 16a Limits for consumption of renewable resources, 16b Limits for consumption of non-renewable resources, 17a Limits for degradable waste and toxins	↗ –
25.4	Energy intensity of economy	12a Ecologically acceptable production, 16a Limits for consumption of renewable resources, 16b Limits for consumption of non-renewable resources, 17a Limits for degradable waste and toxins	~ ≈
25.5	Renewable energies	16a Limits for consumption of renewable resources, 16b Limits for consumption of non-renewable resources, 17a Limits for degradable waste and toxins	↗ +
25.6	«Minergie» buildings	12b Ecologically and socially acceptable consumption, 12c Transparent information for private industry and consumers	
25.7	*Grey energy*	*12b Ecologically and socially acceptable consumption, 16b Limits for consumption of non-renewable resources, 17a Limits for degradable waste and toxins*	

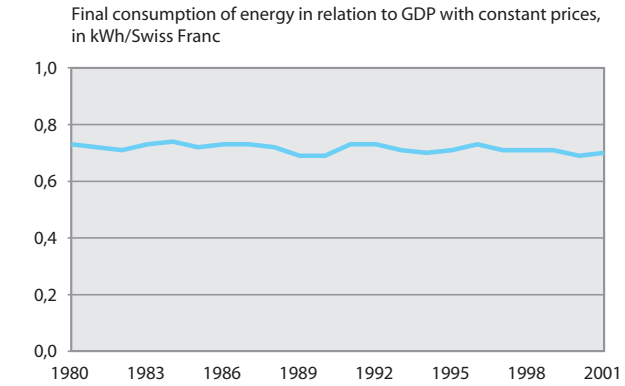
Explanation of symbols on page 15

25.3 Final energy consumption



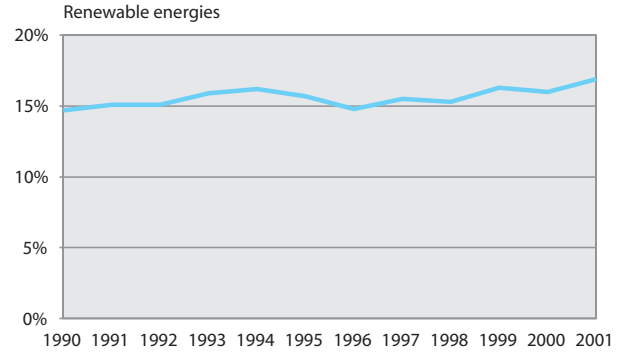
Swiss Federal Office of Energy; Swiss Federal Statistical Office

25.4 Energy intensity of economy



Swiss Federal Office of Energy; Swiss Federal Statistical Office

25.5 Renewable energies



Swiss Federal Office of Energy

© Swiss Federal Statistical Office (SFSO)

26 Forests

For sustainable development, the natural heritage, biodiversity and the quality of ecosystems should be maintained in the long term. Forests constitute a habitat for many plants and animal species, protect settlements from natural hazards and supply a renewable energy source in the form of wood. Forests also play a role in the global carbon cycle since they store CO_2 temporarily.

The total area of forest is increasing

42% of all forested areas are ecologically valuable biotopes

New wood is only partially used

From the point of view of total area, maintaining forests in Switzerland is not an issue at present as, since 1950, the total forested area (26.1) has increased by 17%. Today around 30% of Switzerland is covered by forest. In the central lowlands the amount of forest remained practically unchanged between 1985 and 1995, but it must be constantly monitored owing to conflicting interests concerning the use of the limited land.

The focus is therefore on the qualitative aspects of forest maintenance. The ecological quality of forests (26.2) is a decisive factor in relation to its function as a habitat for flora and fauna. Today 42% of the forested areas of Switzerland are ecologically valuable biotopes.

As yet, no comprehensive information is available about the condition and development of forests that protect humans, settlements and transport routes from natural hazards (26.3). Nevertheless, for the first time some figures are available for 1999 concerning anti-avalanche forests: today 42% of forested areas provide good protection and have been planted in such a way that they will continue to do so in the medium term.

From the point of view of sustainable development, the use of native, renewable and CO_2-neutral energy sources is to be recommended. In order to avoid endangering forested areas only so much wood may be felled, however, as grows within the same period of time. In the ten-year period between the first and second national forest inventory, 72.6% of new wood was used (26.4). It would therefore make sense to increase the rate of use.

Commercial forestry should maintain forests as natural habitats and ensure their role in providing protection against natural hazards, as well as guaranteeing their existence for recreational purposes and as sources of raw material. Income from the sale of felled wood is often insufficient to pay for a type of forestry that can fulfil all these roles, however. Through subsidies the Confederation helps achieve this aim. Annual federal expenditure on forestry (26.5) amount to some CHF 180 million, excluding exceptional measures in connection with natural disasters.

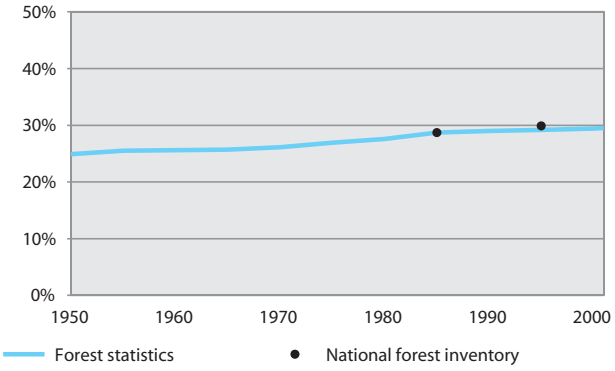
Indicators		Postulates of Sustainable Development	Trend/ Assessment
26.1	Forest area	2a Meeting needs, 15a Preservation of natural resources, 15b Preservation of biodiversity	↗ +
26.2	Ecological quality of forests	18a Ecological compensation, 19 Taking into consideration the time needed for natural processes	…
26.3	Condition of protective forest	2a Meeting needs, 3b Development that takes well-being into account	…
26.4	Wood harvesting intensity	15a Preservation of natural resources, 16a Limits for consumption of renewable resources, 18a Ecological compensation	…
26.5	Public expenditure on forestry	15a Preservation of natural resources, 15b Preservation of biodiversity, 10d Limited public debt	↗ +

Explanation of symbols on page 15

26 Forests

26.1 Forest area

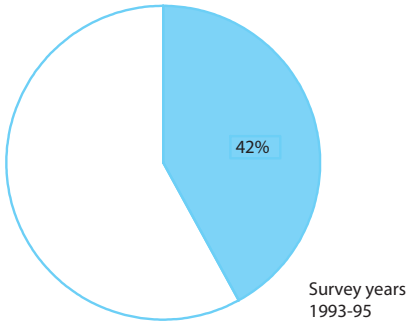
In relation to total area



Swiss Federal Statistical Office;
Swiss Federal Institute for Forest, Snow and Landscape Research

26.2 Ecological quality of forests

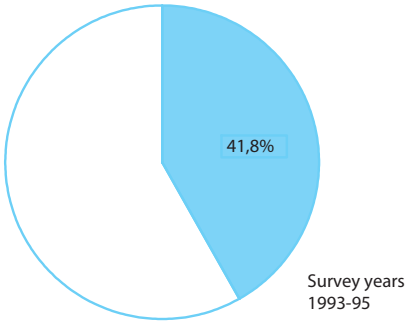
Share of the forest area with high biotopic value



Swiss Federal Institute for Forest, Snow and Landscape Research

26.3 Condition of protective forest

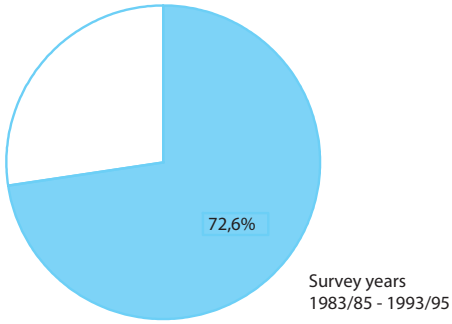
Share of protective forests against avalanches in optimal state



Swiss Federal Institute for Forest, Snow and Landscape Research

26.4 Wood harvesting intensity

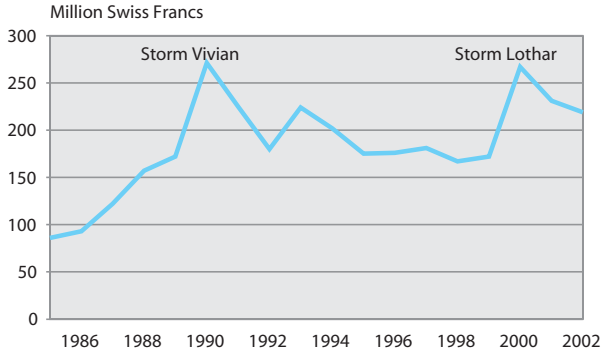
Harvested wood as percentage of forest increment



Swiss Federal Institute for Forest, Snow and Landscape Research

26.5 Public expenditure for forestry

Million Swiss Francs



Swiss Federal Office of Environment, Forests and Landscape

© Swiss Federal Statistical Office (SFSO)

Section B: Comments

The first validity test for the MONET project

The principal aims of the MONET project are, firstly, to provide an indication of whether Switzerland is moving in the direction of sustainable development and, secondly, to create awareness among the public through the monitoring system. The following commentaries are an opportunity both to present different interpretations regarding the degree of sustainable development in Switzerland and to assess the validity of the monitoring system.

The opinions of specialists concerning sustainable development in Switzerland

Firstly, the following media personalities were invited to be part of this scratch test:

- Alfred Neukom
  Home affairs editor for the Neue Zürcher Zeitung
- Susana Jourdan and Jacques Mirenowicz
  Founders of the Study Centre for Research and Innovation in Fribourg and editors of LaRevueDurable
- Christoph Allenspach
  Journalist, professor at the Zurich School of Design, freelance writer on architecture and spatial development

All the above people have proven professional experience in the field of sustainable development. They have given us their own opinions about the degree of sustainability in Switzerland and whether the country is on the path towards sustainable development. Furthermore, their comments also cover the usefulness and suitability of the MONET system, an important impulse for refining and developing the monitoring system, as well as maintaining its dynamic aspect.

These three essays are then followed by short comments from members of the strategic and technical advisory groups, who provided expert opinions and a serious commitment at the start of the MONET project. These brief comments establish the breadth of the requirements of sustainability and provide important conclusions for the further development of the MONET system. It is in particular the explanations, of which some are especially practice-orientated, which clearly show the potential of the monitoring system, as well as the limits of statistical indicators in general.

Specific comments will encourage the further development of the MONET system

The SFSO, the SAEFL and the ARE have provided this platform as part of the final report on the MONET project in the knowledge that totally contradictory opinions may be expressed. It is part of the essence of sustainable development that new questions arise from the answers provided, and that different viewpoints and approaches can lead to theses which may be quite specific. The aim of the following commentaries is to demonstrate the variety of different interpretations and thus to encourage a broad and open debate.

The comments reflect only the opinion of their authors

The three federal offices would like to express the greatest respect for the personal opinions of the journalists and specialists which follow. The commentaries illustrate the varied expectations linked with sustainability. They are, however, only the opinions of the authors and do not necessarily reflect the viewpoint of the three federal offices on the subject of sustainable development.

We should like to take this opportunity to thank the authors for their serious and thought-provoking contributions.

Sustainability as a public project

By Alfred Neukom

There was a clear point at which the expression «sustainable development» acquired a political dimension and political importance: 1992, at the Rio Conference. The famous Brundtland definition of sustainability, on which the Swiss confederation's sustainability concepts are based, had in fact already been set out in 1987; the ideological and philosophical debate surrounding the principle of sustainability is even older and still applies today.

The demand for sustainability in the sense of a dynamic principle, i.e. sustainable development, originated in the field of ecology, more precisely in the ecological deficits of which the industrialised world became more aware in particular in the 1980s. The results of analyses carried out by the Club of Rome concerning the much quoted «limits of growth» played a major role. The fact that the world summit in Rio obtained a place in recent history not as an environmental conference but as a conference on development is the result of the efforts made by third-world countries. They saw the fact that they were trailing behind not as a result of their environment but of their social and economic situation. While, to put it briefly, the Brundtland definition of sustainability requires that communities at a national and global level should not survive at the expense of future generations, the developing countries represented in Rio demanded that the gap between them and the industrialised world be reduced. For them it was more important to consider their sad situation today and what it was likely to lead to than concepts for a vague and distant future.

Creating a global balance

As a result of the debate that has surrounded this issue, the concept of sustainable development requires that ecological, social and economic aims be reconciled. Sustainability in the sense of the decisions taken in Rio is therefore a global concept which is to be implemented both within national borders and at an international level. In view of the obvious north-south divide sustainable development has become a foreign policy issue for industrialised countries, and thus too for Switzerland. From an ecological point of view third-world countries, which are all in favour of sustainable development, will increase their pollution rate. As the principal generators of pollution worldwide, industrialised countries are to reduce their pollution rates, however, and furthermore to propose ways of ensuring the sustainable progress of developing countries.

Our country too therefore has a duty to make a corresponding contribution towards the Third World. At the same time the concept of sustainable development requires that domestic policy be based equally on the three pillars – the «magic triangle» – of sustainability. But this should be done not only with a view to political decisions that will have repercussions in the future but also in relation to any mistakes made in the past. A national policy of sustainable development cannot be based on a balanced or even an ideal situation in the present but must also take into account deficits in the past. And these are often, but not exclusively, to be found in the ecological domain.

Does sustainability mean taming ecology?

The expectation that sustainability, with its three pillars, should «tame», set limits on or marginalise ecology, which can sometimes be observed in politics today, has come from an unreliable approximation of a concept that has developed over time and is far from simple. The complexity of the term «sustainable development» means that it is liable to be misused politically. It contradicts the essence of the term if the three-cornered cloth is pulled over the edge of the table on one side only. On the other hand, it is very easy to argue whether in practice this happens or not. Adopting sustainability as an aim does not replace the political debate surrounding practical questions. There is no doubt that Switzerland's adopting the concept of sustainability in its revised constitution was a step forward. This meant that discussions concerning sustainability now have an institutional platform at the highest level, and ecology has a definite position within the «magic triangle» along with older and more established federal obligations but not more, in particular with regard to practice.

The MONET monitoring system examines the objectives of sustainable development in the form of 20 assumptions concerning social responsibility, economic performance and ecological responsibility. Proving these assumptions – the proof being obtained with the help of 120 indicators – reveals whether and to what extent Switzerland is sustainable or not. This raster, which is itself a political compromise, will be able to provide neither a conclusive nor a complete answer to the question of sustainability in Switzerland. But

it will indicate important developments that are relevant to sustainability in our country. Other aspects, some of them important, will not be touched on. The most important element not to be included, at least implicitly, is the fact that sustainable development is definitely a long-term concept. Long-term thinking is not fashionable in Switzerland. From this point of view our country can by no means claim to be sustainable.

Long-term vs. «we want it all and we want it now» thinking

Political, economic and social circles are all more or less equally criticised; it is least justified with regard to public authorities at all levels. At times these appear to be the only bodies which guarantee continuity and which can and must constantly focus on longer-term objectives. In view of the general hectic pace, the fact that the authorities are criticised for their immobility, inefficiency and slowness would seem to be rather absurd. Often politicians, like many of their countrymen, seem to be able to deal with only one or two major current issues at any given moment. These have to be sorted out as quickly as possible, during which time the mass of other issues are put on the back-burner until they become a priority of their own accord, often through some kind of disaster. The media follow this short-term activity – some even make a living out of it – but they are not the cause of it.

The pace of the constant change of issues can be partly attributed to private industry, to industrial leaders themselves, who at times claim that the rapid rate of change is a positive indicator of quality. One is tempted here to mention traditional and in the recent past disregarded virtues in relation to investment activities on the stock exchange. There is a degree of contradiction in this behaviour, since on the other hand industry demands that politicians provide «basic conditions for a market-economy system to ensure that long-term thinking pays off», as stated in a brochure concerning the MONET system that was issued in August 2002 by the federal offices involved.

Above all, long-term thinking is one of the key factors in sustainable development; the fact that it bears fruit only too rarely is today one of the major problems. In the early 1980s the youth movement in Switzerland called for immediate action, an attitude which seems to have become the secret motto of a whole society. But this way of thinking blocks the often highly divergent requirements of the sustainability triangle. It also prevents people looking beyond their own time scale at the initially unclear needs of the younger and later generations.

Moderation as a sustainable virtue

The expression «sustainable development» itself also contains a certain incentive for over-dynamism, however. A clear distinction should indeed be made between development in connection with sustainability and simple, quantitative growth: sustainability can imply that «development» is intentionally not adopted as an aim. Not that this should represent an attempt to reverse the wheels of history, however; the question here is moderation. Moderation can be a sustainable virtue. In reality such a position requires clear decisions taken after due consideration, both in the social and economic sectors and with regard to the ecological sector of the sustainability triangle. Experience shows that politicians have difficulty deciding not to do something, and not only in election years. But it is precisely in these circumstances that sustainability and the concept of sustainable development are at some not inconsiderable risk.

And so how sustainable does Switzerland appear in the light of the Confederation's views as outlined above? The answer will be subjective to a certain extent, even formulated on the basis of the MONET indicators; it depends on how the individual topics are weighted within the overall picture. The subjective and non-binding viewpoint of the journalist has to be compared with the political weighting if the concept is to have any practical consequences. Neither will the viewpoint of the political decision-making bodies – governments, parliaments – be «objective». But it will represent a compromise in the sense of a balancing of interests which takes into account more comprehensive points of view, at the same time being binding.

If one looks at a variety of relevant political areas it is clear that in most of them the question of sustainability and sustainable development has been addressed. At the same time, however, there seem to be contradictory developments. Furthermore, mistakes or shortcomings in the past have often not been addressed or what has been achieved with some difficulty is now in danger. Like every dynamic concept which is subject to political collective action, sustainable development runs the risk of being steered in the wrong direction. In many ways, Switzerland is both sustainable and not sustainable.

For this reason important political areas should therefore also be kept in view. As already stated, selection and in particular limitation are decided by the subjective viewpoint of the journalist. Examples of the ambivalence of sustainability can be seen in transport policy, among other things in the policy on trans-Alpine transport in connection with the NRLA project (new rail-link through the Alps) and the concept for financing public transport (FPT). Examples can also be found in policy on finance, energy and climate. In the case of spatial organisation policy, an effort is also being made to adopt a sustainably correct path, for example with regard to soil protection and maintaining the natural heritage. Seen from a superior standpoint, the expansion of Switzerland's infrastructure, with our tendency to go overboard and exaggerate tends to give a generally negative impression of the situation with regard to sustainability.

The sustainability of the NRLA

How sustainable is the NRLA project and its financing through the FPT fund? Does this major project fall within the framework of a type of development which can basically be termed sustainable? The first answer is no. The NRLA project aims to provide a solution to the problem of a continually increasing total volume of road and rail traffic and in some areas the necessity for it is questionable. This includes the transport of goods from north to south which, after rather meagre processing are then sometimes transported back north of the Alps. The famous case of Dutch potatoes being sent to Italy to be washed caused an uproar some time ago. New railway lines also take up land, divide natural habitats and cause noise pollution. During the long preparatory period of the NRLA project such aspects were discussed in detail and weighed up. The fact that the electorate voted twice in favour of the project and its financing can be accounted for in no small measure by the conviction that the NRLA would improve the situation in Switzerland with regard to sustainability. Various reasons were and are still given for this. By connecting the Swiss rail network with the European high-speed rail network the NRLA will be able to raise the competitiveness of rail transport in the face of air transport, which is considered less environmentally friendly, for short distances. The NRLA will also make it easier to shift freight from road to rail, which is one of the objectives of Swiss transport policy.

The preparatory work for the NRLA lasted several decades. The electorate's positive vote in a referendum in 1992 had to be reconsidered when it became obvious that the concept as planned would be too expensive and could not be funded. The FPT concept which encompasses the NRLA, the second stage of Rail 2000, connecting western and eastern Switzerland with the European high-speed rail network and protection against noise was a hard-won compromise which brought with it massive cuts in the original NRLA programme (in particular concerning access to the planned base tunnels). The slower pace adopted in the final phase, which became unavoidable for financial reasons, resulted in a feasible project totally within the definition of sustainability which a priori should not leave behind it an unreasonable level of environmental problems for future generations.

A maximum of two-thirds of the funding for the NRLA project (through FPT) will be obtained through the distance-related heavy vehicle fee (HVF), one-quarter from part of the tax on petroleum and by raising value added tax by a 0.1 percentage point. Three-quarters of the construction costs should be covered through these sources, the remaining 25% representing a loan on which the Confederation will pay interest as well as paying back the capital. In other words, allowing for a certain degree of delay, when the NRLA tunnels have been completed according to present plans 75% of the cost will already be paid. Three-quarters of the financing of the NRLA project can therefore be considered sustainable; future generations will not have to worry about this part of the construction costs. In comparison with other European countries which continue to have problems with financing Alpine rail projects this is an impressive – even excellent – achievement for Swiss policy.

How precarious the construction of forward-looking infrastructure can be is evident from the fact that merely the interest, not to mention repayment of the remaining 25% of capital is by no means ensured today. This burden will be borne by our children, who will also have to pay for the maintenance of this monumental project. In addition, in all honesty we cannot guarantee its usefulness in the distant future. We can only state that the St. Gotthard rail tunnel, which was built in the 1870s, has remained an essential rail link to this day. It can therefore be concluded that embracing technological progress can be sustainable, although, in the case of larger and more expensive projects, it should be combined with caution and restraint.

For the moment there are tangible problems involved in the NRLA project in relation to the European Union and in particular to our neighbours to the north and south. First and foremost, the construction of connections in Italy is not yet assured. In the transport sector too, a policy of sustainability is most effective as a policy of international networking; with respect to the NRLA, as on other issues, there are important tasks involved for Swiss foreign policy.

Many additional, mostly regional, wishes concerning the continuation of the NRLA project are proving to be a hindrance to pursuing the path of sustainability. Restraint is called for because the limits to which the project can be financed by the present generation will quickly be reached.

Risks for spatial development and land

One uncertain aspect remains, and that is the sustainable effect of further large-scale public transport projects. It remains to be seen, for example, whether Rail 2000, with its quicker intercity connections, will reinforce the residential importance of urban centres or whether it will lead to the spread of suburbs until they merge into one another. Strengthening the role of town centres, combined with the consolidation of the outskirts of agglomerations would be a contribution towards sustainable development. It is clear that spatial development in Switzerland, in particular in the central lowlands, will depend not only on the effects of rail infrastructure but at least as much on the road network. In addition, spatial development will be governed not only by transport but equally by other factors and political issues. In Switzerland the regulations concerning construction are still too vague and the landscape is still being spoilt, and quite rapidly, through the indiscriminate spread of settlements of low density. The resulting loss of land is proceeding at an alarming rate. In this respect Switzer-

land is a good way from achieving sustainable development, although the problem was identified and recognised as such a long time ago.

There are many reasons for this, and there is a strong risk of these reasons being weighted in a very one-sided way or even reduced to monocausal connections. There is no question that the population of Switzerland, especially in the central lowlands, has increased considerably (by over two million) since the Second World War. The tendency to see the demographic problems only from this point of view and often only as problems caused by immigration, sometimes even as problems caused by asylum seekers, is quite unacceptable. Xenophobia cannot be reconciled with sustainable development, which is an anthropocentric concept from a historical approach. It is not merely the larger population that is responsible for expanding settlements but also the individual's greater need to have more living space or to break away from old familiar structures to a certain extent and live independently or as a single parent. The latter is not only the result of individuals increasingly claiming the right to self-determination and self-achievement but should also be seen as being in the interests of private industry, which offers advantages to employees who are more flexible. Industrial and commercial zones have also expanded within agglomerations without, however, taking the pressure off urban centres. The amount of land sacrificed for transport, in particular roads, has increased enormously. This trend is continuing although, in view of the dense transport network that exists today, there would appear to be little need for further development. Social and economic realities have so far proved stronger than planning incentives and solutions.

One would be ignoring the reality if one were not to identify two main causes of these hard to sustain developments: Switzerland's federal structure and the autonomy of local authorities with regard to decisions on spatial development, which is of critical importance in most cantons. Furthermore, problems of agglomerations are much more widespread geographically speaking, without question in the Basel and Geneva areas and the Ticino, but increasingly in the Zurich area too. Omissions in relation to assessing the situation beyond our borders can be seen for example in the present dispute concerning approach and take-off paths for Zurich airport. Nevertheless, most of the planning tools which can be used to address outstanding questions are available, for example models for rural development concepts. Many of the difficulties involve making transregional, political decisions.

The energy supply cannot be considered sustainable

The main question-marks concern the sustainability of energy supplies in Switzerland. This critical sector exemplifies the current and future need for the global integration of Swiss policy on sustainability, relations with the country's immediate neighbours being of particular importance. Switzerland is totally dependent on oil to supply the population with natural gas and fuel. Oil still plays a clearly dominant role as an energy source, as it does in all other industrialised countries throughout the world. The conditions under which the consumption of oil is promoted in some oil-producing countries and the problems of the international transport of oil, which is of essential importance to Switzerland in present-day circumstances, are issues that need be to discussed in this country from the point of view of sustainability.

Anyone who mentions the limited supplies of world-wide oil reserves (including bitumen and oil-shale) is mocked and hardly taken seriously, especially by the economic sector. This shows people's inability to think in the long term, as mentioned above – a basic requirement for sustainable development – rather than an intellectually confident approach to reality. It must be admitted that the 30 to 40-year limit of oil supplies once mentioned by the Club of Rome has since proved pessimistic, but from the point of view of sustainability it is irrelevant whether supplies of oil and natural gas will be available for only the next 30 years or for 130 years. Even from the most optimistic point of view, a child born today will not be able to offer his grandchildren an «oil age» as we know it today.

Alternative energy sources have been adopted worldwide, including in Switzerland, to a very minor degree so far. The slowness shown in this respect is being perpetuated by a temporary excess on the energy markets of industrialised countries. The predictable consumption of oil supplies is totally and clearly contrary to the most elementary principles of sustainable development, however. The consumption of oil in heating systems and vehicles that often have a deplorable degree of efficiency, and to bolster up a wasteful «plastic age» is and will remain a scandal. Future generations will have no oil to consume. From the point of view of a sustainable use of resources this is not acceptable.

In this connection the idea of a tax on energy sources has found too little approval. If it were not designed as a rise in state tax quotas at least, such a tax would be compatible with the basic principle of sustainability. It would need to be designed to affect both the general public and industry as fairly as possible. It would also have no negative consequences for future generations. The results of various votes over the past few years have shown that such new ideas cannot be forced through against the will of industry and industrial organisations. On the other hand, it is not unjustified to expect that a new idea which after all is creative and which affects the country's financial situation and economic conditions should be supported by industry.

A serious policy on climate

In its policy on climate, Switzerland has taken serious steps with regard to sustainable development. The CO_2 Act relies first and foremost on measures being taken voluntarily. A tax is envisaged only if the climate objectives of the Act are not achieved. This concept, which takes into account the main demands of industry, has been supported by the industrial sector so far. The question of whether the CO_2 Act fully complies with the Kyoto regulations or whether differences still need to be ironed out is of secondary importance in view of the long-term scope of the Act. The decisive factor in assessing the Act is that industrial organisations and the main companies represented by them realise that action is needed and have drawn their conclusions with regard to their own position. Perhaps the policy on climate can be used as an example for policy on other issues where a common denominator for strongly diverging interests has not yet been found, for example for controlling the consumption of fossil fuels for a great variety of purposes.

A heavy debt for future generations

Deficits in the public coffers which are virtually impossible to eliminate clearly constitute a serious limit to the scope of action of future generations. In an elementary sense, an economy based on debt is not sustainable. It is wrong, even most reprehensible, that children should pay for what their parents have squandered. On all its federalistic levels, Switzerland follows this unacceptable example; admittedly, however, there are some exceptions, principally at a local level. Even when more or less sustainable funding methods are found, as in the case of the NRLA for example, it should not be forgotten that even infrastructure which has been paid for in full has to be maintained and will therefore generate costs for a long time to come. Urban development in Switzerland, which in view of the loss of open land is not ecologically sustainable, means that existing infrastructure needs to be expanded and generates economic costs that will unquestionably be a heavy burden for future generations. This is a dubious development, especially since there are indications that future generations will have to adapt their lifestyle to lower incomes than those of the present population of Switzerland. It can be predicted today with certainty that the proportion of the population which lives below the poverty line (the «new poor») is set to grow. From a social point of view Switzerland is not developing in a sustainable manner. There are already serious doubts about the future.

Switzerland is not sustainable

By Susana Jourdan and Jacques Mirenowicz

The classical definition of sustainable development tends to confer equal importance on the three basic pillars which it comprises: environment, society and the economy. Sustainable development brings nothing new if the ecological dimension is not properly integrated into aims concerning prosperity and social justice. This does not mean that the environment must systematically take priority over the two other pillars, but that it provides binding conditions to which industrialised societies must adhere if they want to survive into the future.

From this point of view, the report on the MONET project for the first time provides indicators for an overall picture of sustainable development in Switzerland

I Findings of the MONET project

The population of Switzerland is a happy one

To start with, the population of Switzerland considers itself happy. All indicators concerning satisfaction with life (Section 3) are at all-time high: 80% of the Swiss population, and up to 87% of old people, profess to be happy with the life they lead. The falling suicide rate bears this out. Even poverty does not change the picture: 75% of the Swiss people who live in poverty are satisfied with their lot, compared with 82% of their more prosperous compatriots. This figure is hardly less than that for the least satisfied age group, the 25-39 year olds, of whom only 76% are happy. Another statistic contradicts this finding, however, at least in part: only 48% of the population consider that their psychic well-being is good.

Swiss people sort their refuse, breathe better air and enjoy a higher quality of water

Thanks to efficient measures that have been taken, the processing of waste (Section 18), the water quality (Section 20) and the air in urban areas (Section 21) in Switzerland have improved. The proportion of sorted and recycled refuse rose dramatically from 15% in 1970 to 46% in 2001. Water consumption per inhabitant, which reached a maximum in 1971 with 505 litres per person per day, has fallen to 400 litres. Since the 1970s the level of phosphates in Swiss lakes has dropped. Thanks to catalytic converters, filters and more efficient combustion, the quality of the air has improved over the past twenty years.

Employment is becoming critical and the economy is indifferent to eco-efficiency

Between 1980 and 1991 the gross domestic product (GDP) per head rose by 12.8%. Between 1990 and 2001 the rise was only 2.9% (Section 15). This economic deceleration was coupled with an increase in unemployment which is, however, still low in comparison with the rest of Europe. But the situation with regard to employment is becoming more critical. In 1999 7.5% of those employed could be classified as working poor, compared with 5.5% in 1992 (Section 13). Most of those concerned worked part-time. As a result the proportion of people living below the poverty line rose over the same period from 8% to 10.6% (Section 1). Since 2001 the trend has changed. The proportion of working poor and those affected by poverty has fallen, and 91% of those in employment are still satisfied or «quite» satisfied with their jobs (Section 13).

In 1980 energy consumption stood at 0.29 kWh per Swiss franc value added. Ten years later it was only 0.26 kWh, corresponding to a drop of 10% in energy consumption through manufacturing. This trend did not continue, however: from 1991 until the end of the 1990s energy consumption was 0.28 kWh per Swiss franc value added (Section 15). The fact that the Swiss economy appears to be indifferent to eco-efficiency is also shown by another indicator: only 0.3% of companies (883 out of the 295,000 included in the survey) have ISO 14001 certification (Section 9).

Enormous rise in traffic and no drop in CO_2 emissions

In 1993 an average of 154 g of CO_2 was produced per kilometre travelled by each person on the road; in 2001 it was only 140 g (Section 22). This 9% reduction was achieved thanks to technological progress, despite the increasing number of heavy-duty vehicles, stronger engines and air-conditioning in cars. On the other hand, the dramatic increase in private road traffic (17.5%) over the same period resulted in a rise in total CO_2 emissions of 5% (Sections 17 and 22).

Even more marked is the trend in air transport: the number of aircraft taking off and landing in Switzerland rose by 31% between 1995 and 2001 (Section 17), the vast majority of these movements involving pleasure flights (Sec-

tion 5). The amount of CO_2 produced by air traffic already represents 13% of total CO_2 emissions and, if this trend is not stopped, the figure will be 30% in 20 years' time (SAEFL, 2002).

Freight transport, which reflects the close links between the Swiss economy and that of other countries, has also increased considerably: the figure for tonne/km of goods transported rose by over 30% between 1990 and 1997, this increase being accounted for entirely by road transport. Foreign trade, which represented around 36% of GDP in 1990, reached a level of 45% in 2000 (Section 11). And while in 1970 60% of freight was still being transported by rail, this figure has now fallen to 32%, the rest being transported by road, which causes much more pollution for the environment (Section 17).

With the ratification of the Kyoto Protocol, whose aims must be considered minimalist in view of the size of the problem and which does not include pollution from air traffic, Switzerland has undertaken to reduce its emissions of greenhouse gases between 2008 and 2010 to a level 8% below that of 1990. These emissions remained stable between 1990 and 2000 despite the fact that final energy consumption for transport rose by 18% (Section 17) and emissions in this sector rose by 10% (16% if one includes air traffic; SAEFL, 2001). Road traffic remains the principal source of greenhouses gases in Switzerland (30%; SFSO, 2002).

The fact that total CO_2 emissions have fallen can be accounted for by the rise in mean winter temperatures, falling emissions in the industrial and agricultural sectors and the increasing use of renewable energy sources, the latter having risen from 14.7% to 17% of final energy consumption between 1990 and 1997 (Section 25). Overall, these reductions balance out the increase in emissions caused by road traffic.

Technically induced ecological progress thwarted by changes in lifestyle

The sustainability indicators show that this phenomenon has a general significance beyond merely transport: the overall increase in the level of activity as a result of changes in lifestyle renders technologically necessary ecological improvements ineffective.

Between 1994 and 2000 the proportion of households with a car rose from 75% to 80%, with 24% of households having more than one car. On average there are 117 private vehicles for every 100 households. Households with more than one car are mainly found in rural areas where those concerned seek to enjoy a better quality of life, preferably in their own region.

The increase in the amount of built up area per person corroborates this trend. In Switzerland 0.86 m^2 of land is concreted over every second; there is on average 397 m^2 of built up area per inhabitant, as compared with 382 m^2 fifteen years ago (Section 23). The general increase in road traffic can thus be explained by the trend towards a low density settlement pattern which creates a greater demand for residential areas and roads and results in increased mobility, energy consumption and CO_2 emissions.

A comprehensive health-care service does not result in improvements in health

The rising cost of health is the main concern of the Swiss population (GfS Research Institute, 2002). This trend is the result of more expensive treatments, technology and medicines (Section 2). This rise in medical costs has not led to improved health among the Swiss population, however. At the same time for example, the number of smokers has risen (by more than 2% in the space of 5 years) to more than 30% of the total population and the number of people who take sufficient exercise has been falling in the past ten years. In addition, four million people are subjected to amounts of dust particles in the air which exceed permitted levels of air pollution.

Switzerland shows little solidarity

Solidarity is definitely not on the increase. The growing frequency of trips to southern countries apparently does not encourage Swiss people to favour increased cooperation with these parts of the world: the proportion of GDP earmarked for development aid (0.34%) is way below the 0.7% level recommended by the United Nations. And only 25% of the population feels that development aid should be increased (Section 7).

II Conclusion: Switzerland is not on the road to sustainability

The indicators mentioned above show that Switzerland is not steering a path towards sustainability.

According to an all too common concept of sustainability, which gives priority to factors such as sorting refuse, catalytic converters and dust filters, more efficient combustion engines, leak-proofing sewage pipes, economical flushing cisterns and the manufacture of less toxic products etc, Switzerland is on the right path. And it is true that many areas of progress and behavioural patterns indicate a greater ecological awareness. But these positive trends do not counterbalance the overall increase in activity.

This increase is connected with changes in lifestyle. Consumption is increasing because the population has adopted a different way of life: the desire for a house with a garden, a car, to fly to a far-off country, to buy food and other products originating on the other side of the globe all help to make Switzerland – and the rest of the world – unsustainable. Not only is the population explosion continuing:

on average, each individual consumes more, occupies more space and travels more. And the sum of this increased individual consumption has an overall effect which prevents Switzerland from adopting a clearly sustainable path for the future.

The extent of this change endangers the progress that has been made with regard to the quality of water and air, although to maintain ecosystems and to protect the health of the general population it would be necessary to further reduce phosphate levels in Swiss lakes as well as the levels of ozone and dust particles in the air. As far as sorting refuse is concerned, this has no effect on the overall mass of refuse generated, which is still growing.

Many people believe that with the increasing spread of information technology Switzerland will become a «post-industrial society» in which, from a commercial point of view, intangible goods such as knowledge and innovation will replace manufactured goods. The results of the MONET project have shown that this belief is unfounded. It is true that the reduction in the amount of energy used in industry in the 1980s was unquestionably a sign of dematerialisation of growth. The subsequent levelling off of this trend showed that the idea of a clean or non-polluting «qualitative growth» is a pipedream, however.

Hoping to reconcile growth in consumption and GDP with the requirements of sustainable development is the quadrature of the circle. Whether to accept the primacy of industry or to maintain the natural heritage: a decision has to be taken. At present industry is winning the battle, which is preventing Switzerland from following the path of true sustainable development.

III On the way to create a sustainable Switzerland

Replacing the GDP by other scales of measurement

In order for Switzerland to be able to make the necessary changes in the direction of sustainable development it first of all needs to adopt a new reference system for its activities. The MONET project offers a range of indicators which are far more suitable than GDP, which is used at the moment to measure the country's prosperity. The following explanations will illustrate why.

The basic problem preventing a change of course towards sustainable development lies in the fact that, even if it were well informed and aware of the findings of the MONET report, Swiss society would be incapable of drawing the necessary conclusions. Swiss institutional structures are not suitable for implementing such a change.

In this context, institutional structures include values, norms, legislation, regulations, state measures, voluntary agreements, traditions, customs and, last but not least, national and international bodies which together govern individual and collective behaviour (Hinde, 1997). In Switzerland, as in other industrialised countries, the institutional framework of politics does not allow for a comprehensive and real absorption of the findings set out in the MONET report.

The existing institutional structures have the historical task of dealing with scarcity. It is therefore logical that they are not able to deal with the excess and the social and ecological imbalance which is characteristic of non-sustainable industrialised societies. Since the Second World War, these structures have been well anchored in the public's mind. The predominant factor is economic thinking, aimed at the key objective of growth in GDP, which in turn is nurtured by scientific progress (Mirenowicz, 2000). The political and trade union culture, which is an integral part of in this social mindset, continues to give priority to the business sector at the expense of other social and ecological parameters. Thus, on an international level, for example, the World Trade Organisation (WTO) carries more weight than the Kyoto Protocol.

Changing a reference system implies reducing the importance of GDP and abandoning the belief that all problems can be solved by technology.

Goodbye to unquestioning belief in the economy and to the delusion of technical feasibility

This is not the place to argue about whether research and development will help Switzerland and every other industrialised country to achieve sustainability. Many problems can be solved through new technology. The results of the MONET project have shown, however, that it is hardly a suitable tool for promoting changes in behaviour.

Social or institutional innovation is a much more important element in this respect. Innovation must encourage the Swiss population to stop turning a blind eye to the unscrupulous destruction of the natural heritage of future generations.

Since the MONET project implies a by definition positive relationship between sustainable development and the number of scientists, patent applications and public expenditure on research, it encourages an outdated belief in technology and progress (Section 12). Not all research proposals serve the aim of sustainable development. And it is not always the projects that would contribute most towards sustainability which receive the most backing. For example, public expenditure for research in the field of energy has fallen in real terms. And in 2003, for the first time ever, more money will have been spent on saving energy than was used to provide nuclear power (SFOE, 1999).

The aim of the concrete proposals set out below is, on the one hand, to abandon the institutional structures which dominate the decision-making arena and prevent Switzerland from adopting a policy of true sustainable development and, on the other hand, to promote the creation of

structures which favour a change of direction towards sustainable development.

IV Four concrete proposals for a change of course

1) Awareness campaign on the significance of the MONET project

The fact that for the first time reliable and comprehensive data is available on the situation with regard to Switzerland is a good thing. It can help to eliminate the first obstacle on the path to sustainable development: ignorance. Although no survey has been carried out to reveal the level of awareness among the Swiss population (or their representatives at a local, cantonal and federal level) of the importance of sustainable development, it can be presumed that such awareness is meagre. The first recommendation is therefore that a large-scale awareness campaign should be organised around the MONET project in order to familiarise the population, in particular those responsible for taking decisions.

Experience shows, however, that such targeted information input rarely has much influence on decision output. It was observed, for example, that the sustainability indicators that were to be used for the local development of four cities (London, Lyon, Vienna and Winterthur) play no role in practice (The Pastille Consortium, 2002).

At a national level, the latest parliamentary negotiations surrounding the «Avanti» popular initiative show that sustainability indicators can only have any real influence on decisions if they are embedded in a political culture and a government system which accord them a proper value. As long as this is not the case, like the conclusions of the National Research Programme 41 (NRP 41), they will wilt on the shelves of the research stations that proposed them. The challenge of striking out on a new course towards sustainable development consists principally of overcoming this inability to use the data which is available.

A case study: the debate surrounding the Avanti initiative

December 2000: The National Council discusses the Avanti initiative and the Federal Council's counter-proposal. Both proposals are aimed at eliminating problems to do with the national road network. They propose that a third lane be added to the Bern-Zurich and Lausanne-Geneva motorways and the construction of a second road tunnel under the St. Gotthard Pass. These discussions took place one year after the publication of the results of a five-year research study on traffic in Switzerland funded through the National Research Programme «Traffic and the Environment: Interaction between Switzerland and Europe» (NRP 41). The conclusions drawn underline the necessity of coming to grips with the demand for mobility, in particular in air traffic and recreational travel. In addition, 41 measures were proposed for a sustainable policy on transport. The parliamentary Transport Committee was informed of these conclusions in detail.

The proceedings in the National Council show that only the opponents of the proposed road works referred to the recommendations of NRP 41 and included keywords such as «CO_2», «climate» and «environment» in the discussions. Those in favour of the proposal did not utter these words once. They rejected all their opponents' arguments with one sentence: «Sustainable development also means ensuring that traffic flows freely and safely».

2) Sustainability indicators must be yardsticks for each political proposal

Assessing sustainability implies estimating the consequences of bills debated in parliament, in relation to sustainability indicators, before they become legislation. This measure, which is already justified in itself, can further help to ensure the necessary inclusion of sustainable development in policies. As part of its Strategy 2002 for sustainable development, the Federal Council plans to introduce such a measure. The second recommendation is therefore that this proposal from the Federal Council should be implemented as quickly as possible.

3) Encouraging basic democratic processes with ordinary people

Present-day lifestyles and behaviour are important causes of the lack of sustainability in Switzerland. A sustainable policy can therefore not be successful without including the main protagonists – the population. As in the case of the decision-makers, however, simply providing information is not enough to incite the man in the street to think and act in an appropriate manner. In order to confront the general

public with the consequences of their lifestyle and to include them more directly in the process of collectively adopting the MONET indicators, the third recommendation is aimed at organising basic democratic events like the Publiforum (Mirenowicz, 2001; Bütschi, 2002) or workshops on different scenarios (Andersen and Jæger, 2003).

4) Promoting the involvement of cantonal authorities in the MONET project

A project is currently underway which aims at providing a uniform set of sustainability indicators for cantonal and local authorities in Switzerland (LaRevueDurable, 2003). In order to expand the influence of the indicators it is recommended that similar measures be introduced at local and cantonal level as have been proposed at a federal level, i.e. to assess all decisions with reference to the sustainability indicators (the cantons of Geneva and the Ticino are already working on this) and to organise events for the general public.

V Further operational proposals

In addition to these four proposals for a change of course, general and operational measures can also encourage a change of direction towards sustainability. Some of these measures are described in brief below:

A In Switzerland

1) Introduction of an ecological fiscal system

The fact that it has not been possible so far to reduce the amount of energy used in manufacturing to any great extent and on a permanent basis is proof that energy is too cheap. Taxation is needed if the external costs generated by energy consumption are to be covered. In comparison with its neighbours, Switzerland is slow to raise the price of energy and thus take the burden off salary bills (Section 12). Despite the electorate's rejection of four proposals concerning ecological taxes over the past few years, this issue needs to be revived soon. Above-average tax relief for those on low incomes would help to improve the lot of the working poor.

2) Promoting local Agenda 21 processes and ISO certification

The launch of local Agenda 21 processes and ISO 14001 certification are good tools for education and creating awareness. It must be said, however, that the number of boroughs in Switzerland that have already initiated a local Agenda 21 (36), is very low. The same applies to the number of firms that have been given ISO 14001 certification. Local authorities and private industry need to be more effectively motivated to introduce such projects through financial incentives.

3) Investment in preventive medicine in the health-care sector

The proportion of total expenditure in the health-care sector spent on preventive medicine must not be reduced but on the contrary increased. This would be an appropriate political reaction to the trends that are currently a burden on the health-care budget (more smokers, less exercise).

B On an international level

1) Commitment to more humane commercial regulations

In its Strategy 2002 the Federal Council underlined its intention to raise expenditure on state development cooperation from 0.34% to 0.4% of GDP. Solidarity is admirable; social justice is a much more worthy cause, however. Switzerland should back the cause of fairer trade. By calling for as much protection as possible for patents on medicines at the WTO, for example, it is preventing Aids victims in poorer countries – who represent 95% of those suffering from Aids throughout the world – from having access to affordable anti-retroviral treatment.

2) Taking the negative consequences of deregulation seriously

A study needs to be made urgently of whether it makes sense to continue along the path of global deregulation. In order to be able to take into account the social, cultural and ecological consequences of world trade properly, the WTO must also be far more open in its relations with civilian society.

3) Strenghtening international environmental organisations

An international institution would constitute a counterweight to the power of the WTO which would be able to represent the combined interests of the environment, urge caution and defend the rights of future generations. A first step in this direction would be to reinforce the United Nations Environmental Programme (UNEP) by increasing its budget and expanding its mandate. The UNEP is only a subsidiary coordination programme within the UN system, however. The aim would have to be to convert the UNEP into a real worldwide environmental organisation that would be able to take up the enormous challenges regarding sustainable development. A critical factor in this necessary change would be to include civilian society, which would definitely not be an easy task for a UN organisation.

4) Taxing air traffic

Swiss people are «frequent fliers». With a tax on avia-

tion fuel and legislation which prevented companies offering extremely low-price flights this trend could be slowed down. Such proposals would only be effective on a worldwide scale, however. The UNEP or a worldwide environmental organisation could play an important role in this respect.

A final word

Steering Switzerland on to a sustainability course by abandoning the principle of referring to the use of GDP to measure anything and everything requires political courage and innovation. Such courage and innovation can only be brought to the fore in society by constantly questioning the future and encouraging broad, public discussion.

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Trouble with the social contract for sustainable behaviour

By Christoph Allenspach

Is Egypt sustainable? As I was travelling through the country on the banks of the Nile, I had plenty of time to consider what sustainable development actually means. Away from my accustomed setting of Switzerland, my mind and body were confronted with completely different realities, with the kind of contrasts that surface much more vividly in a poor country in the south than in a wealthy one in the north. I stood amid a milling crowd of people, surrounded by the noise and diesel fumes from the chaotic Cairo traffic, and a few hours later, I was surrounded by virtually intact desert landscapes, empty of people. Both were fascinating. I saw wretched poverty and piles of garbage in the districts of one of the world's largest metropolitan cities, and in the remote villages, I witnessed people's daily battle for survival – as well as their solidarity. In the boutiques of Cairo's new shopping centre, I saw the upper-class youngsters buying clothes that are prohibitively expensive for the majority of people. Even so, the shelves display the country's own products, made of Egyptian cotton, not the international labels. The few tourists who had still ventured to this Islamic country in spite of the war in Iraq were stretched out on the beaches, segregated from the native population. Countless checks by hundreds of police and soldiers irritated me from one end of the country to the other. However, my irritation was soon put into proper context by ordinary people's concerns and their bitter comments about the war in Iraq, and about the way the USA and Britain – and their leaders – understand democracy.

Egypt is one of the poorest countries of all, and seen through Western eyes, it is neither ecological nor democratic. This country will not want to set up any indicators to prove its sustainability. Switzerland, on the other hand, sets great store by its clean engines and swept streets, its strong economy, its social aid for weaker individuals, and its mature democratic structures. For the Egyptians, if they happen to know Switzerland, it must seem like the Promised Land: clean, green and wealthy. Switzerland has the affluence to which the people in the South also aspire. But how exemplary is Switzerland's development? Is its behaviour so much more sustainable than Egypt's? And how sustainable is that behaviour, measured in terms of the country's financial and logistical resources, and the high average level of education?

Is Switzerland sustainable?

Among the 100 or so MONET indicators, there is no survey of the Swiss population to find out whether they regard Switzerland as sustainable. I imagine that a majority – perhaps even a large majority – would have answered 'yes' to this question. For most people, sustainability would be synonymous with ecological sustainability, and many Swiss (both men and women) have become aware of this aspect. However, I am sure that the profile of such a survey would turn out to be more heterogeneous as more questions were put. Anyone who gives extensive thought to sustainability in society, the economic sector and the environment, will soon encounter contradictions or even unbridgeable conflicts in Swiss society which do not serve the purpose of sustainable development:

- Switzerland is one of the richest countries in the world, and yet part of the population is living below the poverty line. The social authorities in the cities are supporting increasing numbers of the working poor, people who undertake full-time work but whose wages are not sufficient to support themselves and their families. Social expenditure is rising because many people are not paid enough for their work.
- The Swiss economy operates at a high level and is still a factor on the global market, even though several important companies have had to cut back in recent years, or have been integrated into larger corporations. However, this economy is not able to offer adequate social security to the people of the country. Young, capable and intelligent people look to the future with concern, and older employees have cause to be worried about their jobs. And who would like to wager that cushioning measures by the public sector, such as the unemployment fund, will be able to resolve these difficult situations in the long term?
- Switzerland is a free and democratic country. However, hundreds of police are deployed for important national and international conferences, demonstrations and other events. Fears of a few «anarchists» and of attacks are widespread. In return, people accept that the citizens' freedom of movement is restricted. The political sector has not yet found any other response to dissatisfaction

and the readiness to use violence.

- Environmental protection is reported as a success. The good quality of the water, the cleaner air, healthier food and recycling of re-usable materials are the fruits of a policy that goes back many years. But are they adequate in view of the technical and financial possibilities, and given the knowledge that the health of the people and of the environment is still at stake?

This list could be continued indefinitely with more examples, some major and some minor. At the very least, contradictions of this sort suggest that a developed democratic form of government, a more or less stable economy and level of affluence, and an awareness of the environment are still far from adding up to sustainability.

Networked thinking for sustainable behaviour

In the brochure entitled «Measuring Sustainable Development», which was published last August by the SFSO, the SAEFL and the ARE in connection with MONET, there are about 20 postulates for sustainability for more than 100 indicators that are presented. They read like a vision for a society based on justice and solidarity, where each individual can find his or her suitable place. «Every member of society should have the same rights and opportunities. A more just distribution of resources should be the aim», one of the key sentences in the brochure tells us. Nobody would seriously want to claim that Switzerland is anywhere close to attaining this goal. But is it at least making adequately consistent progress along the path towards sustainable development? What do sustainable thinking and behaviour actually mean in a wealthy country?

We know something about the discrepancy between thoughts and deeds. For example, a referendum decision by the voting citizens that is relevant to the environment does not necessarily lead to behaviour that is relevant to the environment. Postulates aimed at protecting the countryside have a good chance of gaining majority support, but Switzerland's countryside continues to be under heavy pressure from urbanisation, traffic and leisure activities. Many people want to protect the environment when they are at the ballot-box, but fewer individuals are truly concerned about modifying their own travelling habits. Likewise, it is generally known that affluence is substantially based on the unchecked exploitation of nature and resources throughout the world. Similar conclusions can be drawn in the social sector. Everyone backs a future for young people, and solidarity with people in weaker positions. But initiatives that propose innovative developments for Swiss society are regularly rejected. We are a risk society (Ulrich Beck's phrase) that accepts hazards even though it knows better. How is a society of this sort going to be able to put sustainability into practice?

Many of the 100 MONET indicators prove that the first dawnings of sustainability are present. However, we are a long way from sustainable development. Sustainability calls for networked thinking and action. The political sector and the public administration are primarily dealing with small sub-areas, as are the business world and the institutions. Measures and decisions affecting one small area are too rarely coordinated with other areas, and little thought is given to their effects. Everyday life in Switzerland is characterised by fragmented thinking and behaviour.

Networked thinking is not taught in schools, nor is it an important factor in the business or political worlds. It is hardly necessary for a professional career. On the contrary: anyone who wants to make fast progress in a career is forced to focus on one narrow area. A sportsman can only consider his sporting performance, a manager can only think about the conditions of the market economy, and a politician has to represent short-term minority interests if he wants to be noticed by the media and the electorate. There is little demand for generalists, because their thinking and behaviour contains more layers, and the path to the goal is longer. Learning has a one-dimensional structure and is mostly based on knowledge that the students learn by rote. However, a learning process aimed at networked thinking goes beyond the history of the Romans, mathematical formulas and correct spelling. It calls for a sophisticated creative process, lateral thinking and links between the facts.

If Switzerland wants to travel a sustainable path, it will have to consider how education, and how economic, political and social thinking and behaviour can be made multidimensional. Sustainability can be achieved if a society rewards sustainable thinking and behaviour.

But when is action sustainable?

Which criteria should we use to identify sustainability? It is revealing to read media reports and comments from a sustainable perspective for a few weeks. However, this «reading course» is even difficult for people who have given some attention to the theories and criteria of sustainable development. The exercise is easier for environmental protection than for economic or social topics. You do not need a critical mind to ask the following question about analyses with a seemingly sound scientific basis, or decisions that are backed up by experts: is this actually sustainable and is it in line with future needs, or does it merely represent minority interests? I would like to illustrate the difficulty of judging this issue with the help of two examples, one from the economic sector and one from the area of environmental protection.

A well known newspaper informed us a few days ago that Switzerland is now less attractive as a business location. What is the basis for this statement? A management institute draws up an annual ranking list based on criteria which are classified as promoting or inhibiting business. The gov-

ernment and population of Switzerland are not sufficiently able to adapt, the report states. This more or less means that they are not sufficiently in favour of globalisation. But particular criticism is levelled at the excessively low growth rate. Considerations of sustainability played no part in this assessment.

Growth measured by the gross domestic product (GDP) is an important indicator for the economy in MONET. What is more, growth is capable of gaining majority support and it is an important factor in the prosperity of the economy – and ultimately of society – throughout all the political camps. But how sustainable is growth, and under which conditions? People over 50 still recall the productive discussions in the 1970s about the limits of growth and the critical views expressed by the Club of Rome, which drew attention to the finite nature of resources. Growth also costs jobs due to rationalisation, and it puts pressure on public budgets due to increased social expenditure. The drive for higher productivity leaves weaker firms behind, and causes stress at the workplace as well as physical and mental health problems. Growth can harm the environment if the products are not suitable, or if their manufacture does not ensure adequate protection for resources and the environment due to the profit motive.

So does it follow that growth is sustainable? The question could also be phrased: how much GDP is compatible with sustainable development? Isn't GDP an indicator that can be evaluated as sustainable for the single area of the economy, whereas it can have damaging effects in other areas of life? So does it follow that growth is useful?

The question of waste and how to dispose of it can also throw up very similar questions, and this is a problem which has evidently been solved on a clearly sustainable basis in Switzerland. The quantity of waste sent for incineration is falling, so the indicator should be rated as a positive sign, according to MONET. Indeed, the population's behaviour with regard to the waste problem is considered to be exemplary because they sort out large quantities of glass, plastic and paper. This falls short of the mark. On the one hand, the balance sheet for the total quantity of waste (including all substances) which is sent for recycling is in fact quite different. The quantity is actually increasing. On the other hand, whole mountains of materials are currently being burned although they could very probably be recycled as well. Or these materials should never have been produced in the first place. Many products – including their packaging – which are on the market nowadays are either useless, are produced with excessive use of energy and resources, or are too short-lived, and they are thrown away too soon. Viewed in the short to medium term, new products are basically high-quality waste from important raw materials which are first taken from nature and are ultimately removed from the production cycle and destroyed. A well-organised and expensive waste removal system ensures that they are not left lying around in the countryside, with incinerators to ensure that they are eliminated without major emissions. The problem is disposed of cleanly. But does this system amount to sustainable behaviour?

On this point, let us draw a comparison with Cairo, where the streets in many districts are strewn with filth and waste, and where the administration of this city with 17 million inhabitants is nowhere near being able to cope with the problem as a public service. Even so, the waste problem is solved to a large extent. In Ard el Liwa, one of the poorest districts, about 5000 waste-gatherers live in ruined shacks on the edge of a huge waste dump: they are the *zabalin* who originate from the Coptic minority. Early in the morning, they drive their trucks to Cairo's wealthier districts where they collect the garbage. Women and children sort the waste. Remains of food are fed to the pigs, while metal, glass, plastic and other recyclable materials are neatly segregated and sold to dealers. In this way, more than 80 per cent of the collected waste is recycled – a dream figure. The *zabalin* do not go to the poorer districts, because collecting waste is not worthwhile there, and the city administration is unable to solve this problem either. An estimated 20 per cent of the waste is piling up somewhere or other in public areas, or in ruins and back yards, and the garbage mountains are growing. Nevertheless, far more materials remain in the production cycle than in Switzerland. The economy gets them back, and probably at more favourable conditions than for new raw materials. This system has its negative aspects, such as child labour. Even so, thousands of families at least find an income that keeps their heads above water. These people have organised themselves as a community based on solidarity. The city avoids financial burdens which it would in any case be unable to bear. So which system of waste disposal is more sustainable, the one in Zurich or the one in Cairo?

Monitoring is essential

The hundred MONET indicators show the effort that is being made to assess and measure sustainability in a comprehensive manner. The authors have found that clinical measurement, excellent though it is, cannot suffice on its own to assess an individual's state of well-being. To be precise, this calls for «a system of many indicators which produce a complete picture when they are considered together», they write in the brochure on «Measuring Sustainable Development». The approach of finding a yardstick for evaluation purposes in such a diverse range is certainly a valuable one, but it is not without its problems. The people in charge of the project themselves immediately set the present value of their work in its relative context with a critical appraisal: «Indicators must nevertheless be treated with caution». They add: «The message ascribed to an indicator is always the result of an interpretation. It follows

that the validity of each indicator has to be critically analysed, time and again». The system of indicators, they say, is changeable and new indicators could be incorporated on the basis of newly acquired knowledge, while existing ones could be abandoned.

A look through the assembled data very quickly shows that the current data situation is not satisfactory as a source of meaningful information. To be sure, not all the indicators are as innocuous as the one on the population's health-related behaviour, based on the percentage of people who get slightly out of breath for at least half an hour a day, or who perspire due to 20 minutes of sporting activity at least three times a week. Or the indicator which specifies the percentage of those entitled to vote within the population, whereas actual participation in voting would probably give a better picture of the understanding of democracy. Nevertheless, it is clear that many of the indicators are a somewhat makeshift means of finding an approach towards an understanding of sustainable development. Relevant data is missing in various areas, and/or they do not extend over sufficiently long periods of time. Certain indicators can only be shown as options, since the data still have to be assembled. And in some instances, one would gladly exchange indicators such as Internet usage based on access to public traffic (– as an example for the *Service public* –) or statistics on researched reports as a yardstick for the variety of the press, instead of the number of media houses and press products.

Nevertheless, this initial approach to monitoring at Federal level is important and essential. This is clearly shown by the serious difficulties regarding the measurability of sustainable development. Consistent monitoring offers a guarantee that the concept will be clarified as time goes on, so that behaviour can be brought into line with it.

The limited value of measurable indicators

The MONET indicators are based on statistical material, on figures from surveys and questionnaires. This means that they are measurable to some extent. However, statistical statements have to be interpreted with caution. They show a specific aspect of a complex set of questions, based on a specific data situation – which means that under certain circumstances, they only swing the door slightly open to information in a complicated factual situation. Statistical measurement variables are basically one-dimensional, but sustainability is multi-layered. This throws up the question as to whether data of this sort is relevant to a verification of sustainability. Is it not true that measurable statistics exclude aspects which are perhaps subjective from a scientific viewpoint, aspects which do not have such a sound basis but which are nevertheless more meaningful? The authors of the study stress that the three 'columns' of sustainability – the economy, society and the environment – cannot be regarded as independent entities. On the other hand, the indicators can generally be assigned unambiguously.

What is more, the indicators are focused on Switzerland, and they are defined on the basis of conditions in this country, and of the standards and wishes that are able to gain majority support in a Central European nation. Switzerland's sustainability only has limited links with Switzerland as a unit of size, as the statistics suggest. It can be measured just as well in a residential district or by a product, or else it must take account of the international context. At any rate, when measured by the needs of the South, these indicators are not a yardstick. Switzerland cannot be an island, so sustainability cannot be assessed within this narrow framework either.

There is still no evaluation of the monitoring which can provide more information. The present status has to be, and can be, accepted as the starting point. But in what direction should MONET develop?

Complex circumstances call for appropriate research

The market share of products arising from fair trading is one of the indicators for which the bases are still inadequate. However, purchasing products from the South at fair prices is a significant yardstick for sustainability. How many fair trading products are there on the market and in the hands of the consumers, and how many products manufactured in a socially and environmentally compatible manner? Given the increasing pressure of migration and the resultant social tensions even in Switzerland, these figures are more meaningful in terms of development cooperation between North and South than the actual sums spent by the government.

The Max Havelaar Foundation and its monitoring scheme for social, economic and ecological sustainability point a way forward for the entire issue of sustainability and ways in which it can be measured. This trade could also provide some lessons for monitoring, upon which it is actually conditional. The selected products are directed towards complex and not merely ecological sustainability, since self-help and independent initiatives are encouraged as well as people's livelihood and health. The resources should stay within the cycle. The producers receive the money that is due to them, and which they can re-invest on the basis of their own decisions. The aim is longer-term trade instead of short-term profit – the type of trade that is ecologically, socially and economically compatible for the society in question, and which can survive in the future as well.

Fair trade is a success story, and it proves the benefits of sustainability. The niche products were given virtually no chance on the market, since they are more expensive that their counterparts from the free market where price pressure prevails. In the meantime, however, they have secured

respectable market shares. Twenty-five per cent of the bananas on shelves in Swiss stores originate from fair trade. With equally surprising speed, the former niche sector of bio-agriculture has now achieved a 10% market share for itself, and the trend is continuing to rise. Bio-agriculture has even become a trademark of the crisis-ridden Swiss agricultural sector. Consumers are increasingly following the trend, either due to ecological or social awareness or out of fears for their own health.

Why should the Swiss economy or government not learn from Max Havelaar and bio-agriculture? Why should the assessment of sustainability for society, the environment and ultimately the economy itself not become a central criterion of thinking and action? We are familiar with quality and environmental certificates. One way of making the future secure would be to certify the comprehensive sustainability of companies and their products, or of the government, its investments and its expenditure.

The breakthrough to a social contract

Switzerland's current policy is not aimed at sustainability, but rather at maintaining and increasing affluence and at growth for the economy. In the 19th century, Switzerland was still a poor and underdeveloped nation itself, an exotic country for British tourists and German writers to travel through, but in the 20th century it achieved social, economic and ecological progress. Nowadays it seems to be stationary to the point where it is becoming lethargic. The country is in need of new impetus which it can find in multilayered sustainability.

The Rio conference and its various protocols such as Agenda 21 triggered a process which opens up new horizons all over the world so that fallow potentials can be exploited. The resistance of the USA, as the world power, does nothing to change this. Sustainability will make its way because it draws on the variety of resources that lie dormant within a population. The processes in Agenda 21 can replace the debates and decrees imposed from above by more complex movements and actions.

Conventions on human rights and biodiversity or against racial discrimination are immensely important. But sustainability goes one step further. With the approaches that it adopts, and in spite of all its shortcomings, it is the first worldwide social contract that can be developed and maintained regardless of national ideologies and religions. It provides options which religions and national ideologies are unable to provide because they are based (not least) on segregation and exclusion. Governments, communities, organisations and single individuals, with their differing circumstances and convictions, can each play their part both in their immediate environment and in the wider context.

Sustainability is so immensely important for the global community because it can become effective in spite of the factors that separate people. It has no inherited defects. It can play a decisive part in resolving conflicts by peaceful means and in creating solidarity. It is not Switzerland's intention to stand aside from this. But more effort is required.

From various viewpoints – comments by members of the advisory groups

«Grandchild-compatible» development for Switzerland!

Philippe Baltzer, Environmental Protection Department, Canton of Aargau

«Grandchild-compatible» development for Switzerland: for me, this image enshrines what is meant by sustainable development. The final report of the MONET project represents a good basis for considering whether the development portrayed there is actually «grandchild-compatible».

Here are some thoughts on this report:

- Since each indicator is presented on its own, there is a risk that the issue of sustainable development will only be judged on a one-dimensional basis. Depending on the viewpoint, the reader will interpret a development that is presented with the help of the indicator as more positive or more negative (the naturalisation rate is an example of this). The postulates that are shown in the report and are linked to the indicators are useful for this reason, although they too are closely tied to value judgements on the part of the individual and/or of society.
- Different indicators should be assessed in combination with each other. For example, if the «internet access» indicator shows positive development, while the indicator for «active memberships in associations and organisations» develops negatively (which may be due precisely to the increased use of the Internet) – does this amount to sustainable development in overall terms?
- For the most part, the indicators in the environmental sector show an encouraging trend. Nevertheless, we are still far from sustainable development. Now as in the past, we use too many non-renewable resources. Our rivers and lakes are still more heavily polluted than they reasonably should be in the long term. The air is not yet so clean that nobody in the country could be harmed by it, and many people are exposed to excessively high noise pollution.

We can only hope that MONET will raise the curtain on a broad-based public discussion of Switzerland's sustainable development and that it can be continued in this form for a long time to come.

The uses and limits of sustainability indicators

René P. Buholzer, economiesuisse

Sustainable development is a vague model that is open to controversial interpretations, and it may mask differing concepts of society, images of the world and preferences. Seen in this light, the call to operationalise sustainability by means of indicators becomes understandable and comprehensible. Nevertheless, it is all too easy for the figures and measurement data provided by indicators to feign a level of objectivity which cannot actually be attained, since not all of the dimensions of sustainability can be perceived as social phenomena. Even selecting the indicators always entails a choice of specific theoretical interpretations of the causes of problems – not to mention the difficulties of interpreting indicators on their own, and in the context of the three equal dimensions of sustainability. Given this background, it is hardly possible to establish indicators as a kind of test grid to measure sustainability in Switzerland. In our view, indicators can do equally little to fine-tune or evaluate political measures.

On the other hand, indicators can be a useful information tool. They can play an important part in the socio-political debate, and they can create knowledge and awareness. This function should not be under-estimated, although sustainable development must primarily be understood as a social process of seeking, learning and development. Economiesuisse is convinced that ingenious indicator systems and bodies of experts are not really the key factors in making progress along the path towards sustainable development. In fact, the objective is really to create the political conditions to enable a competition for solutions that can cope with the future in the economic and social sectors. Social and technical innovation are the watchwords. This makes it necessary to create an environment which strengthens the development of research and technology, gives social permission for the implementation of technological progress, encourages lifelong learning and which supports a readiness to invest and hence an ability to innovate on the part of the economy and of society as a whole.

Sustainable development indicators: a vital tool for greater sustainability

Nicola Cantoreggi, equiterre

With its two successive national strategies (1997 and 2002), Switzerland has completed the conceptual framework for promoting sustainability. Now, more than ten years after the Earth Summit in Rio, the next vital step is to measure progress towards sustainability using adequate tools. Sustainable development is such a complex concept that solid indicators are needed to determine where progress has been made and where there is still room for improvement.

MONET indicators adequately meet this need by providing a coherent overall view that includes all of the main topics, enabling quick and satisfactory assessment of the situation. However, the rather unwieldy Swiss system still has to contend with the same persistent problem that plagues existing benchmark systems: striking the right balance between the clear and exhaustive monitoring of all relevant areas and the ability to present data in a way that potential users will find concise and easy to understand. These are two equally important and fundamental requirements.

At its current stage of development, MONET already provides a highly structured platform that enables users to identify current sustainability trends and yet allows them to draw their own conclusions regarding economic, social and environmental policies. In the future, it would be advisable for sustainable development indicators and the Confederation's public policies to be more closely tied together.

More globalisation needed to underpin analysis

Steivan Defilla, seco, State Secretariat for Economic Affairs

Is Switzerland on the right track? The present report is supposed to answer this question or at least this is what readers may expect it to do. Of course, the report was written with the greatest of care and based on the latest information on hand. However, to say that we have answered the question may be a bit premature. There are two things to be considered when thinking and writing about sustainability: The first is long-term focus. Our time frame should take history, not politics, into account. The Romansh people, for instance, recently celebrated 2,000 years of existence. If we view things from this angle, modern development has been very short and very quick for us. In terms of the chosen time frames, however, our report provides precious insight into possible development distortions. The second thing to be considered is globalisation. What purpose would it serve if only the 190th nation, with about one thousandth of the world's population, made the necessary changes within its own territory? Much of the data in this report does not lend itself to international comparison. Although we may be overly optimistic, we also lack ambition. Indeed, being able to compare indicators internationally is not enough. In order to further sustainability, these indicators must also be part of an international system. To give an example, a drop in energy consumption (graph 25.4 in the report) in a given country can only be considered as such unless we know for certain that the country has not imported raw energy in the form of energy-intensive goods. The international system upon which our report is based is unable to take into account all the international threads criss-crossing our modern globe. Our reports are in need of more globalisation!

Diversity as a strength and a weakness of the system

Peter Farago, Landert Farago & Partner

There is an encouraging upturn in the compilation of indicators at all levels of the Swiss political world. The MONET system of indicators is one of the high points of this development – in terms of the wide range of its subject matter as well as the thorough and professional manner in which it has been devised. The team comprising members from three Federal agencies deserves much appreciation for its efforts.

The MONET indicator system is presented as a new form of statistically-oriented social reporting. Its most important strength is the diversity of its content. The 120 or so indicators assigned to 26 subject areas will be helpful when it comes to drawing up policies in specific areas.

However, the diversity of the system also constitutes one of its weaknesses: the stimulating breadth of the subject-matter leaves readers somewhat confused about the overriding goal: the assessment of the status of sustainability in overall terms. How much progress has Switzerland made along the path towards a sustainable way of living and doing business? Where must it go next? And how?

The answers do not emerge immediately. This is why the creation of one or more collective indicators on the most important dimensions of sustainable development is a desirable aim that arises from the MONET system, and this should be accomplished as the next step. At an aggregated level, comparable key economic variables (GDP, price index, etc.) should enable these indicators to deliver an assessment of the status attained as regards sustainability, together with monitoring of changes in this status.

Facts for acts!

Sonja Kahlmeier, Institute for Social and Preventive Medicine, University of Basel

MONET shows that even a wealthy and highly industrialised country such as Switzerland is still a long way from sustainability. Although the key economic figures show largely positive development, there are still major inequalities between men and women in terms of professional positions and incomes, and the working poor are increasing in numbers. While expenditure on education, research and development remains stagnant, 20% of 15-year-olds do

not even have basic reading skills. Although environmental taxes have increased, their rate is lower than in the EU and public development aid continues to stagnate at less than the target of 0.4% of the gross national product.

The indicators are most meaningful in cases where links to other subject areas emerge. One example is provided by the constant increase in traffic capacity for passenger and goods transport (with a fall in the percentage of public transport), the increase in the consumption of final energy and air pollution. Another striking feature in this context is the increase in health costs that are in turn linked to smoking behaviour and the lack of physical activity as well as the low proportion of funding allocated to health promotion.

The utility of data surveys such as the health questionnaire would increase significantly if the data were geocoded, and this would allow them to be linked to other information, for example on noise pollution. Possibilities for action will only be revealed by cross-references of this sort. In this regard, specifically «Swiss» indicators are also a crucial factor. MONET has been daring enough to develop new ideas where necessary, for example in the «health» sector. At the same time, reference to international conditions has been preserved as far as possible so as to allow the benchmarking which is important for policy purposes.

The challenges now will be to coordinate MONET with other systems of indicators such as the Observatoire de santé system, indicators for policy control and international systems such as the WHO Environmental Health Indicators, and to go on developing the system so that MONET continues to be a collection of «facts for acts».

How do indicator systems benefit the assessment of a country's sustainability?

Hans-Jörg Lehmann, Swiss Federal Office for Agriculture

A national indicator system such as MONET allows comparisons between individual sectors of the economy and the national development of sustainability. For example, it becomes possible to compare the national development of the agricultural sector with that of Switzerland as a whole. This is especially useful for revealing conflicting developments – and hence the possibility of a coherency problem – at an early stage.

In the agricultural sector, the Federal Council has issued a special decree stating that sustainability in agriculture must be assessed on a regular basis. This requirement has been met by the agricultural reports for the last two years. Coordination with the MONET system of indicators was a necessary requirement which has been properly satisfied, and further development can be envisaged.

Monitoring is a presentation of developments. More should be done to hierarchise and group the indicators to improve understanding of the contexts and to deduce the need for action. A distinction should at least be made between indicators which provide information about policy programmes such as agricultural or health policy, and those which give information on the effects on those at whom the policies are aimed. Likewise, more effort should be made to improve the equivalent interpretation of key figures with the help of a criteria grid.

Can't see the wood for the trees?

Samuel P. Mauch, Mauch Consulting

One hundred and seventeen (117) sustainability indicators broken down into 26 social, economic and ecological subjects are necessary statistical material, but they initially lack the visible ability to tell us whether (or to what extent) Switzerland is sustainable – that is to say, how far it is able to cope with the future. The 117 explanations provide sporadic hints: what importance was accorded to each indicator in terms of the concept for sustainable development (SD) that was agreed on an international basis in 1992 at Rio de Janeiro. This heavily broken-down flood of information does not yet amount to a viable basis for an evaluative assessment of our sustainable behaviour. At best, time sequences and international comparisons provide isolated conclusions about trends, and they tell us where we are in relative terms – but they are only ever measured on the basis of «individual details». They describe a lot of trees, but not the whole wood.

These statistics are (only) judgmental insofar as they have selected the indicators that are considered to be relevant. However, they do not answer the political question as a whole. For this purpose, interpretations, weightings and summarising indicators are indispensable. Consequently, the report can only serve as a basis for interpretations of this sort.

Widely differing conclusions can be drawn from the indicators, depending on whether one primarily considers the (many) locally/nationally relevant SD aspects (such as health, populated area, local environmental quality) or the (few) globally relevant ones such as greenhouse gas emissions, consumption of non-renewable energies, use of agricultural areas and so on. While Switzerland comes out comparatively well in the first case, it is definitely not sustainable if we take the second approach because, clearly, the Swiss consumer style cannot be transferred to the whole world. Conflicts about scarce and very unequally distributed resources – water and oil – put global peace at risk.

Map, compass and altimeter

Gabrielle Nanchen, Foundation for Sustainable Development in Mountain Areas

When you set out on a long march, you put a number of things in your rucksack: an accurate and complete geographical map, a hiking guide which will provide useful

information about the place names and other markers that point out your route, a compass, an altimeter or other more sophisticated equipment. These documents and instruments are essential for walkers so that they can advance towards the destination they have themselves within the time available and by the best route.

Exactly the same applies to sustainable development, the process undertaken by the population of a territory with the aim of improving its quality of life while budgeting the resources needed by future generations so as to meet its own needs.

But it can happen that hikers have to cross a region for which there is no large-scale map as yet. It is to be hoped that their troubled reaction, combined with those of many others, will bring about the intervention of political decision-makers who will take action to ensure that things change.

Again, the same is true of sustainable development. The MONET list of indicators is like a map that still includes some terrae incognitae. In the sectors of the economy, environment and health, the individuals responsible for this project were able to find nearly all the statistical data they needed. Unfortunately, the situation is rather different as regards the subjects of social cohesion, cultural identity and the participation of players in the sustainable development process.

A list of indicators is an indispensable tool to advance the cause of sustainable development not only because of what it offers, but also because of the very gaps that it contains.

Indicators – traces of our behaviour

Christoph Ritz, ProClim- Forum for Climate and Global Change

Even if we as individuals perceive our Planet Earth as huge, humanity as a whole amounts to more than a negligible disruption of its equilibrium nowadays. Changes of this sort are especially worrying when the effects are still virtually unmeasurable, even though the disruption is great. A typical example is the combustion of fossil sources of energy which causes global changes to the earth's climate. Once the CO_2 has been emitted, it remains in the atmosphere for a very long time and accumulates like water in a washbasin with a blocked outlet. At the same time, social structures that have developed over the centuries are changing as globalisation increases. What is more, these changes influence one another. Do we recognise the crucial changes? Are we drawing the correct conclusions from them, and are we putting those conclusions into effective practice?

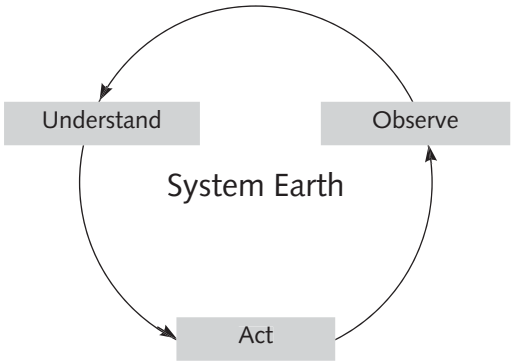
As we cannot see into the future, and since we are not yet familiar with all the variables that threaten our quality of life, about 150 indicators have been defined in the MONET Project. They not only measure changes that appear to be critical, but also factors which make our lives worth living. The indicators are an integral element of our decision-making, which comprises three elements:

knowledge of the critical factors and the most important processes;

action in order to neutralise the forces identified as driving the critical changes;

observation, to learn whether the actions actually lead to the expected corrections and as an indicator of knowledge that we lack.

The indicators are also used for a retrospective assessment of whether our present actions have been responsible. Watching indicators is therefore a key element of our history.



Is the city of Zurich more sustainable than the rest of Switzerland?

Karin Schulte, Office for Urban Development, City of Zurich

Value added per head in the city of Zurich is higher than the average for Switzerland as a whole. The general level of satisfaction with life is also above average. Even the emissions of greenhouse gases per head are lower, according to current estimates. Does this mean that the city of Zurich is more sustainable than the Swiss average?

Probably not. Opinions of this kind fall short of the mark. Within Switzerland, the city of Zurich has a special role as a business centre and a densely populated zone. Most of the indicators used by the Federal Government – and in the same way by the city of Zurich – do not correctly map this particular division of labour, which is also becoming more important at the international level: the «sustainability balance sheet» for exports and imports is not taken into account.

We could celebrate because the energy intensity of production in Switzerland is falling. But who is to tell us that it is not falling because we import all the energy-intensive products rather than continuing to manufacture them ourselves?

We could be proud that our labour productivity is already at a high level and is continuing to rise. But who is to tell us that the gain in productivity is not achieved because insufficient added-value-intensive activities are being exported abroad, or because a clever control system ensures that

companies enjoy benefits if they arrange for their globally earned profits to accrue in Switzerland?

It seems obvious to suspect that many of the positive messages from the indicators are based on effects of this sort, and on the other hand, that the rather more negative messages (especially among the environment-related indicators) would turn out to be even more gloomy if the balance of imports and exports was included. You will find references to this point in the current report.

Contemporary developments are based on two important factors: one is the global affluence gradient and the other is the low price of energy which makes transport so favourable. The consequent overuse of natural resources and the global inequality of opportunities cannot continue in the long term. Switzerland is therefore on the path towards sustainability unless a change in these two factors jeopardises economic development in this country, splitting society into winners and losers.

Indicator systems – a means of countering arbitrariness in the sustainability debate

Otto Sieber, Pro Natura

The concept of sustainability is not yet twenty years old. The open definition, the complex concept and the efforts by a variety of different interest groups to us it for their own purposes have resulted in an arbitrary approach to the idea. Indicator systems are a means of countering this arbitrary approach.

MONET is the first indicator system for Switzerland with statistically reliable data arranged according to postulates. The 117 indicators that it presents are a real treasure. To have identified and assembled them is the pioneering achievement of the MONET project.

Of course, there are some gaps in the system. Many of the indicators are based on unique surveys, or surveys conducted for the first time. In this regard, I hope that MONET will have the stimulating effect of triggering more surveys in the future. With three indicators, bio-diversity has made a painfully poor showing here. This is not to reproach MONET, but merely to note once again that there is insufficient statistically usable material in this area although hundreds of specialised works are available on the subject. The monitoring of biodiversity which has now started up should hopefully remedy this situation.

A serious and statistically reliable approach is the hallmark of MONET. A system of this sort tends to be ponderous. Great effort and expenditure are needed to obtain a picture from the accumulated information. Other indicator systems are simpler, such as the ecological footprint which the environmental organisations have used in different ways. On the other hand, one can argue endlessly about what should be offset against what, and how. Both are probably needed so that the sustainability debate does not slide into arbitrariness.

Switzerland and the State of Geneva

Jean Simos, Central Office for Public Health, State of Geneva

Geneva's law on public action in respect of sustainable development (the law on Agenda 21), which was passed in March 2001, stipulated in Article 10 that «The state favours the compilation and distribution of recognised sustainable development indicators allowing comparisons over time and space, as well as the definition of quantified objectives».

Under the leadership of the Canton's Sustainable Development Department, an interdepartmental working group and an external agency, the «association equiterre», worked between autumn 2001 and spring 2003 to devise a system of indicators of this sort. One of the principles guiding the course of this important work was to do as much as possible to preserve the comparability of the Geneva system with the system being compiled at the same time by the Federal MONET project, and also with the experimental system for the Cantons developed under the auspices of the Federal Office for Spatial Development. The selected model consists of components (environmental, social, economic, and governmental) refined by the definition of transverse indicators.

An extensive series of 75 indicators was defined to provide wide coverage for all the dimensions of sustainable development for the purposes of more technical utilisation. In addition, a limited series of 33 indicators was extracted from the larger series for the purposes of strategic information and order. They are assigned as follows (figures for the restricted series are given in brackets): mainly environmental: 9 (4); mainly social: 16 (5); mainly economic: 5 (4); environmental-social interface: 11 (5); economic-environmental interface 6 (2); social-economic interface: 13 (5); environmental-social-economic interface: 4 (3); governmental: 11 (5).

Apart from certain subjects (domestic market, international trade, production) and problem areas (scale, data collection) belonging to the Federal level, the comparability of the Geneva system can only be partial. Nevertheless, there are a significant number of identical (14) or similar (15) indicators.

Gap in ecological viability and global sustainable development

Daniel Spreng, Centre for Energy Policy and Economics, ETH Zurich

The following points occurred to me as I considered the time sequences for the indicators:

- Many indicators only change a little over the time period

they represent. This is probably less a sign of hardening than a result of the circumstance that many things only change slowly due to their very nature.

- The fast changes made clear by the time sequences are nearly all linked to the increase in household income, production and consumption, the rapprochement of the global community and technical changes in the IT sector.
- To some extent, political programmes in the environmental and energy sectors have also resulted in significant changes (indicators for air and water pollution, and the proportion of petroleum in total energy consumption). In my estimate, however, these changes are less significant in terms of sustainability than the fast changes that proceed autonomously, which I have mentioned above.

Contributors to the present collection of indicators include not only the SFSO, the SAEFL and the ARE but also experts from many other Federal agencies. It is remarkable that the Federal administration has managed to accomplish a joint venture of this sort, and it will be important for the future use of the indicator system. However, another result of the selected approach is that alarming statements and methods of presentation have been avoided; examples of this include the «ecological footprint» which «shows» that ecological viability was already exceeded some years ago. The planned publication of flagship indicators may perhaps help to increase the profile of the work.

Anyone with an interest in Switzerland's role in global sustainable development will not find much in the present work. Switzerland is one of the wealthiest countries, with by far the highest density of multinational corporations. What does this mean for global sustainability? What are the effects of our positions on customs duties for agricultural goods and patent protection for medicines? Are there indicators that use the postulate of sustainability to measure technological development performance, technology exports and the education of students from developing countries?

What is the purpose of sustainability indicators?

Christian Suter, Institute of Sociology, University of Neuchâtel

What do the MONET indicators show us? For example: women are moving up in education – women's participation in education is steadily approaching the level for men (indicator: expected duration of schooling). But: with the same education, the same level of requirements and the same professional position, women draw lower salaries (indicator: pay differences between women and men). Or: due to the increase in road traffic, the energy consumption per person in the transport sector has continuously risen over the last thirty years (indicator: final energy consumption in the transport sector). At the same time, though, there has been a fall in CO_2 emissions per person and per kilometre (indicator: CO_2 intensity of individual motorised transport).

What is the purpose of key statistics such as these? These indicators give us information about the state of sustainable development in Switzerland. They provide factual knowledge – not for the world of politics and the media, but for all the citizens. They show what it has been possible to achieve – measured by our goals – and where there is need for action. Such key concerns of sustainable development include equality of opportunities between the sexes in education and on the labour market, minimisation of environmental pollution and the consumption of non-renewable energy sources.

The cited indicators show us the varied but also contradictory nature of many developments. This is why indicators of this sort are needed – because they stimulate us to consider our society, our everyday behaviour and the future world which we want to leave to our children and descendants.

Switzerland is not on the right path

Denis Torche, Travail.Suisse

If Switzerland has taken note of sustainable development, the indicators show that it is not on the right path. One of the main reasons for this has to do with the fact that our capacity to produce goods with fewer resources is destroyed by the increase in consumption and the unbridled use of space. The problem of mobility is significant in this respect: despite an increase in energy efficiency, the consumption of energy for transport shows an increase of about 70% between 1980 and 2000.

We also know that poverty is an obstacle to sustainable development. It is therefore worrying to see that the number of working poor in Switzerland is growing, as are social inequalities.

A policy aimed at greater social justice and a shake-up in the general conditions aimed at encouraging many more processes and products that respect the environment are two of the most important measures that must be taken if we are to put the postulates of sustainable development into practice.

At the international level, the deregulation of markets favours greater exploitation of natural resources, and the increase in exchanges creates added pressure on the environment. So the incorporation of external costs into the prices of goods has to become a reality.

The indicators are very useful as a way of measuring Switzerland's sustainability, and of enabling political intervention to take the measures that are required. We should make sure that this Swiss monitoring system plays its part in providing an overall vista which is not obscured by the closer view. Research must therefore be carried out to hier-

archise the indicators to some extent.

Filing regular reports as the next step

Ursula Ulrich-Vögtlin, Swiss Federal Office of Public Health

The range of selected indicators gives us a good instrument here in Switzerland to assess the development of the country in terms of sustainability. Nevertheless, some effort must still be made to ensure that certain indicators can actually be put into practice.

For example, the indicator for the «social gradient of life expectancy in good health» provides more information about sustainable development in our society than the indicator on «life expectancy in good health», since it also reflects the distribution of the commodity of «health» among the population. We can only speak of a development towards more sustainability with a clear conscience if there is an increase in the life expectancy in good health for all sections of our population.

MONET has now provided us with the instrument to measure sustainable development. The next objective is to make use of it. A first step will be to set goals in the various areas of policy. The next will be to file regular reports and to present development in the same way (for example) as Great Britain with its «Quality of Life Barometer».

This will reveal the areas where development is moving towards more sustainability in our country, as well as those where even more effort is still required.

SFSO Publications

The Swiss Federal Statistical Office (SFSO) is the central and official purveyor of statistical information to the Swiss Government. It is officially mandated to supply this information to a wide range of users.

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Sustainable development and regional disparities

SFSO, SAEFL, ARE (Publisher): MONET Final Report – Methods and Results, Neuchâtel 2004 (47 pages), Sfr. 7.-. Order no. 633-0400-05, ISBN 3-303-21009-8

SFSO, SAEFL, ARE (Publisher): Measuring Sustainable Development: Insights into MONET – the Swiss monitoring system, Neuchâtel 2002 (28 pages), free of charge. Order no. 520-0200, ISBN 3-303-21004-7

SFSO, SAEFL (Publisher): Sustainable Development in Switzerland – Factors for an indicator system, Neuchâtel 1999 (111 pages), Sfr. 15.-. Order no. 320-9900-01, ISBN 3-303-02054-X

These publications as well as further information on the indicators for sustainable development are available on the MONET website: http://www.monet.admin.ch

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ARE Publications

Sustainable Development Strategy 2002: Report of the Swiss Federal Council (27 March 2002)

In this report, the Federal Council presents 22 specific measures to implement sustainable development. Editor: Interdepartmental Rio Committee (IDARio)

Orders: BBL 812.014.e, free of charge, Swiss Federal Office for Buildings and Logistics (BBL), CH-3003 Bern. On-line source: www.are.ch

Sustainability Assessment: Conceptual Framework and Basic Methodology

The purpose of the sustainability assessment framework is to evaluate and optimize federal projects and undertakings in relation to the goals of sustainable development. Published by Federal Office for Spatial Development (ARE), Department of Environment, Transport, Energy and Communications (DETEC).

Available from Internet: www.are.ch

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Regular updates on the national and international debate on sustainable development can be found on the website of the Federal Office for Spatial Development.

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This brochure presents an indicator system that can help answer these and other questions. Over 100 indicators, grouped according to topic, provide a first-ever comprehensive picture of sustainable development in Switzerland, painted from an economic, societal and ecological standpoint.
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