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Agroscope

Swiss agricultural policy

SALCA life-cycle assessment Agri-environmental indicators

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Outline

Swiss agricultural policy

- Swiss agriculture: facts and figures
- Swiss agricultural policy today
- Agriculture policy 2014-2017

SALCA life cycle assessment (Swiss Agricultural Life-Cycle Assessment)

- The concept of life cycle analysis with SALCA
- SALCA emission models and impact assessment methods
- Examples of applications

Agri-Environmental Indicators (Agri-Environmental Monitoring)

- Basic concepts
- SALCA tools
- Examples of results



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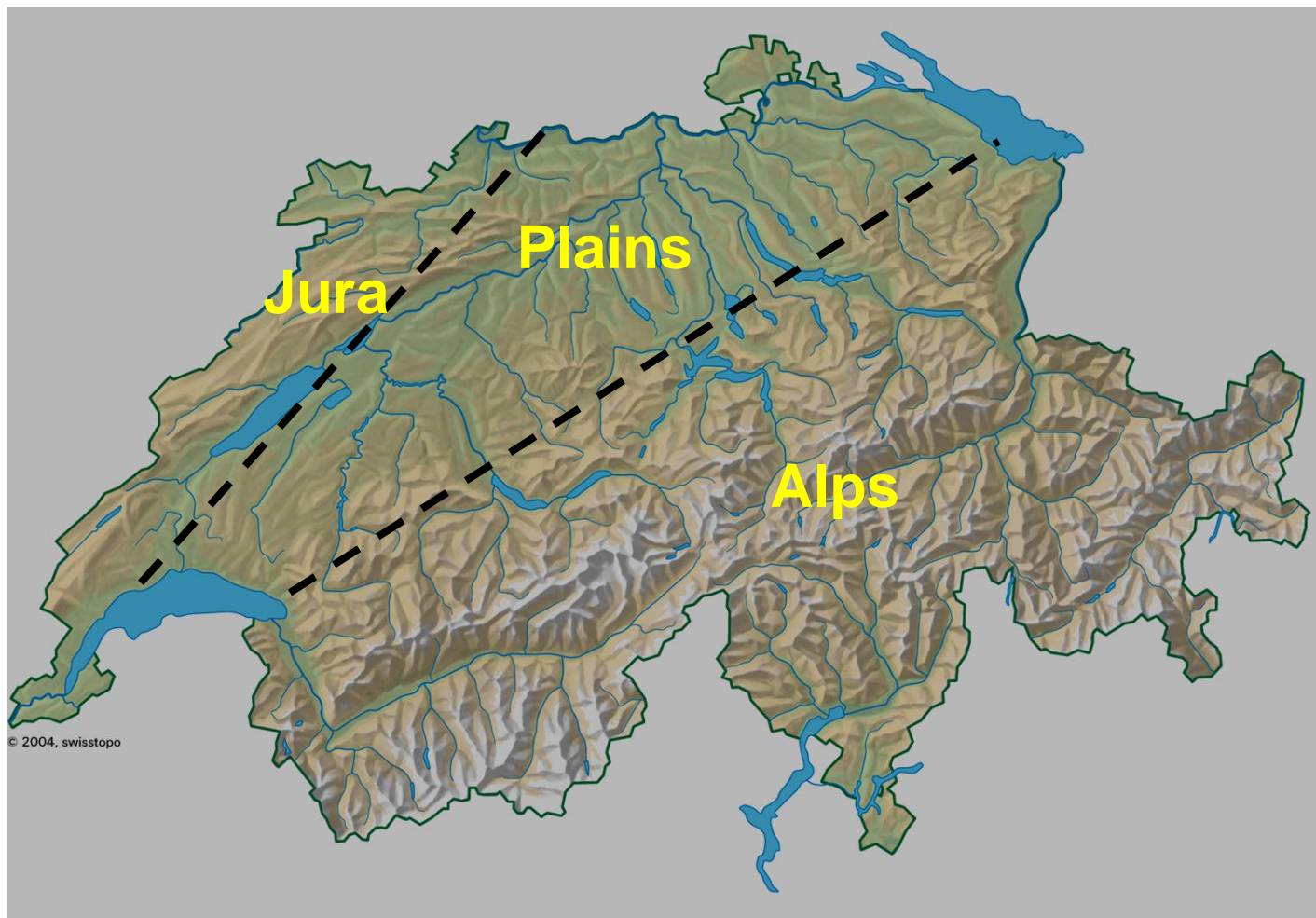
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Switzerland is a diverse country...



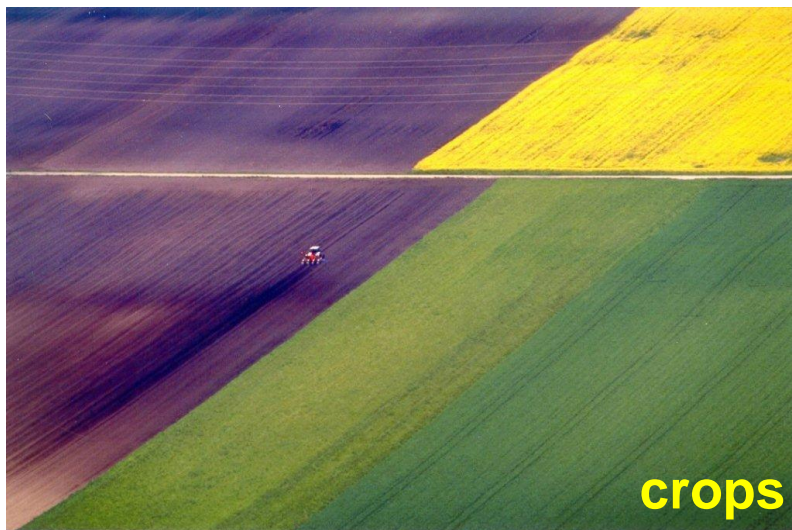
Mountain areas:

**2/3
of the Swiss
surface area**

**1/4
of the
population**



... with a diverse agriculture...





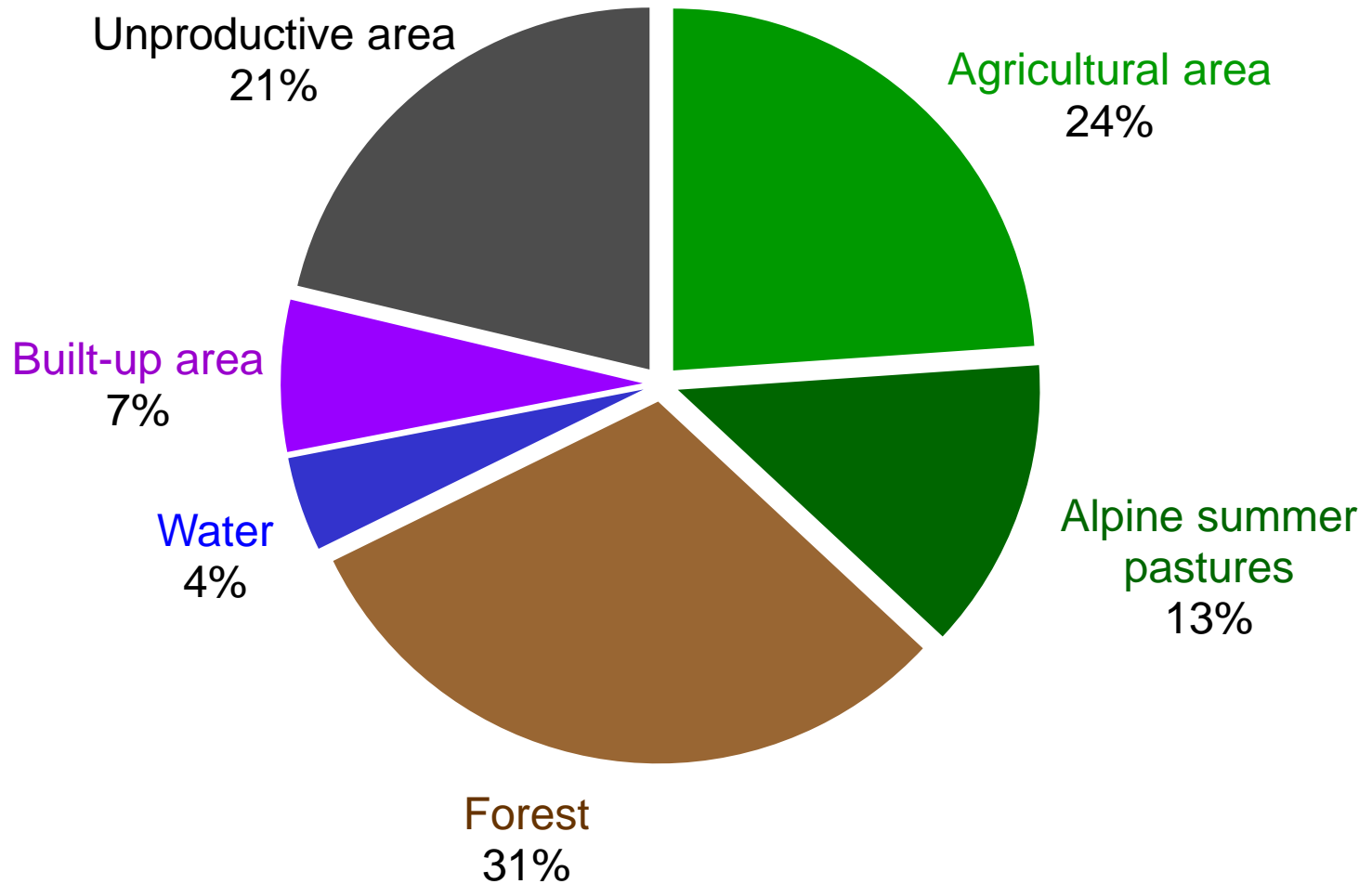
... and endangered soils!





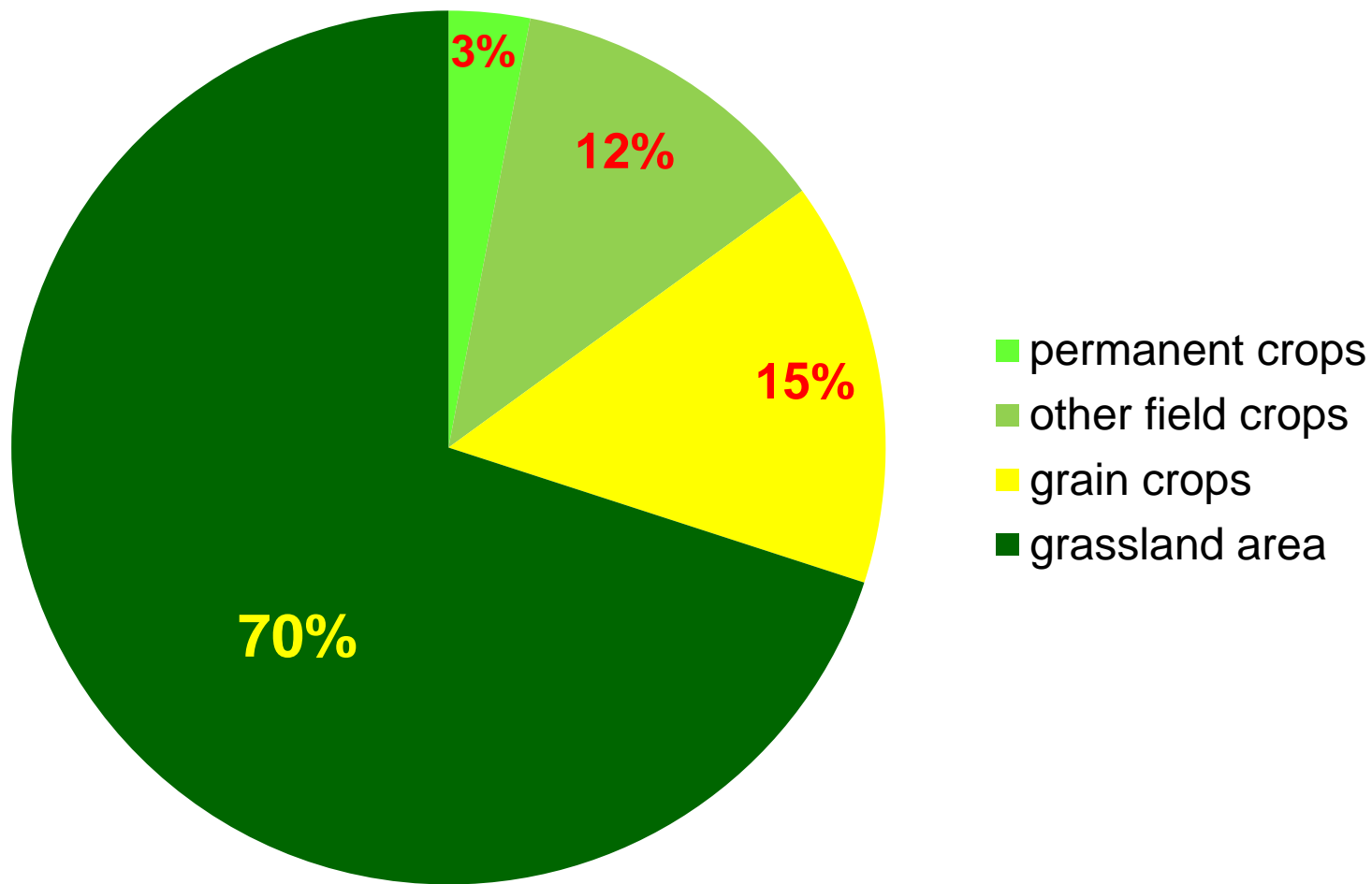
A country shaped by its agriculture

Total area: 4'128'500 ha



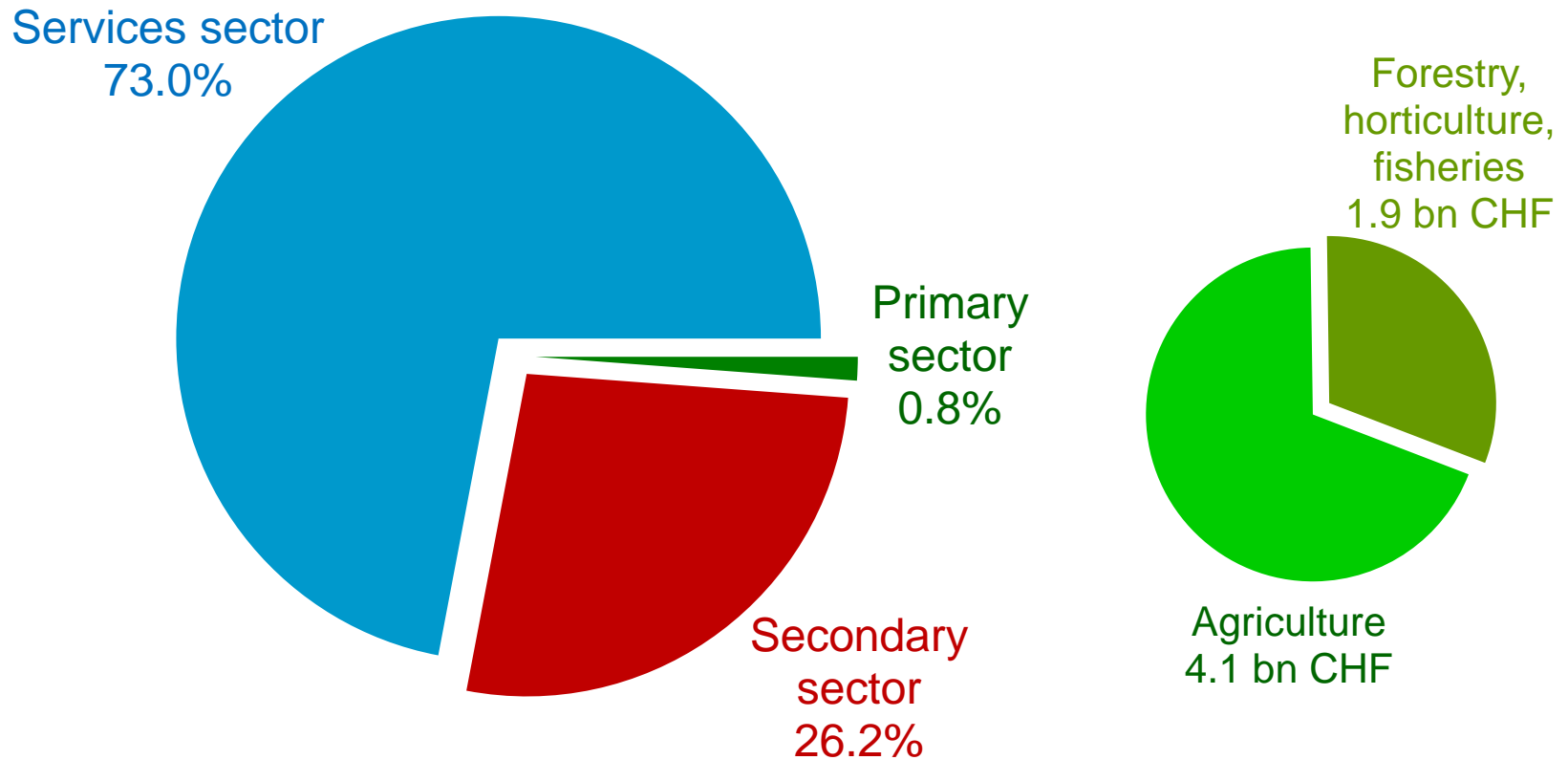


Utilisation of the agricultural land



A small share in gross domestic product

Gross domestic product 2011: 555 bn CHF

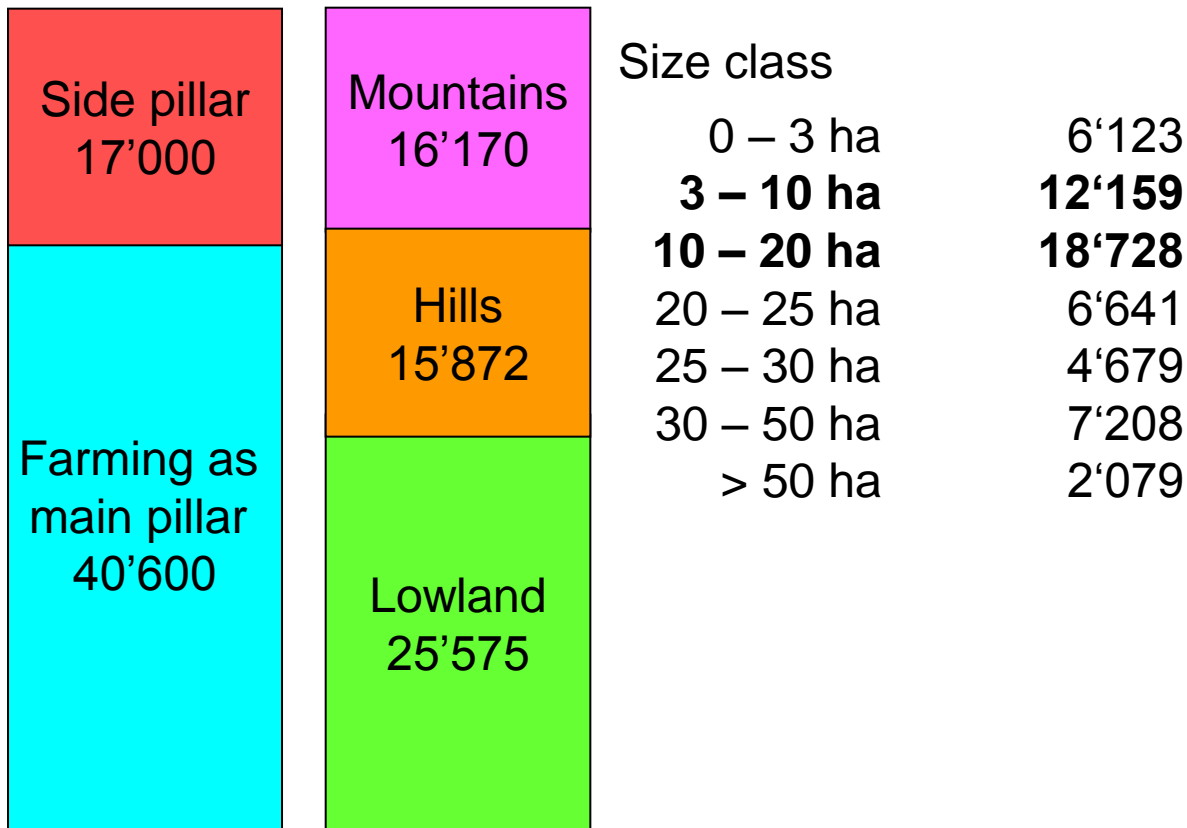


Source: BFS



Agricultural structures #1

Number of farms in 2011: 57'617



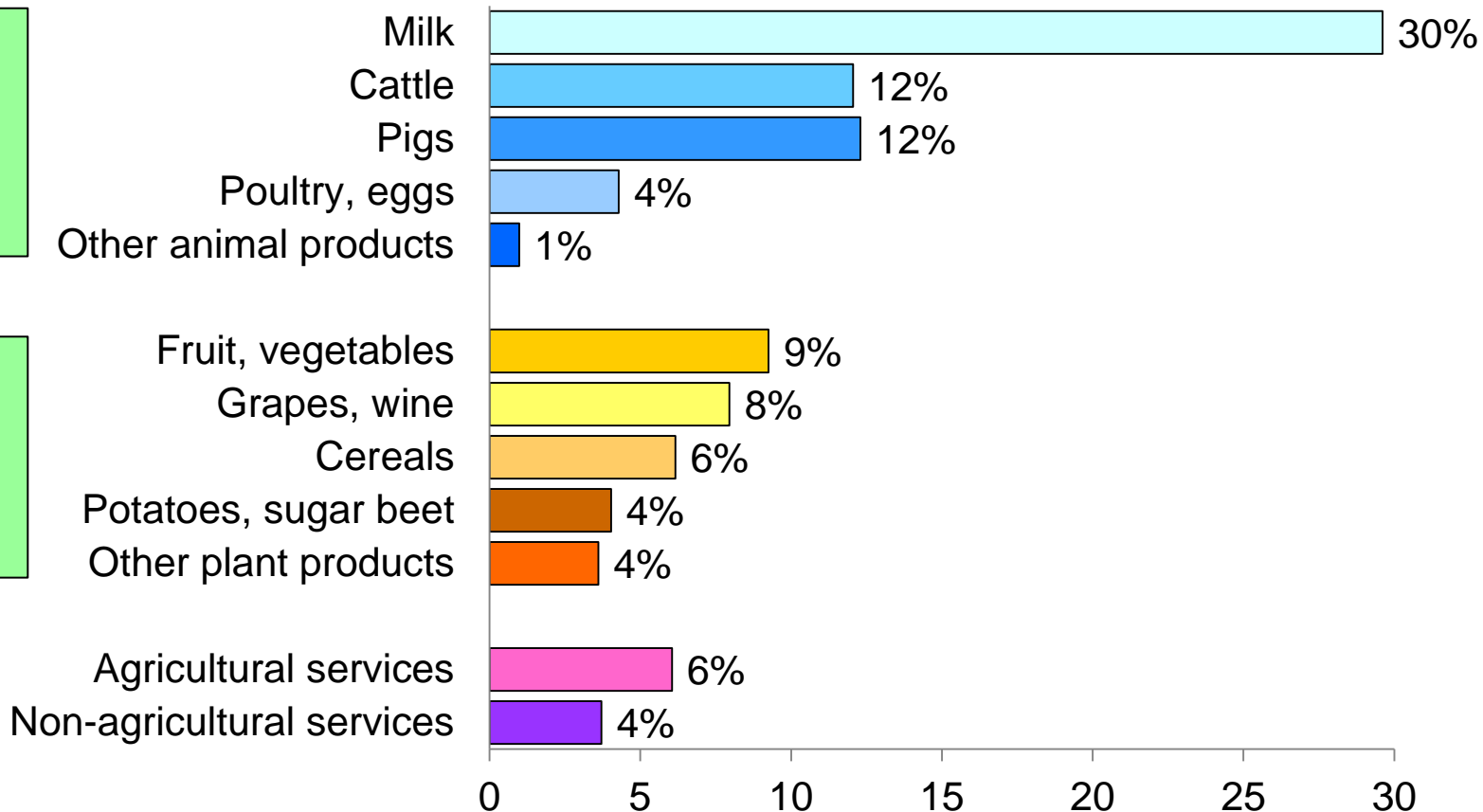
Source: BFS



Production value (in 2010)

Animal production: 59%

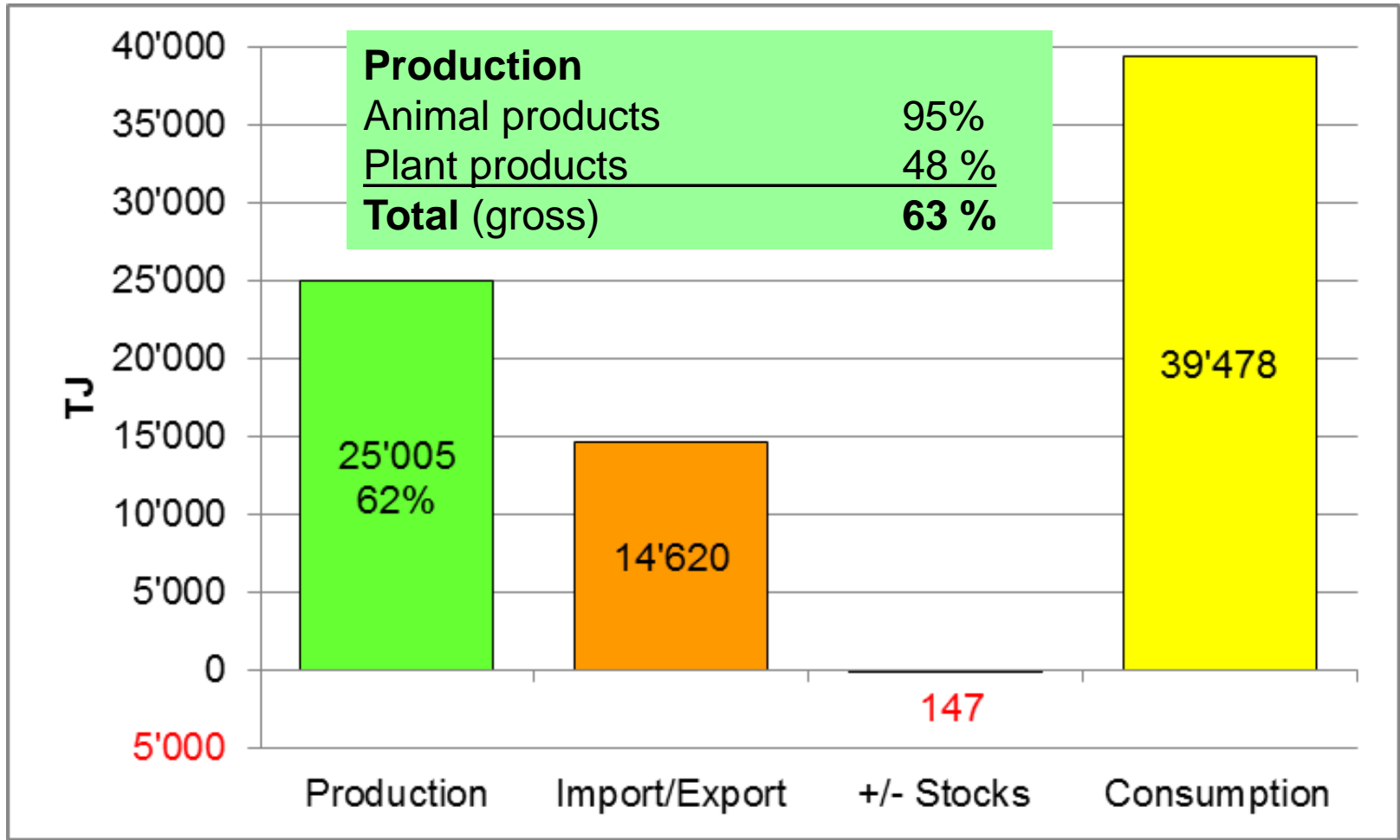
Plant production: 31%



Source: BFS

Important contributor to food security

Degree of self-sufficiency 2009





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The direct payment system is a puzzle

society

- policies
- consumption demands
- compensations

single farm

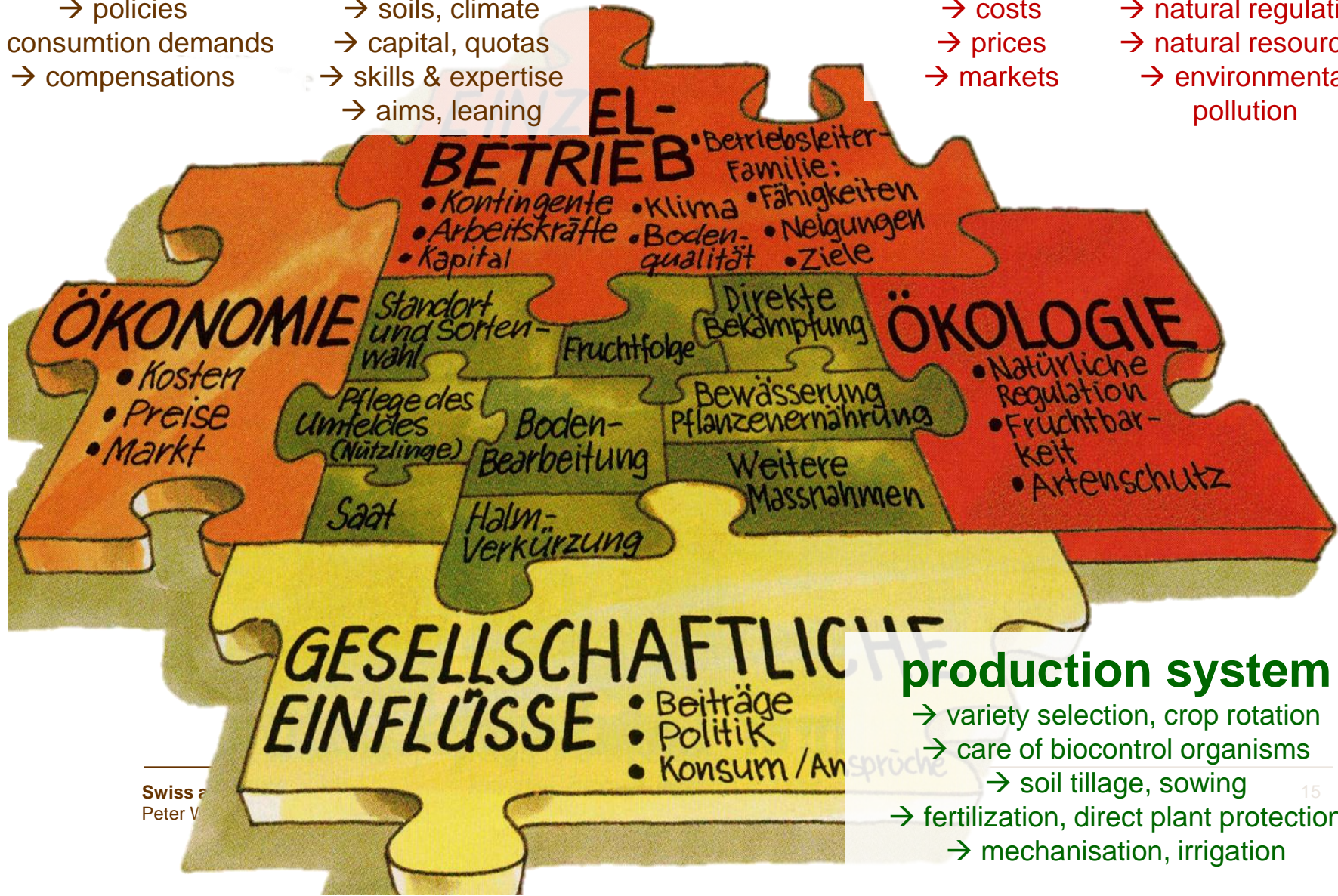
- soils, climate
- capital, quotas
- skills & expertise
- aims, leaning

economy

- costs
- prices
- markets

ecology

- natural regulation
- natural resources
- environmental pollution



production system

- variety selection, crop rotation
- care of biocontrol organisms
- soil tillage, sowing
- fertilization, direct plant protection
- mechanisation, irrigation



Evolution of agricultural policy: problem history

period	main problems	strategy	instruments
1960-75 intensification	increase of production output	expansion of production without ecological obligations	internal intensification, bonuses for arable crops → product price
1975-84 growing problem awareness	eutrophication of lakes (P-losses), nitrate in drinking water, pesticide residues in vegetables, loss in biodiversity	fight against symptoms, no causal relationship between agricultural production and environmental protection	punctual recommendations and bans → end of pipe-solutions
1985-92 antagonism ecology vs. economy	eutrophication of lakes (high livestock rates), hormones and pesticides in food, animal welfare	steering of production by increase of quantity, segregation between agriculture and nature conservation	recommendations and increasingly bans, voluntary stipulations → product quantity
1993-99 link between agricultural and environmental policy	food security, landscape management, animal welfare, biodiversity	decoupling of prices and income, ecology as pillar of rural income	general direct payments contingent upon a proof → ecological performance



Evolution of agricultural policy

up to 1992	highly state-controlled, guaranteed product prices
1992	start of the agricultural reform
1993 - 1998 "decoupling", "more ecology"	first phase of the direct payment system, introduction of product-independent direct payments → slight reduction of prices → incentives for specific ecological achievements based on the concept of integrated production
1999 – 2003 "more market"	second phase of the direct payment system → deregulation of guaranties for product prices and marketing → coupling of direct payments on proof of ecological performance (corresponding to integrated production)
2004 - 2007 "competitiveness"	third phase of the direct payment system → end of milk-quota system → development of structural improvements and social accompanying measures
2008 - 2013	fourth phase of the direct payment system → market support shifted into direct payments
from 2014 on	fifth phase of the direct payment system → more targeted direct payments



Principles of agricultural policy

Article 104 of the Swiss Constitution:

The Confederation shall ensure that agriculture contributes substantially with a **sustainable** and **market-oriented** production:

- a. to the **secure provision** of the population with food;
- b. to the conservation of **natural resources** and the upkeep of **rural landscape**;
- c. to the **decentralized settlement** of the country.

→ **multifunctional agriculture!**

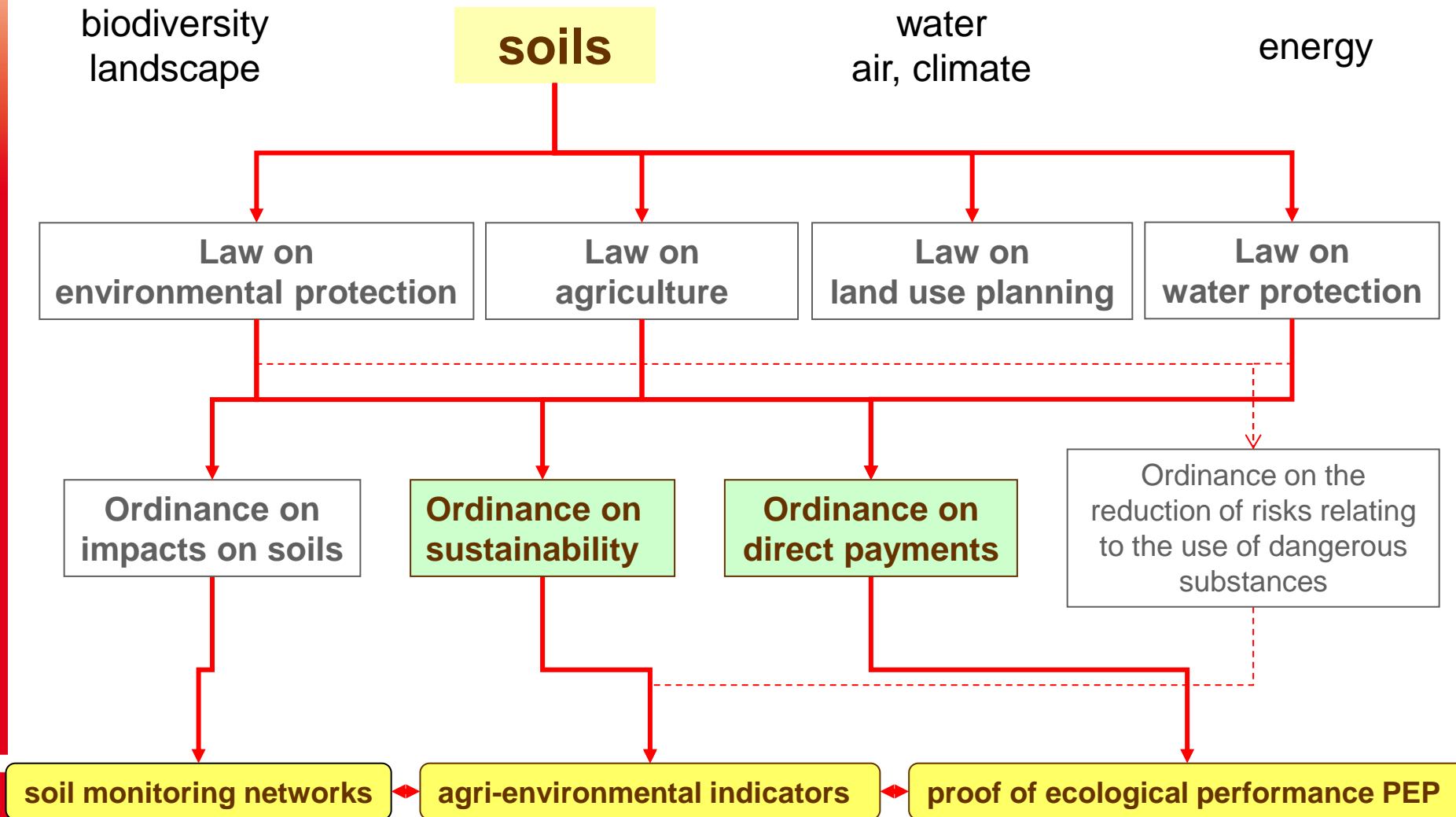


Principles of the agricultural reform

- **Optimization of agricultural production**
 - efficient use of agricultural supplies (fertilizers, pesticides, energy, water, ...)
 - reduction of environmental pollution
 - increase in operating efficiency
- **More ecological production**
 - sustainable use of natural resources: soil, biodiversity, water, air, landscape
- **Compensation of public services**
 - general direct payments, linked to ecological performance
 - protection of natural resources



Coordination of agricultural and environmental policies: soil





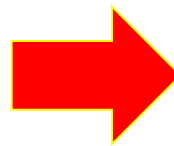
Evolution of agricultural policy

1993

1999

integrated production

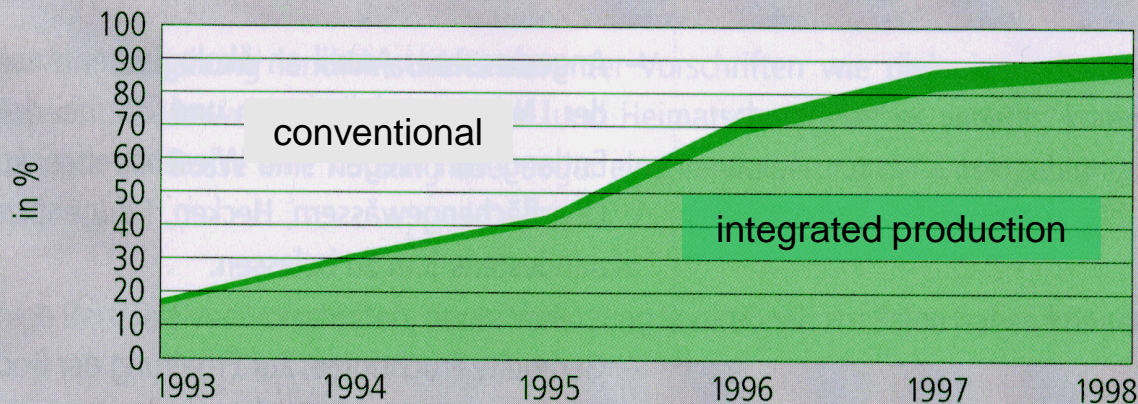
voluntary programmes
&
specific contributions



proof of ecological performance

minimum requirements
for
direct payments

evolution of managed area according to production system



organic farming

Instruments of Swiss agricultural policy

Market measures

Tariffs, promotional measures, milk, meat, crops

Direct payments

General, ecological, ethological

Basic improvements

Structural improvements: Investment aids, social measures, animal and plant breeding, research, extension





Direct payments: typology



Three types of direct payments:

- **General direct payments**
Compensate farmers for their public services and for difficult production conditions
Promote the settlement on the whole territory
- **Ecological direct payments**
Compensate for additional ecological services (incl. organic farming)
- **Ethological direct payments**
Compensate for animal friendly husbandry

Direct payments:

- The most important policy tool: 2.6 bn CHF (75%)
- 64% go to the hills and mountains
- 14% go to organic farming



Direct payments: types

General

General area contribution

Contribution for arable area

Contributions for cultivating arable crops

Animal husbandry contributions

- roughage consumers
- difficult production conditions

Summer alp grazing contributions

General slope contributions

Slope contributions for vineyards

Ecological

Ecologic compensations

- extensively used grassland
- less intensively used grassland
 - hedges, groves
 - wildflower strips
 - rotational fallow
- conservation headlands
- species-rich field margins
- high-stem fruit trees

Contributions for biological quality and linking

Extenso production

Organic farming

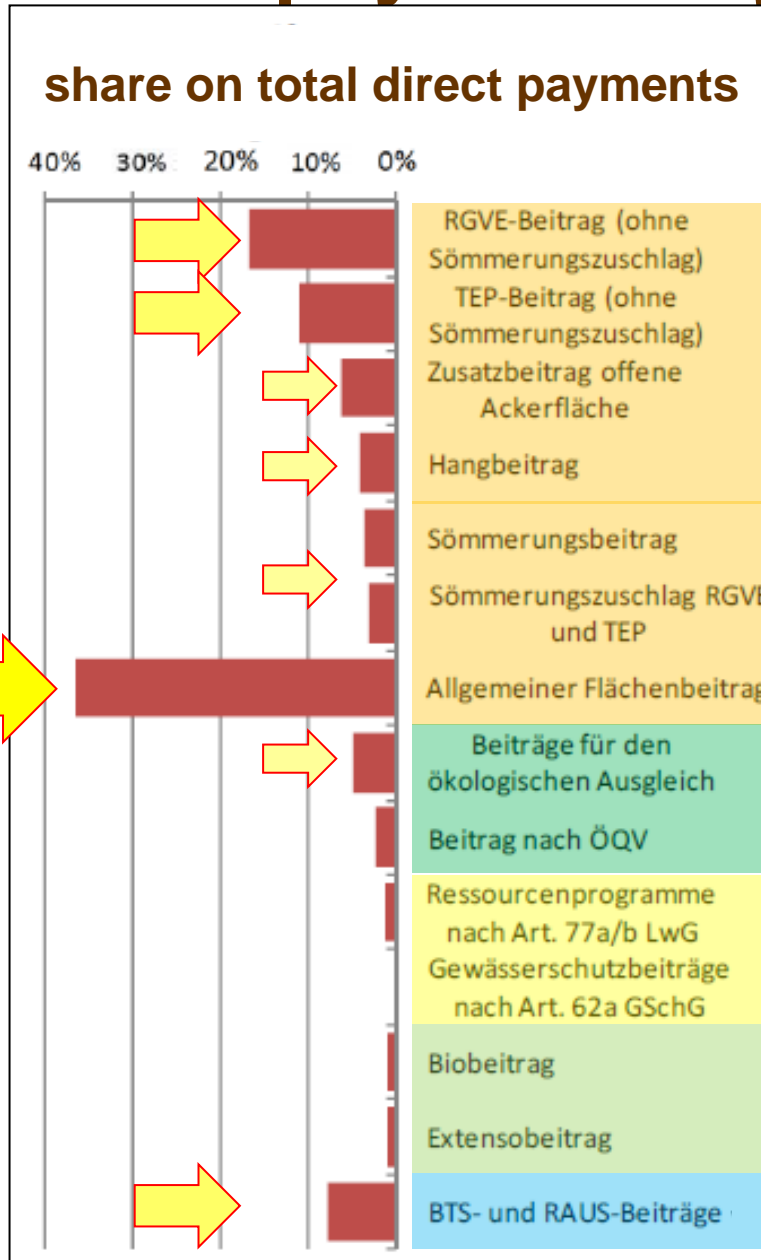
Ethological

Specifically animal friendly housing

Regular open air-runs



Direct payments: types and shares



General direct payments

Ecological direct payments

Ethological direct payments

Direct payments and proof of ecological performance PEP



✓ *All direct payments are contingent upon a set of ecological standards: proof of ecological performance PEP (“cross-compliance”)*

Elements of PEP

- balanced fertilizers budget
- share of ecological compensation areas (7%)
- well-ordered crop rotation
- suitable soil protection
- selected and targeted application of pesticides
- animal welfare standards

✗ *Direct payments are limited according to eligible area, number of livestock units and income per labour unit*

Proof of ecological performance PEP: general prescriptions

- **Farmer keeps regular records on farm management**
as reproducible representation of management activities
 - with farm area, agriculturally used area, field plan, field register
 - with data on crops, crop rotation, soil tillage, fertilization, plant protection, harvest dates, yields
 - with documentation of nutrient balance calculations
 - with other necessary documents
- **Every farm is regularly controlled**
 - every year 33% of all farms (or more often if problems exist)
 - by cantonal organisation or by accreditation body (organic farms)
 - checkup of records, farm, fields and animal housing

crop
rotation

soil
protection

balanced
fertilizer
budget

targeted
pesticide
application

ecological
compensation
areas

animal
welfare
standards

Proof of ecological performance PEP: crop rotation

Two alternatives:

1) Minimum number of crops in rotation

→ 4 per year

(20% of area = ley ≈ 2 crops, 30% of area = ley ≈ 3 crops)

2) Maximum share of crops in rotation

	<i>in Prozent</i>
<i>a. Getreide gesamthaft (ohne Mais und Hafer)</i>	66
<i>b. Weizen und Korn</i>	50
<i>c. Mais</i>	40
<i>d. Mais mit Untersaat, Mais als Mulch-, Streifenfrässaat oder Direktsaat nach Gründüngung, Zwischenfutterbau oder Kunstwiese</i>	50
<i>e. Maiswiese (nur in den Reihen Herbizideinsatz möglich)</i>	60
<i>f. Hafer</i>	25
<i>g. Rüben</i>	25
<i>h. Kartoffeln</i>	25
<i>i. Raps, Sonnenblumen</i>	25
<i>k. Sojabohnen</i>	25
<i>l. Ackerbohnen</i>	25
<i>m. Tabak</i>	25
<i>n. Proteinerbsen</i>	15

C
rot

imal
elfare
standards

Proof of ecological performance PEP: soil protection

Two components:

1) Soil cover after August 31

→ winter crop

→ catch crop (before September 15, until November 15 at least)

2) Protection against soil erosion

→ "where adapted protecting measures are missing, no repeated soil losses may occur"

→ "adapted protecting measures" = perennial plan to prevent soil erosion (together with cantonal agency)

crop
rotation

soil
protection

balanced
fertilizer
budget

targeted
pesticide
application

ecological
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animal
welfare
standards

Proof of ecological performance PEP: balanced fertilizer budget

Two components:

- **Balanced nutrient budget for N and P by using a prescribed calculation method**
→ error range +/- 10% crop needs (except: unadequate soil supply)
- **Soil analyses at least every 10 years in certified laboratory**
→ at least pH, P and K
→ organic carbon on arable fields

**crop
rotation**

**soil
protection**

**balanced
fertilizer
budget**

**targeted
pesticide
application**

**ecological
compensation
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welfare
standards**

Proof of ecological performance PEP: targeted pesticide application

Three components:

- **Spraying equipment has to be tested every 4 years**
- **Only explicitly allowed applications**
 - specific dates
 - specific application techniques
 - specific products
 - threshold concept for several pests
- **Certain applications only with special permission**

**crop
rotation**

**soil
protection**

**balanced
fertilizer
budget**

**targeted
pesticide
application**

**ecological
compensation
areas**

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Proof of ecological performance PEP: ecological compensation areas

Two components:

- **Minimal share of ecological compensation area: 7%**
- **0,5 m wide green strips along roads**
(without fertilizers and pesticides)

**crop
rotation**

**soil
protection**

**balanced
fertilizer
budget**

**targeted
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A new system for direct payments: main motivations #1

- **Eliminate weak points** in the present system of direct payments:
 - **Better targeted direct payments**, more efficient use of available resources
 - **Improvements in ecological performance of agriculture** (agri-environmental indicators)
- **Secure provision and reliable food supply, sovereignty of food production**
- **Economic sustainability of farms**
- **Future global problems: Shortage of non-renewable resources, climate change**
- **International trade commitments (WTO, EU)**



A new system for direct payments: main motivations #2

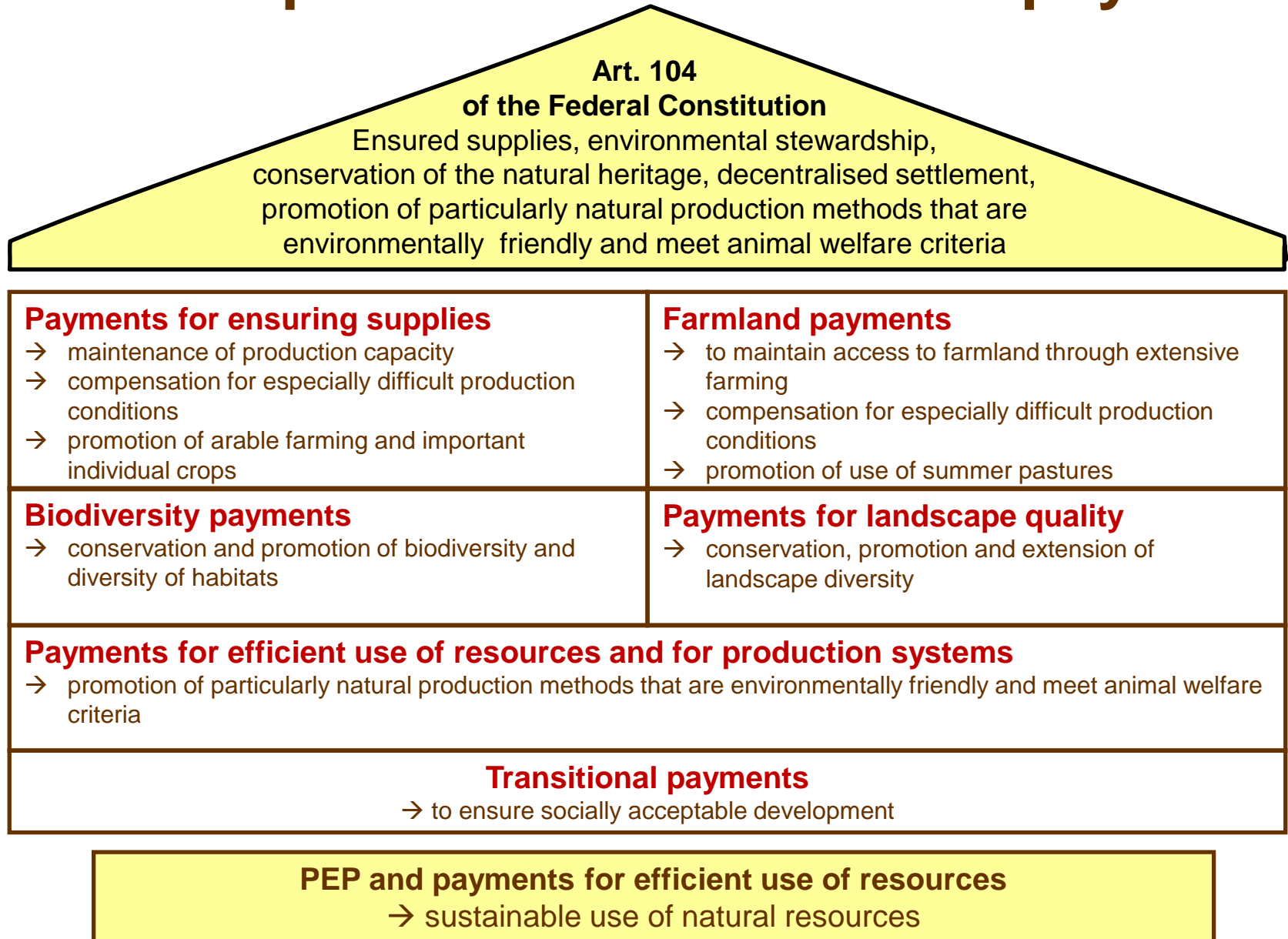
- **Clarity of direct payment system**
 - organisation according to logic in constitution and laws
 - only effects or performances requested which can be checked
- **Flexibility of direct payment**
 - **more possibilities to combine PEP requests** according to specific site and farm conditions
- **Motivation of farmers**
 - **more involvement of farmers in project-type agreements**
(the degree of fulfillment and the quality of PEP measures depend largely on the honesty, skills and motivation of farmers)



Aims of the agricultural policy 2014-17

Target area	Aspect	Situation 2007/09	Aims for 2017
Economy	Labour productivity	+2,1% p.a.	+2,1 % p.a.
	Capital renewal	30 years	30 years
Social	Incomes in the agricultural sector	-0,7 % p.a.	Reduction of fall in incomes to below 0.5% p.a.
Reliable supplies	Gross production	24 200 TJ	24 500 TJ
	Net production	21 500 TJ	22 100 TJ
	Farmed land in permanently inhabited zones	-1 900 ha p.a.	Reduction of loss of farmland to below 1,000 ha p.a.
Natural heritage, ecology	Nitrogen efficiency	29 %	33 %
	Phosphorus efficiency	59 %	68 %
	NH3 emissions	48 600 t N	41 000 t N
	Extent of biodiversity strips (BS)	60 000 ha BS in lowland areas	65 000 ha BS in lowland areas
	Quality of BS	36 % of BS linked up, 27 % of BS of recognised quality	50% of BS linked up, 40% of BS of recognised quality
Agricultural land	Farmland in upland and mountain areas	-1 400 ha p.a.	Reduction of natural spread of forest by 20%
Animal welfare	Participation in ROE (regular outdoor exercise) programme	72%	80%

Concept of direct payments



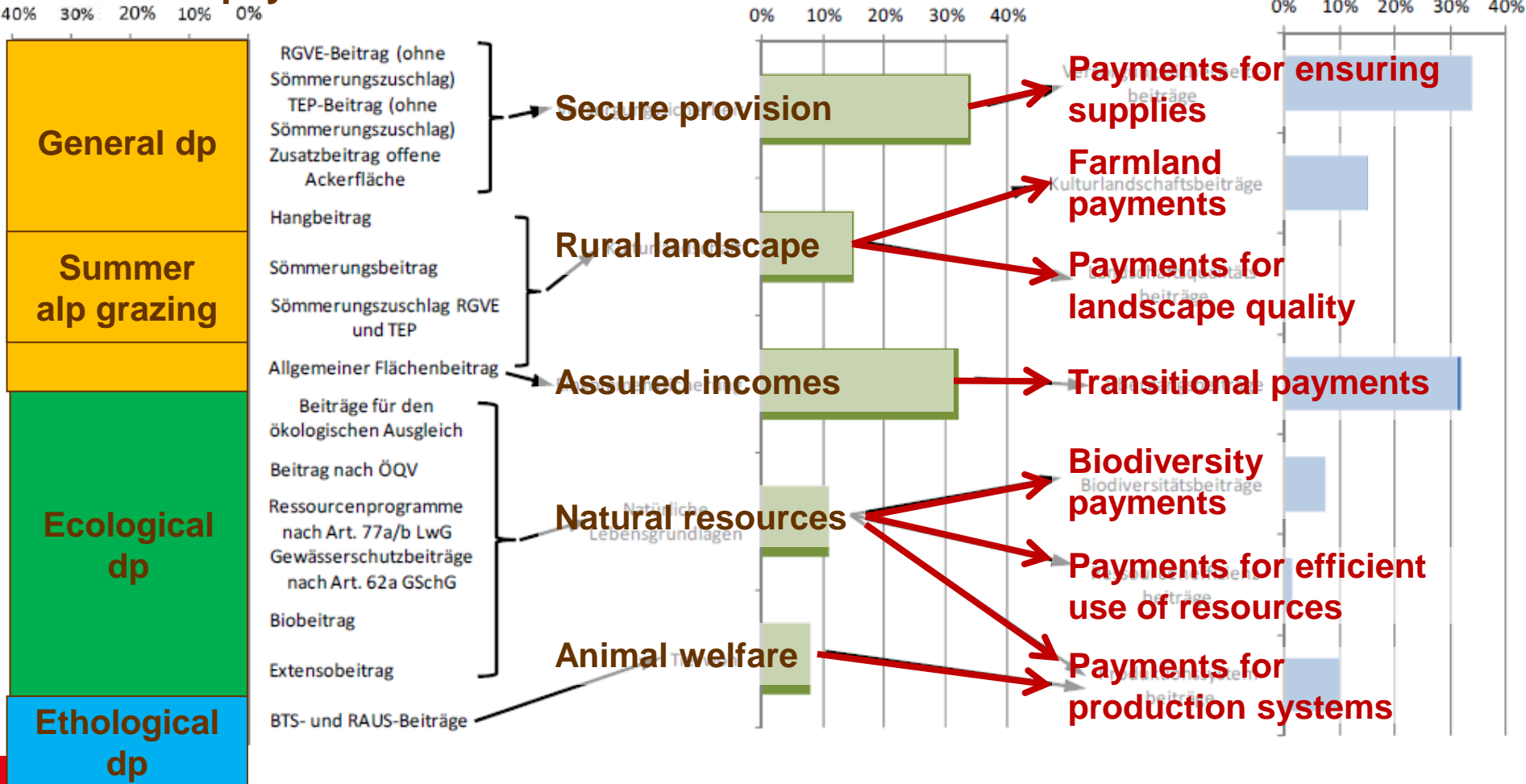


Direct payments: rearrangement of types

share on total direct payments

share on constitutional aims

share on new instruments



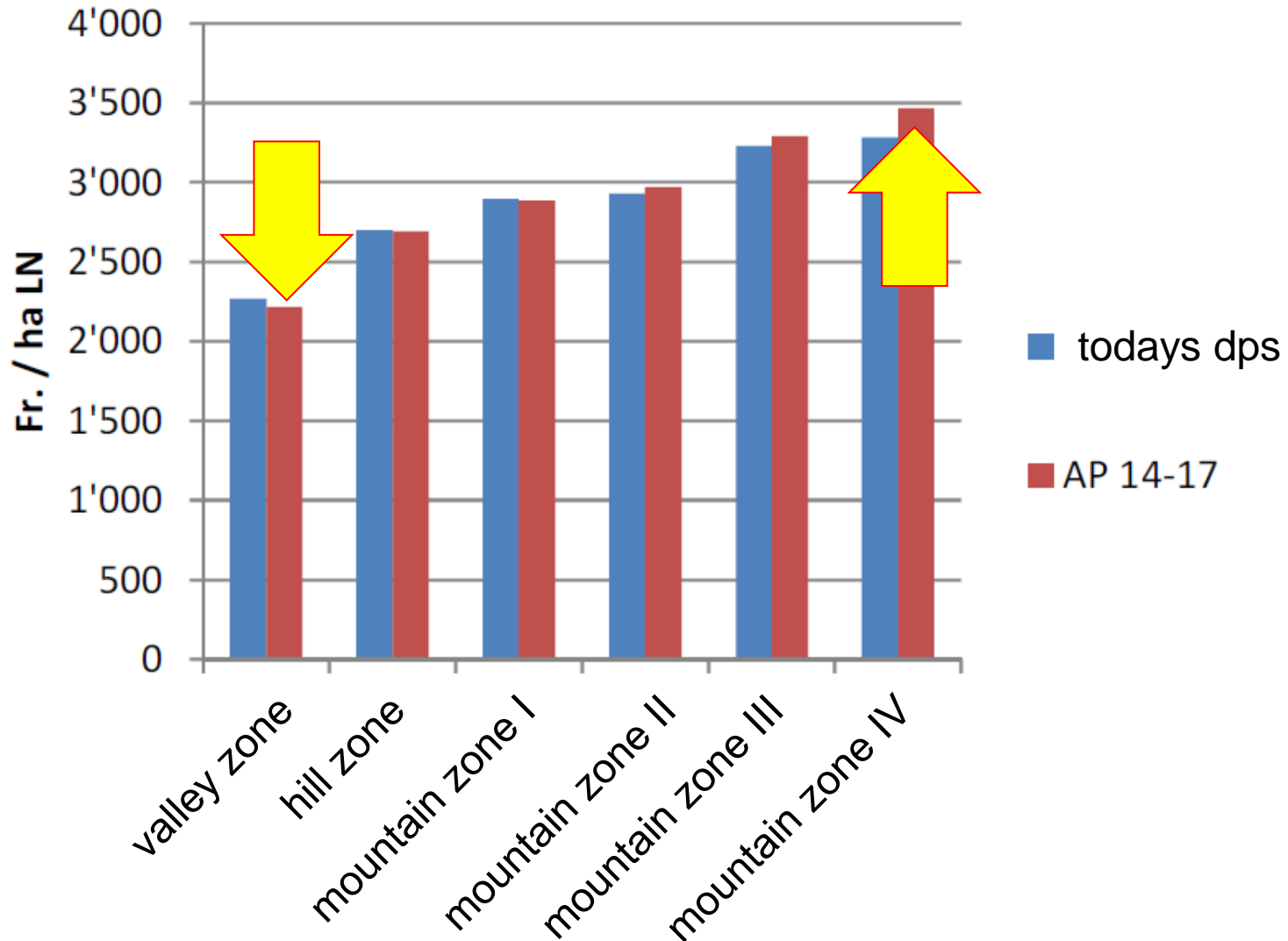


Direct payments: payments framework for 2014-17

(mio CHF)	2014	2015	2016	2017	Total
Payments for ensuring supplies	1 094	1 094	1 094	1 094	4 376
Farmland payments	511	511	511	511	2 044
Biodiversity payments	295	309	323	338	1 264
Payments for landscape quality	20	40	60	90	210
Payments for production systems	361	375	389	403	1 526
Payments for efficient use of resources	52	58	73	73	256
Transitional payments	482	428	365	306	1 579
TOTAL	2 814	2 814	2 814	2 814	11 256

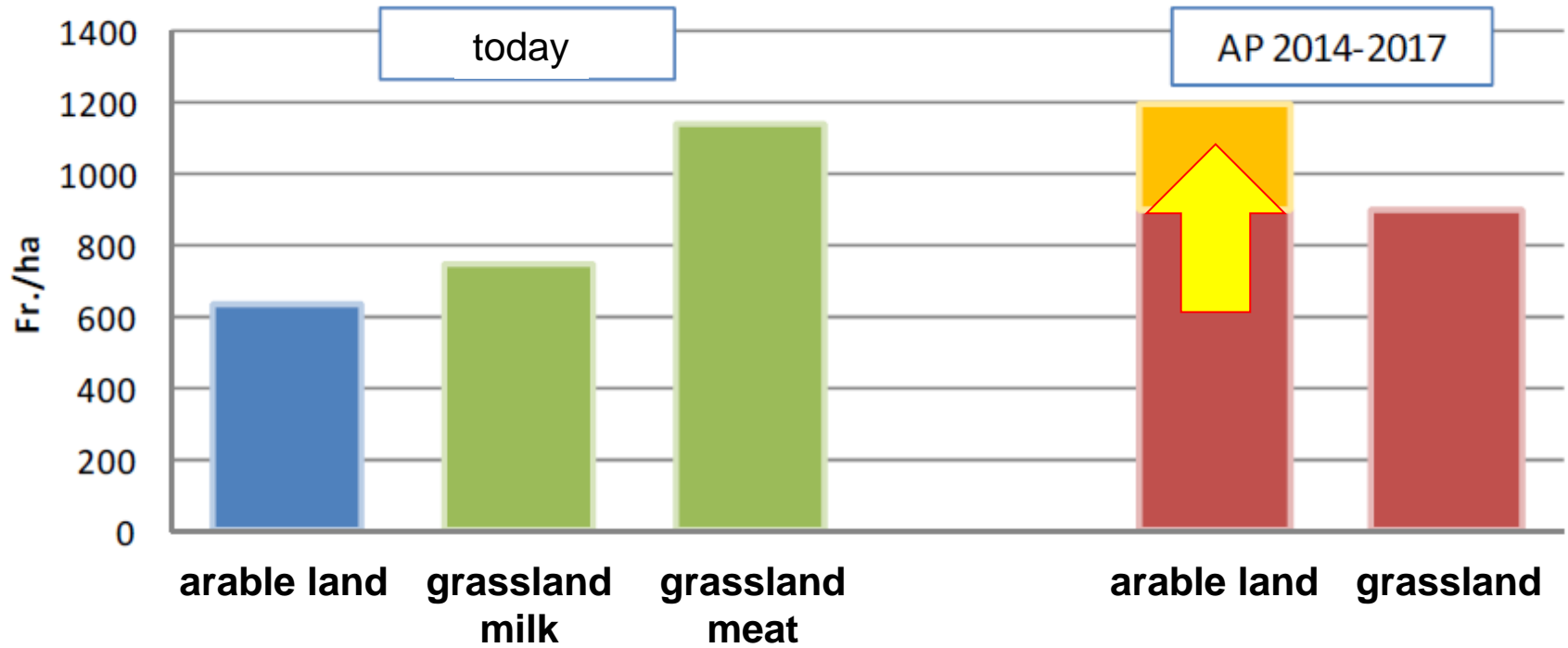


Direct payments per zone





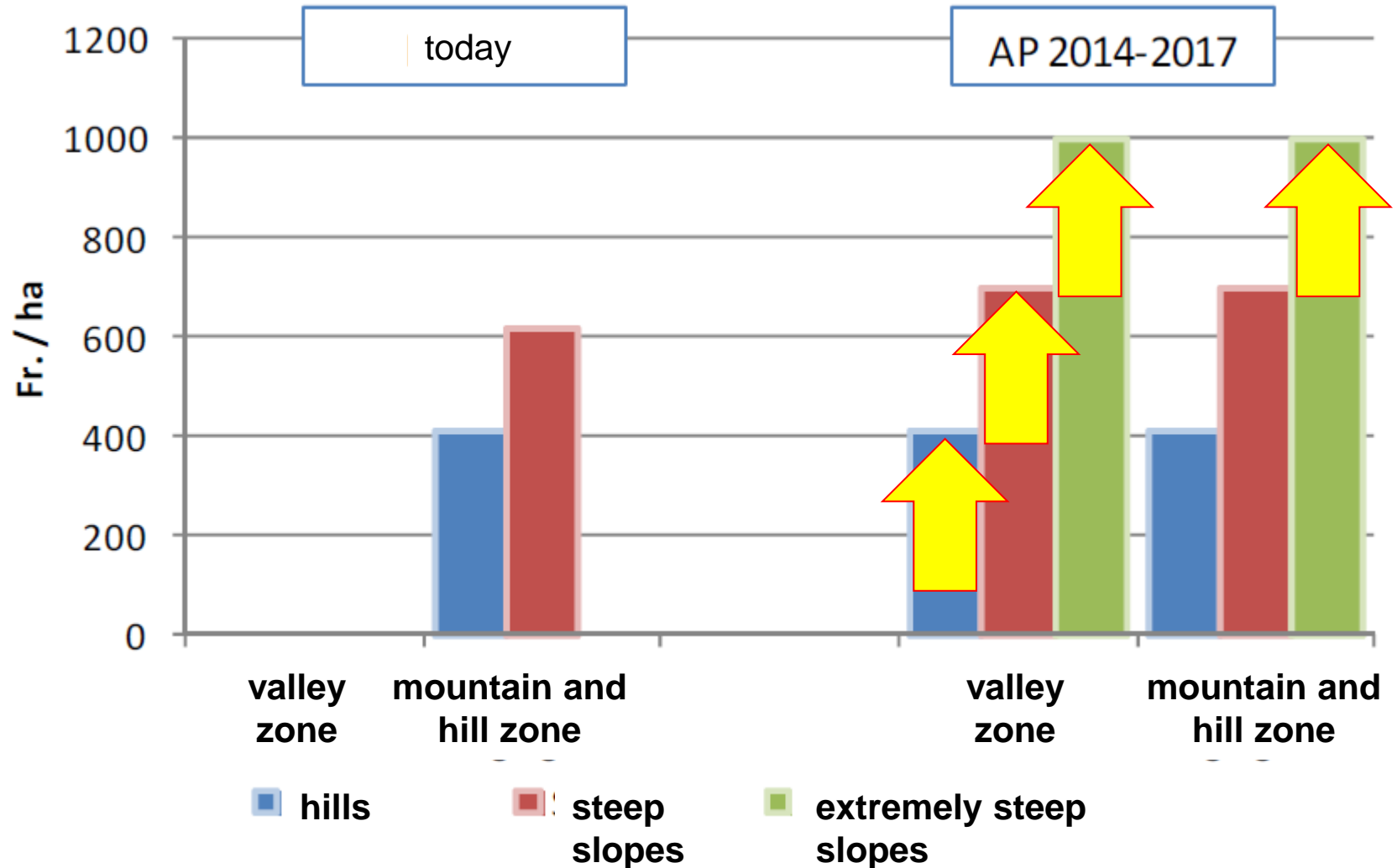
Payments for ensuring supplies



- Contribution for arable area
- Animal husbandry contributions
- Contribution to ensure supplies
- Supporting payments for arable land and permanent crops



Farmland payments: contributions for slope management



Payments for efficient use of resources: aims

- Promotion of the sustainable management of natural resources (soil, water, air)
- Improving the efficiency of production means (nitrogen, phosphorous, pesticides, energy)
- Wide adoption of productive and preserving techniques

Transition from resource projects to contributions for efficient use of resources

- Resource projects are organized by Cantons, the payments for the efficient use of resources will be available for all Swiss farmers .

TG						REB					
	LU, FR, BE						REB				
		AG, AI, AR, SO, NW, OW, ZG, SZ, UR						REB			
			GR, VD, NE, GL						REB		
				SH, BL, ZH						REB	
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019

Payments for efficient use of resources: implementation

Principles

- National promotion, Federation takes 100% of the financing
- Measures can be adopted by every Swiss farmer
- Contributions are limited in time, measures have to be continued after the end of the contributions

Possible measures

- Air: emission reducing spreading techniques
- Soil: preserving soil tillage techniques
- Water: Use of precise application technique





Payments for production systems



Contributions for whole farm production systems

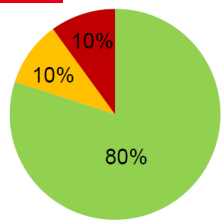
- Besides organic farming other farming systems imaginable

Contributions for production systems on part of the farm area

- Extensio program (cereals and rape production without growth regulators, fungizides, insecticides)
- Grassland-based program for the production of milk and meat
- Expansion of other production systems such as direct seeding methods with the aim of improving soil structure in the long term

Animal welfare programs

- particularly animal-friendly stabling (PAS) and regular outdoor exercise (ROE) animal welfare programmes: specific increase in incentives for categories of livestock where participation is low at present





Payments for production systems: organic farming

Harmonization of regulations

- Previous direct payment regulation for organic farms will be deleted
- **Requirements for proof of ecological performance apply to both conventional PEP and organic farms**
 - for crop rotation and soil protection organic farms have to meet the specific requirements of the national professional organisation
- The Federal Office for Agriculture authorizes the requirements of the national professional organisation

Structural improvements: protection of arable land (=arable soils!)

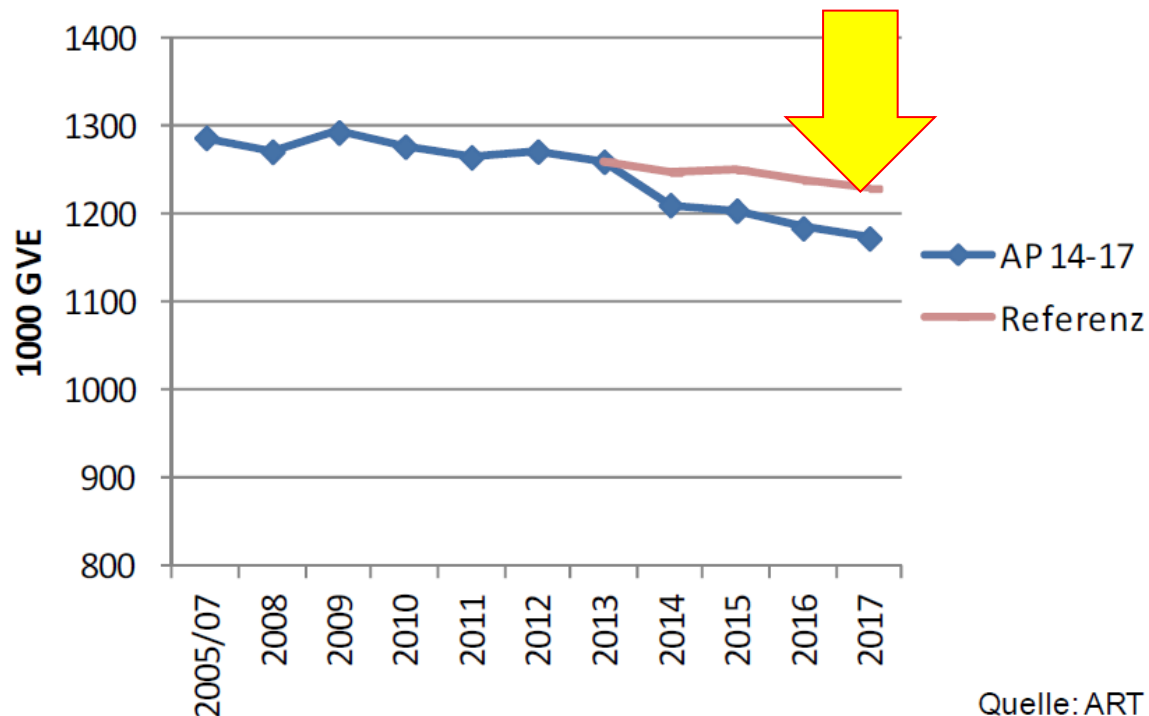
- **Federal Office for Agriculture will use its competences for objections if high quality agricultural soils shall be assigned to building zones**
 - agricultural policy 2014-17 will also **foster the quantitative protection of agricultural soils**
 - other measures are necessary in the framework of the revision of the law on land use planning

Consequences of new agricultural policy: reasons for reducing contributions to animal husbandry

- Today's contributions to animal husbandry are leading to an undesired intensification of animal husbandry

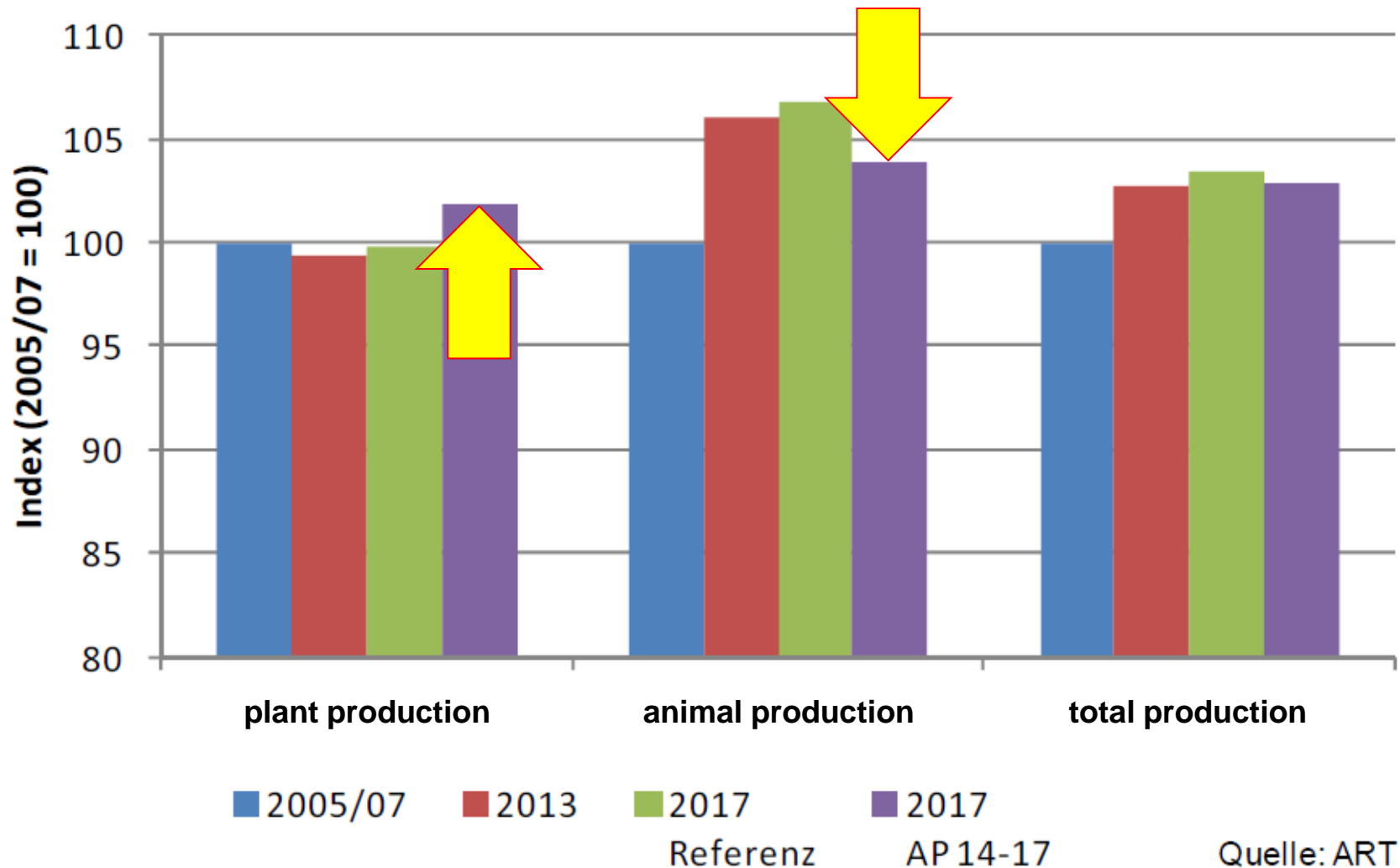
→ surpluses in the milk market with price reductions

→ negative consequences for environment and biodiversity



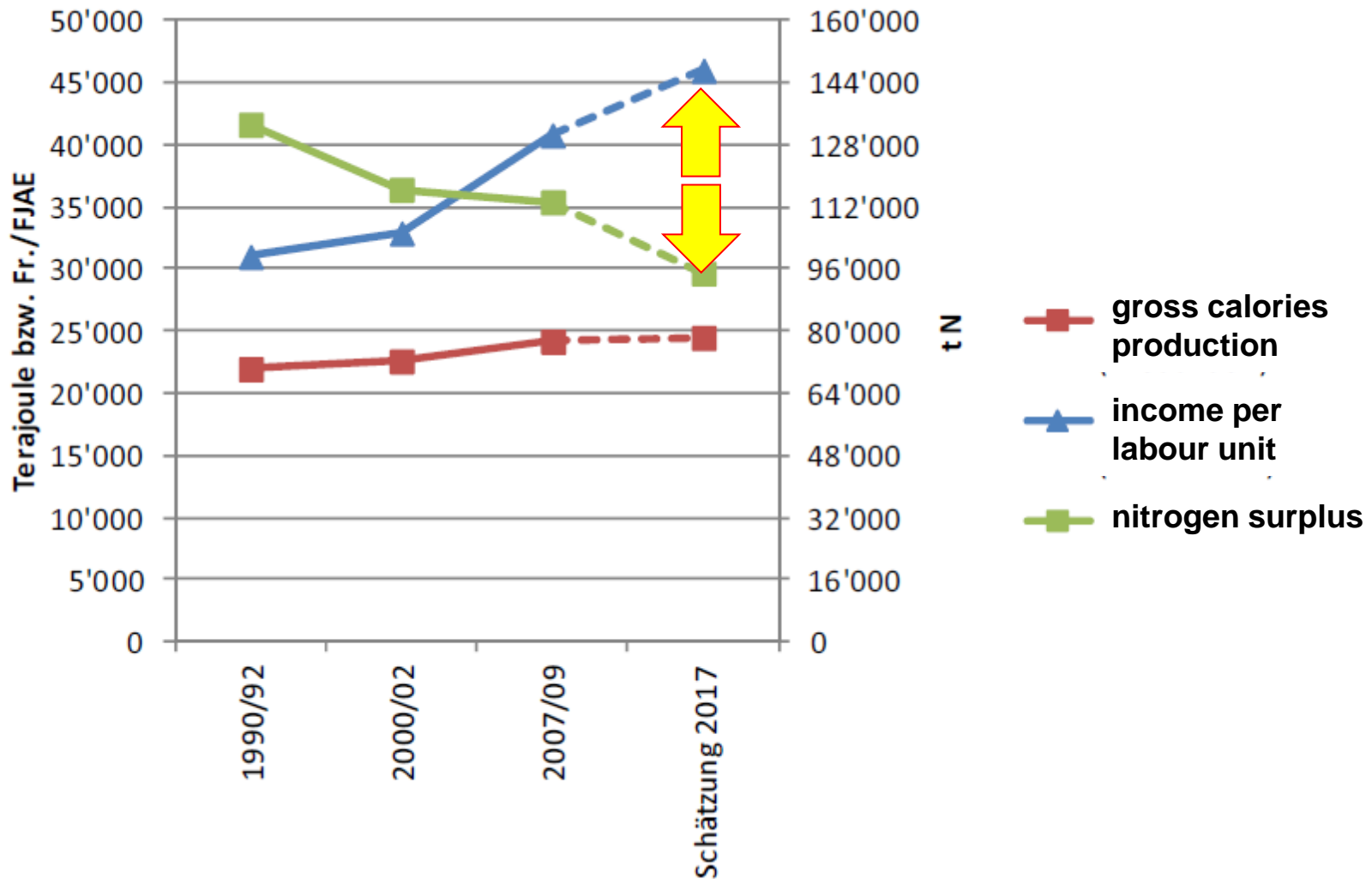
Quelle: ART

Consequences of new agricultural policy: food production in calories

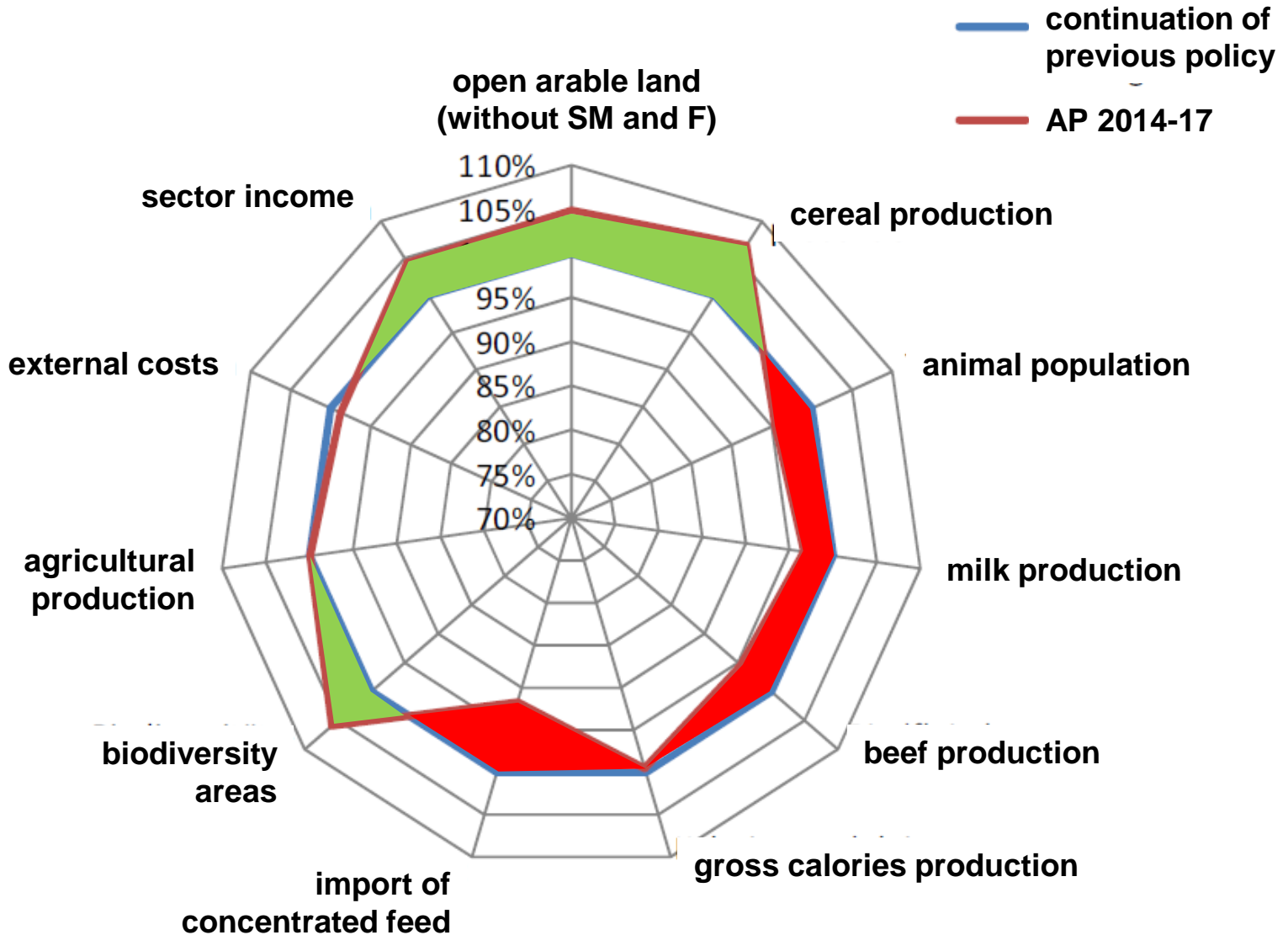


Quelle: ART

Consequences of new agricultural policy: production, income, ecology



Consequences of new agricultural policy: at a glance





Thank you for your attention!



**ART – research for
agriculture and nature**

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