FINANCIAL INNOVATIONS FOR BIODIVERSITY: THE SWISS EXPERIENCE

Two Examples of the Swiss Experience: *Ecological Direct Payments* as Agri-Environmental Incentives & Activities of the *Foundation for the Conservation of Cultural Landscapes* (Fonds Landschaft Schweiz)

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overview. *In Switzerland, the issue of biodiversity protection is addressed through several sectoral policies. This paper analyzes two cases of sectoral policies: ecological direct payments, which are within the realm of Swiss agricultural policy; and the activities of the Swiss Foundation for the Conservation of Cultural Landscapes (Fonds Landschaft Schweiz, FLS) which is within the realm of Swiss conservation policy. Both cases represent examples of the use of financial instruments for the protection of biodiversity.*

One of the most highly regulated and controlled sectors in Swiss economy, Swiss agriculture was reformed in 1992 due to the GATT Uruguay Round. Agricultural price and income policies were separated and domestic support prices were decreased. Swiss agriculture became multi-functional. Its objectives are now to ensure food supply for the national population, to protect natural resources (especially biodiversity), to protect traditional landscapes and to contribute to the economic, social and cultural life in rural areas. On one hand, direct payments are used to ease the transition of Swiss agriculture toward global and free market conditions. On the other hand, direct payments are offered to those farmers who are willing to use more ecological and biodiversity-sound management practices. This paper shows the design and success of these direct payments.

Another instrument for biodiversity protection is the Swiss Foundation for the Conservation of Cultural Landscapes (Fonds Landschaft Schweiz). It was set up by the Swiss Parliament during Switzerland's 700-year celebration in 1991. The Foundation supports specific projects for nature and landscape conservation, for example the conservation and sustainable use of old orchards, corridors of regional ecosystems, or old chestnut plantations in southern Switzerland. The Foundation is financed by federal, cantonal and communal authorities and by private donations.

Biodiversity protection policies are beginning to be implemented into agricultural and landscape policies. Because biodiversity protection is a broad concept, a concentration on funds from agricultural and landscape policies will not be sufficient. Therefore, instruments focusing on other sectors should be suggested.

1. Introduction

In Switzerland, the issue of biodiversity protection is addressed through several sectoral policies. This paper analyzes two cases of sectoral policies: *ecological direct payments*, which are within the realm of Swiss agricultural policy; and the activities of the *Swiss Foundation for the Conservation of Cultural Landscapes* (Fonds Landschaft Schweiz, FLS) which is within the realm of Swiss conservation policy. Both cases represent examples of the use of financial instruments for the protection of biodiversity. After a short description of the historical background, each case is presented by a description of important regulations, externalities that have to be taken into account, requirements necessary to be fulfilled by the recipient of financial support, and further development of the financial instruments. A final part of this paper takes a closer look at the ecological impact of the instruments, political-economic considerations and, in case of ecological direct payments, the international perspective.

Ecological direct payments in Swiss agricultural policy specifically address farm land-use and biodiversity. Due to market liberalization and a lack of international competitiveness in the past, Swiss agriculture had to shift to a different subsidy scheme. In line with the overall policy goal of maintaining agriculture in Switzerland and to ensure farmers' income, the "greening" of Swiss agriculture started on a broad scale. Ecological direct payments are a central instrument in this policy.

The *Swiss Foundation for the Conservation of Cultural Landscapes* supports specific projects aimed at nature and landscape conservation. The Foundation finances a range of activities: landscape protection, construction and maintenance of pathways, the establishment of landscape corridors, and educational projects.

Both examples can be seen as important and innovative instruments of Switzerland's implementation of the Convention on Biodiversity.

2. Case A: Ecological Direct Payments in Swiss Agricultural Policy

2.1 Background

Until 1992, Swiss agricultural policy had not been subject to fundamental changes. One of the most highly regulated and controlled sectors in Swiss economy, agriculture was reformed in 1992 due to the GATT Uruguay

Round. The most important outcomes of the GATT Uruguay Round were a progressive reduction of import tariffs by at least 15%, a reduction of export subsidies by 21% in relation to the exported quantity of goods, and a reduction of existing product subsidies by 36%. A minimal possibility for market entries must be guaranteed; therefore, domestic, product-bounded support prices must be scaled down by 20%. However, the protection of the agricultural sector through non product-specific direct payments remains unaffected.[1]

A political aim in 1992 was to develop a multi-functional Swiss agriculture. Agricultural price and income policies were separated, and domestic support prices were decreased in 1992 policy reforms. In addition to the aim of ensuring a national food supply, objectives included protecting natural resources (especially biodiversity), protecting traditional landscapes, and contributing to the economic, social, and cultural life in rural areas (Federal Council, 7. Report on Agriculture, Bern 1992).

Direct payments are used to ease the transition of Swiss agriculture toward global and free market conditions. Direct payments are also offered to those farmers who are willing to use more ecological and biodiversity-sound management practices. According to the reform of agricultural policy, direct payments should contribute to sustaining the population of farmers and diminishing conventional production methods (Federal Council, 7. Report on Agriculture, Bern 1992).

Because Switzerland is a direct democracy, where agriculture is regarded as a very sensitive sector, the population voted on the planned changes in agricultural policy. In March 1995, the Federal Council launched a vote. The Swiss population rejected this bill, because at the time, there was no plan to strictly bound the introduction of direct payments to ecological cultivation methods, or to oblige producers to declare the applied cultivation method. In early June 1996, the population clearly appreciated a changed *Federal Law on Agriculture*. An impressive 77.6% of all votes favored the new bill, while just 22.4% rejected it. Most notably, urban regions agreed to the agricultural article; for example, 87.4% in the *Federal State* (Canton) *of Basel* and 83.4 % in the *Federal State* (Canton) *of Zürich* voted in support of the new bill. This result also reflects consumers' desire for ecologically produced food. The *Federal State of Schwyz* or the *Federal State of Appenzell Innerrhoden*, both rural areas, accepted the agricultural article with a 65% vote and 69.2% vote, respectively. More or less, farmers in these regions feared additional administrative tasks as a consequence of the

[1] Ammann, M.; Anwander Phan-huy, S.; Zürich 1996, pp. 108

regulation and wanted to keep their reputation as the main food suppliers of Switzerland instead of becoming landscape gardeners.[2]

2.2 Important Regulations

In Swiss agricultural policy, several kinds of direct payments exist. Article 31a of the *Federal Law on Agriculture* (Landwirtschaftsgesetz)[3] regulates direct payments to ensure an adequate income for the farmers. They consist of direct payments for the farm unit and for each hectare the farmer cultivates. Article 31b of the *Federal Law on Agriculture* contains the regulation of agri-environmental incentives (*ecological direct payments*). These monetary compensations should induce farmers to accept restrictions on their property rights on land-use. The compensations are paid because ecologically sound land-use management results in lower yields. Ecologically sound land-use practices should also increase social environmental benefits. Positive external effects should be enhanced, negative external effects reduced. Finally, small family farms obtain social direct payments, which maintain farms and the rural population. Table 1 classifies direct payments in Swiss agricultural policy.[4]

Table 1: Classification to direct payments in Swiss agricultural policy

Type of direct payment	Objectives
Income oriented direct payments	Compensation for general benefits in public interest. Guarantee of farm incomes to supplement market revenues, according to Article 20 and 31a of the *Federal Law on Agriculture.*
Ecological direct payments	Payments for environmental benefits, compensation for lower yields and supplementary costs implied by extensification, according to Article 20 and 31 b of the *Federal Law on Agriculture.*
Payments for farming in difficult natural conditions	Compensation for higher production costs because of natural conditions, e.g. climate. Guarantee farm incomes in mountainous regions.
Targeted Production	Allow to target production and to secure sales, according to Article 20 and 31 of the *Federal Law on Agriculture.* Payments for the farming of grains and leguminosae, for green fallows, renewable agricultural raw materials, cheesed milk. Compensation for the silo ban. Compensation for lower income if cows are not kept for milk production.
Social payments	Keep small family farms and agricultural employment viable, through family payments, according to the *Federal Law on Family Payments in Agriculture* (Bundesgesetz über die Familienzulagen in der Landwirtschaft, FLG, SR 836.1)

Source: Table according to Federal Office of Agriculture 1997

[2] Buess, U.: Agrar-Artikel: Ein Ja von seltener Klarheit, in: Tages-Anzeiger, June 10th, 1996, Zürich 1996

[3] Federal Law on Agriculture (Bundesgesetz über die Förderung der Landwirtschaft und die Erhaltung des Bauernstandes vom 3. Oktober 1951, Stand am 1. Juli 1995, SR 910.1)

[4] For similar classifications, see Curry, N.; Stucki, E. 1997; p. 471, and Baur, P. 1995, p. 89

2.3 Article 31b Federal Law on Agriculture: Ecological Direct Payments

Ecological farming practices are compensated according to specific criteria, as outlined in the *Federal Ordinance on Ecological Direct Payments*[5] (Ökobeitragsverordnung - OeBv). Article 1 of the OeBV names the basic achievements necessary to receive direct payments: the creation of ecological set-asides, integrated production, organic production, and rules for indoor keeping and controlled free-range farming. Table 2 systematically shows the cultivation requirements and designated subsidies.

According to their goals, *ecological direct payments* can be divided into two groups: *i*) direct payments to avoid environmental damages and *ii*) direct payments to support ecological achievements in the public interest. The first group contains direct payments for integrated crop/ livestock production, organic farming, and extensively grown corn; the second group contains direct payments for extensive or low-intensity grassland, hedges and shrubs, litter-crop meadows and flowered fallow land, and standard fruit trees (Baur, P., 1995, p. 89).

Table 2: Cultivation requirements and subsidies

Ecological farming level	Case of application	Amount of subsidy (in Swiss Francs (SFr) per ha and year)
Ecological Set-asides	**Basic requirements and regulations** Minimum existence of 6 years, and minimum area of 5 a subsidies, restricted to a maximum of 50% of the area in agricultural use If on the same area, subsidies are received according to the Federal Law on the Preservation of Nature and the Landscape (NHG), these subsidies are reduced.* E.g. if a farmer in mountain zone I received SFr. 800 for extensive grassland by NHG, he now receives SFr. 700 by OeBV and sFr.100. by NHG. Further ecological practices can be subsidized by the cantons (federal states), payable by their budget.	
Extensive grassland	No pesticides or fertilizer, just mowing allowed. Mowing at least once a year, timing is regulated according to the altitude/ zone	farming and transition zone, pre-alpine hill zone: SFr. 1200 mountain zone I, II: SFr. 700; mountain zone III, IV: SFr. 450
Low intensity cultivated grassland	No pesticides, nitrogen fertilizing just with manure from the own farm. Mowing at least once a year, timing is regulated according to the altitude/ zone	farming and transition zone, pre-alpine hill zone: SFr. 650 mountain zone I, II: SFr. 450; mountain zone III, IV: SFr. 300

[5] Federal Ordinance on Ecological Direct Payments (Ökobeitragsverordnung, OeBV), January 24th, 1996, SR 910.132

Ecological farming level	Case of application	Amount of subsidy (in Swiss Francs (SFr) per ha and year)
Hedges and shrubs	No pesticides or fertilizer, haulm edge of at least three meters, mowing at least once in three years, mowing is regulated according to the altitude/ zone	see extensive grassland
Flowered fallow land	Farming area or non-use area of former special cultures: in farming zone, transition zone, pre-alpine hill zone: width has to be at least three meters, sown with native wild plants No pesticides, no fertilizer, mowing every two years Farmer must maintain wild-plant fallow land for at least two years on the same field, and six years on the whole farm Subsidies just for farmers who did not reduce grassland proportion of the whole cultivated area compared with 1994	SFr. 3000
Extensive grassland on set-aside arable land	In farming zone, transition zone, pre-alpine hill zone, sowed with useable grass and wild plants (if not already consisted of it) Mowing at least once a year, mowing is regulated on a specific time according to the altitude/ zone Subsidies just for farmers who did not reduce grassland proportion of the whole cultivated area compared with 1994	see wild-plant fallow land
Standard trees (fruits)	Timber height of stone fruit trees at least 1.2 meters, for all other fruits at least 1.6 meters No subsidies for trees in plantations	for each tree per year: SFr. 15, each farm has to have at least 20 of these trees, at most 300
Integrated crop/ livestock production	To avoid soil erosion and leaching of pesticides and nutrients, land-use requirements should contain: management of crop rotation cultivation of meadows ground covering closure of nutrition cycles, phosphorus and nitrogen balances use of pesticides only if damage thresholds are reached ecological set-asides have to be laid out on at least 5 % of areable land (7 % since 1998 in farming, transition and pre-alpine zone) buffer strips along surface water, hedges and forest impossible to combine with subsidies for organic farming	for farms up to 50 hec-tare, depending on land-use: SFr. 430 to SFr. 1200 (farm, year) for farms over 50 hec-tare per farm and year at a time half of the subsidies
Organic farming	Land-use requirements of: integrated crop/ livestock production (including ecological set-asides of at least 7 % of arable land (15% since 1998 in farming, transition and pre-alpine zone) buffer strips along surface water, hedges and forest renunciation of pesticides and nitrogen fertilizers, and use of mineral fertilizers that are easily soluble. impossible to combine with subsidies for integrated crop/ livestock production	for farms up to 50 hectare, depending on land use: SFr. 530 to SFr. 1800 (farm, year) for farms over 50 hectare per farm and year at a time half of the subsidies

* According to the Federal Law on the Preservation of Nature and the Landscape; July 1st, 1966, article 18a - 18d, SR 451
Source: Table according to the Federal Ordinance on Ecological Direct Payments (Ökobeitragsverordnung (OeBV), January 24th, 1996. SR 910.132)

In addition, subsidies for animal-friendly indoor keeping and controlled free-range farming are granted.

2.4 Procedures

The Swiss federation delegates the implementation of ecological direct payments to the cantonal (federal state) administrations. In order to receive

ecological direct payments, farmers submit an application to their cantonal administration. Farmers must commit themselves to accomplishing the cultivation standards they pledged for, and inform the administration of other subsidies they receive. It is a task of the cantons to gather farmers' participation on the ecological farming scheme.

Controls must be undertaken frequently. The cantons can assign organizations or instruct administrative personnel who are often employed at the local jurisdiction. These controls are not an evaluation of the potential improvement of ecological quality (Curry, N.; Stucki, E.; 1997, p. 477). All farms have to fill out an annual report. Payments can be cut down, stopped or asked to be paid back if a farmer does not hold to the standards, keeps wrong records, makes controls difficult or refuses them. Although farmers have to commit themselves to the cultivation standards for six years, the agreement may be reconsidered in any year, either by the farmer or the canton. The very bureaucratic procedure leads to a disparity between "the work of farmers on the ground and the quality of their paperwork. Some of the poorest [...] farm plans are produced by farmers who are often the best executors of practical work" (ibid.).

Article 31b of the Federal Law on Agriculture asks for an assessment of the overall ecological effectiveness of its regulations. According to Article 40 of the regulation, the *Federal Office of Agriculture* appoints an organization to assess the ecological performance. In 1997, the *Swiss Federal Research Station for Agroecology and Agriculture* (Forschungsanstalt für Agrarökologie und Landbau) in Zürich-Reckenholz was assigned to undertake this evaluation. At least ten years may be necessary, however, to develop data sets that allow valid statements on the effects of Article 31b on biodiversity (e.g. Ammann, G. 1998, p. 11).

2.5 Financing and development of direct payments

Ecological direct payments do not support the polluter-pays principle. This means that farmers damaging the environment are not penalized. Instead, they receive rewards for environmentally friendlier farming. This scheme aims to prevent future environmental damage and enhance current environmental quality by prescribing cultivation standards. Society as a whole, as well as private individuals, benefit from ecological cultivation standards. As ecological direct payments are financed through the Swiss public budget, the scheme follows the collectivity-pays principle. The subsidies change the allocation of factors of agricultural production and are also distributive. The "greening" of agricultural production is strengthened. Incomes in agriculture are stabilized. Compensation is paid for lower yields and supplementary extensification costs.

State expenditures on agriculture increased from SFr. 1.64 billion (Swiss Francs) in 1980 to SFr. 2.68 billions in 1990 and to SFr. 3.95 billions in 1996 (see table 3). By then, these expenditures amounted to 9 % of the total Swiss budget. Only expenditures on social welfare (29 % of the total budget), on traffic (14.5 %) and on military (12.7 %) were higher. In 1960, the share of contributions to agriculture was 12.3 %. Since 1980, this share has been about 8.5 %.[6]

Table 3: Overall public expenditures 1980-1996 in millions SFr.

Year		Social Welfare	Traffic	Military	Agricul-ture	Educatio n, Research	Other	Total
1980	nominal	3,619	2,728	3,620	1,639	1,372	4,838	17,816
	% of total	20.3	15.3	20.3	9.2	7.7	27.2	100.0
1990	nominal	6,861	4,680	6,052	2,676	2,438	8,909	31,616
	% of total	21.7	14.8	19.1	8.5	7.7	26.2	100.0
1993	nominal	11,289	6,239	5,753	3,416	2,971	10,932	40,600
	% of total	27.8	15.4	14.2	8.4	7.3	26.9	100.0
1994	nominal	10,688	6,176	5,935	3,475	3,103	11,964	41,341
	% of total	25.9	14.9	14.4	8.4	7.5	28.9	100.0
1995	nominal	10,212	6,204	5,856	3,547	3,157	11,553	40,529
	% of total	25.2	15.3	14.4	8.8	7.8	28.5	100.0
1996	nominal	12,732	6,333	5,580	3,953	3,124	12,118	43,840
	% of total	29.0	14.5	12.7	9.0	7.1	27.6	100.0

Source: Swiss Federal Statistical Office, Bern 1997

Expenditures on agriculture consist of administrative costs, research and consulting, enhancement of production conditions[7], support for sales and prices[8] and direct payments (see Table 4). Since the multi-functional orientation of Swiss agriculture was defined in 1992, these expenditures have been subjected to fundamental changes. Domestic support prices dropped from 48.6 % of the agricultural budget in 1992 to 33.8 % in 1996, but direct payments were raised from 37.3 % in 1992 to 56.6 % in 1996. However, in absolute numbers, support prices were reduced from SFr. 1.54 billion in 1992 to SFr. 1.34 billion in 1996 (minus 13 %), direct payments increased from SFr. 1.18 billion in 1992 to SFr. 2.24 billions in 1996 (plus 90 %, see table 4). The overall agricultural budget increased from SFr. 3.16 billions to SFr. 3.95 billions (plus 25 %).[9] Figure 1 shows the development of public expenditures on agriculture between 1985 and 1996.

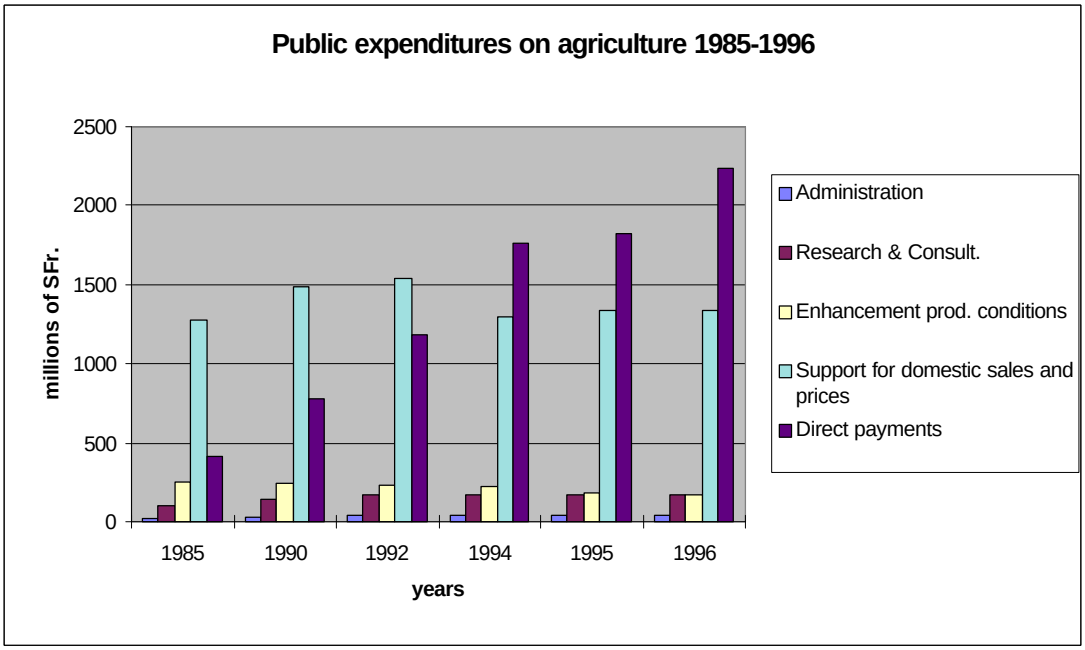
[6] Own calculation, and Swiss Federal Statistical Office 1997, p. 28

[7] Expenditures for enhancement of production foundations contain (i) support for agricultural infrastructure (e.g. reclamations, road improvement, farms water and electricity supply, shed improvement), (ii) credits for larger farm investments and (iii) loans for farms with financial problems without own engagement.

[8] contains export subsidies

[9] Own calculation according to Swiss Federal Statistical Office 1997, p. 28, and Swiss Federal Statistical Office 1998, p. 250

Figure 1: Public expenditures on agriculture between 1985 and 1996



Source: Exhibition according to Swiss Federal Statistical Office, Bern,

Table 4: Public expenditures on agriculture (1985-1996 in millions SFr.)

Year		Adminis-tration	Research & Consult.	Enhance-ment prod. conditions	Support for sales and prices	Direct payments	Total
1985	nominal	21.5	102.5	256.0	1,278.2	412.2	2,070.4
	% of total	1.0	5.0	12.4	61.7	19.9	100.0
1990	nominal	28.5	146.5	241.3	1,484.8	774.6	2,675.7
	% of total	1.1	5.5	9.0	55.5	28.9	100.0
1992	nominal	38.6	173.5	231.8	1,538.0	1,180.2	3,162.1
	% of total	1.2	5.5	7.3	48.6	37.4	100.0
1994	nominal	38.5	174.0	227.4	1,296.4	1,760.1	3,496.4
	% of total	1.1	5.0	6.5	37.1	50.3	100.0
1995	nominal	37.7	173.2	178.2	1,336.7	1,821.2	3,547.0
	% of total	1.1	4.9	5.0	37.7	51.3	100.0
1996	nominal	37.9	171.3	169.8	1,336.6	2,237.7	3,953.3
	% of total	1.0	4.3	4.3	33.8	56.6	100.0

Source: Swiss Federal Statistical Office, Bern 1997

A more detailed analysis of the development of direct payments shows two remarkable results. First, direct payments for regions with difficult agricultural production conditions have been reduced slightly, and social direct payments have remained almost constant. Secondly, overall direct payments according to Article 31a have been increased by 168% from sFr. 331.1 millions in 1992 to sFr. 888.8 millions in 1996. Ecological direct

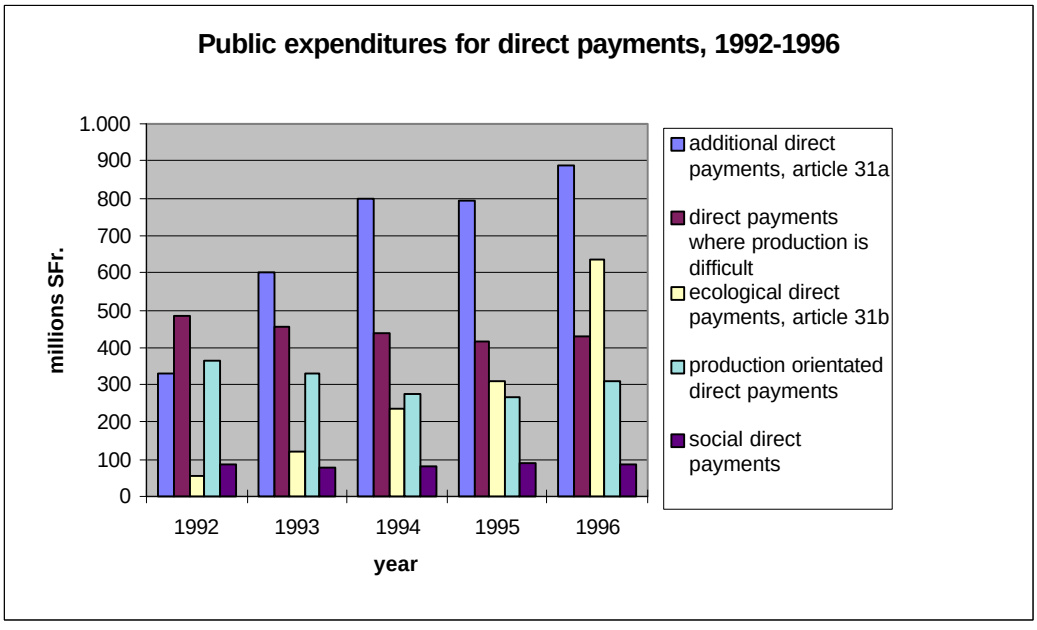
payments according to Article 31b increased by 1006% from only sFr. 57.4 millions in 1992 to sFr. 634.9 millions in 1996. As the analysis above, Table 5 and Figure 2 show, this development is more attributable to the growth of the overall agricultural budget than to a shift from subsidies for the support of domestic sales and prices.

Table 5: Public expenditures on direct payments 1992-1996 in millions SFr.

	1992	1993	1994	1995	1996
Additional direct payments, article 31a	331.1	600.0	796.9	794.8	888.8
Direct payments for difficult production conditions	486.4	456.2	436.6	415.9	431.3
Ecological direct payments, article 31b	57.4	119.2	236.9	310.8	634.9
Production orientated direct payments*	365.3	332.0	274.2	267.7	307.9
Social direct payments	86.7	78.3	80.8	88.3	87.9
Total	1326.9	1585.7	1825.4	1877.5	2350.8

*e.g. contributions if cows are not kept for milk production, price supplements on milk processed to cheese
Source: Swiss Federal Statistical Office, Bern, several years

Figure 2: Public expenditures for direct payments, 1992-1996



Source: Expenditures according to Swiss Federal Statistical Office, Bern, several years

In the following, I will take a closer look at the current state of direct payments with the largest growth. As we have seen before, ecological direct payments according to Article 31b can be differentiated by cultivation requirements. Monetary compensations are paid for extensive grassland,

In the following, I will take a closer look at the current state of direct payments with the largest growth. As we have seen before, ecological direct payments according to Article 31b can be differentiated by cultivation requirements. Monetary compensations are paid for extensive grassland, hedges and shrubs, litter-crop meadows, flowered fallow land, extensive grassland on set-aside arable land, low intensity cultivated grassland, standard fruit trees, integrated crop/livestock production, organic farming, controlled free-range farming and animal-friendly indoor keeping.

In 1996, with 71.2% or SFr. 417.2 millions, the scheme of integrated crop/livestock production received the largest share of ecological direct payments. Organic farming followed, with a share of 6.7 % of ecological direct payments or SFr. 39.3 million (see Table 6). Though almost 35,000 farms covering 650,000 hectares have enrolled in the integrated crop/ livestock production scheme, just 3,400 practice organic farming, covering 54,000 hectares (see Table 7). A regional distribution shows that organic farming is especially strong in the mountainous regions, where a sensitive natural environment and lower potential for intensification has fostered a long tradition of ecologically sound production.[10] With SFr. 35.8 millions, or a share of 6.1% of overall ecological direct payments, the support of standard fruit trees is remarkable. Absolutely, over 38,000 farms have registered nearly 2.4 millions trees (see Table 7).

Table 6: Ecological direct payments in cultivation requirements in 1996 in SFr.*

	percentage	SFr.
Extensive grassland, hedges, shrubs	4.46%	26'136'129
Flowered fallow land	0.08%	453'630
Extensive grassland on set-aside arable land	2.17%	12'694'941
Low intensity cultivated grassland	2.87%	16'831'076
Standard fruit tress	6.10%	35'790'417
Integrated crop/ livestock production	71.17%	417'223'286
Organic farming	6.70%	39'265'703
Free range	5.42%	31'798'483
Animal friendly indoor keeping	1.03%	6'055'147
Total	100.00%	586'248'812

*Article 31b
Source: Swiss Federal Statistical Office 1997

[10]Swiss Federal Statistical Office 1997, p. 29

Table 7: Farms and area receiving ecological direct payments according to Article 31b, in 1996

	number of farms*	ha/ number
Extensive grassland, hedges and shrubs(area in ha)	33,400	31,421
Flowered fallow land (area in ha)	427	154
Extensive grassland on set-aside arable land (area in ha)	4,948	4,805
Low intensity cultivated grassland (in ha)	25,015	38,485
Standard fruit trees (number of trees)	38,262	2,397,858
Integrated crop/ livestock production (area in ha)	34,956	646,282
Organic farming (area in ha)	3,389	53,982
Free range (number of animals)	13,342	254,759
Animal friendly indoor keeping (number of animals)	4,489	94,145

*double counting possible
Source: Swiss Federal Statistical Office, 1997

Since their introduction, the application of ecological direct payments has rapidly increased, as revealed in the steadily growing number of participating farms and covered area. Federal expenditures for this policy are substantial. To further legitimize direct payments, an evaluation of their ecological effectiveness will be undertaken.

3. Case B: Swiss Foundation for the Conservation of Cultural Landscapes (Fonds Landschaft Schweiz)

3.1 Background

The Federal Assembly created the *Swiss Foundation for the Conservation of Cultural Landscapes* (FLS, Fonds Landschaft Schweiz) during Switzerland's 700-year celebration in 1991. The aim of the FLS is to conserve or rebuild historical, cultural and natural landscapes, traditional and sustainable agricultural management practices, and historical buildings and roads.

3.2 Regulations and Procedures[11]

The foundation finances specific projects by application. The aim is to support projects which are economically less feasible than potential landscape-destroying alternatives. If only individual preferences on markets were taken into account, projects with different impacts on nature would compete. The FLS aims to implement those projects that are beneficial to nature.

Supported projects must enhance the ecological and landscape situation, and be directly implemented with local and indigenous knowledge. A

[11]See "Bundesbeschluss über Finanzhilfen zur Erhaltung und Pflege von naturnahen Kulturlandschaften", Bern, May 3rd, 1991 (SR 451.51)

commission appointed by the Federal Council, consisting of members from the federal state, the cantons, and NGOs for nature and landscape protection, decides on the acceptance of project applications. The foundation provides up to 80% of the total project costs, and up to 100% of costs for exceptional projects. It is possible to combine the funds with other subsidies.

3.3 Financing and Development

The foundation addresses cantons, jurisdictions, and natural or legal persons. The starting capital was sFr. 50 million, limited for 10 years. In November 1997, the *Commission for Environment, Zoning, and Energy of the Swiss National Council* decided to start a parliamental initiative for 1998 that would maintain the foundation for ten more years—from 2001 to 2011—with an additional capital of sFr. 50 million. In March 1998, the National Council voted 63 to 34 for the maintenance of the foundation. The State Council (second chamber of the Swiss Federal Assembly) is also expected to accept this decree order, although a final decision has not yet been made.

The foundation is financed by the federal state budget. In addition, cantons, local communities, individuals and enterprises are also monetarily supporting the foundation. Until 1997, the cantons participated with nearly SFr. 630,000, local communities and cities with nearly SFr. 334,000 , and other donors with nearly SFr. 420,000.[12].

Tables 8 and 9 show provided funds, in total and divided by project categories.

Table 8: Supported projects and provided money since 1991

	Applications			Amount in SFr.	
Year		Positive	Rejected	Grant	Loan
1991	30	0	0	0	0
1992	80	24	16	3,169,100	500,000
1993	101	44	28	2,462,498	550,000
1994	152	89	28	6,393,589	2,011,499
1995	167	103	30	8,973,105	2,404,107
1996	141	109	50	7,772,542	2,309,000
1997	157	99	43	6,885,525	272,000

Source: FLS 1998

[12]FLS, Report of Activities (Tätigkeitsbericht) 1996/1997, Bern 1998, p. 27

Table 9: Supported project, project categories, 1991 to 1997

Category	Number of projects	Amount of subsidies in SFr., grants and loans together
Landscape protection	75	14,554,242
Natural reserves	22	3,132,000
Cultivation agriculture	7	279,000
Cultivation biotas	55	3,770,063
Water, rivers	43	4,895,220
Historical buildings	90	3,817,881
Hiking-, historical pathways	31	2,182,646
Landscape protection in cause of infra-structure	16	3,531,581
Biota connectivity	45	2,883,043
Education, information	56	2,184,289
Basic concepts, studies	15	662,000
Ecological enhancement of settlements	13	1,811,000

Source: FLS 1998

The foundation supports the conservation and sustainable use of old orchards, corridors of regional ecosystems, or old chestnut plantations in southern Switzerland. In the following, the example of nature and landscape protection in the Randen in Canton (Federal State) Schaffhausen in northern Switzerland is presented.

3.4 The Randen Case

The *Schaffhauser Randen* is officially recognized as a cultural landscape with nation-wide importance. Nature conservation in the Schaffhauser Randen and its local municipalities has a long tradition. The total area of the Randen is 7,432 hectares, which is 24.9% of the whole Canton Schaffhausen. Geographically, the Randen belongs to the Jura mountain range in Switzerland. A range of several species-rich, nutrient-poor meadows and pastures, with rare orchids, butterflies, grasshoppers, other insects and reptiles are located in this area. Stands of pine trees on extensive grassland are found on the higher Randen areas.

Development of Landscape Protection Activities and Institutions

The species-richness of the higher Randen arose due to extensive agriculture. After the Second World War, agriculture was forced into intensification. The dry and thin arable soil of the higher Randen areas no longer guaranteed sufficient farming incomes. Overall economic growth in the 1950s and 1960s led to the building of over 200 weekend cottages in the Randen. [13]

[13] Huber 1998, p. 88

In 1957, the *Schaffhauser Randen Association* (Schaffhauser Randen-vereinigung) was founded, driven by the initiative of a few engaged individuals. Shortly after its foundation, more than 40 other local organizations became collective members of the *Randen Association*. They were anxious about the rapid decline of natural areas in the region. Obligated to nature conservation in the Randen, the early tasks of the *Randen Association* were to contain the construction activities, to prevent additional agricultural communities, and to restrict growing traffic. Although cantonal laws were amended in 1965 and restrictions on the construction of weekend cottages were introduced, the Randen communities created zones which still allowed cottages to be built. Continuous work of the *Randen Association*, together with the cantonal administration, led to augmented regulations in 1971 which nearly abolished new construction in the open Randen landscape. [14]

Between 1964 and the early 1980s, the redistribution of land in Merishausen, an important Randen community, was a very important issue for the *Randen Association*. Because the redistribution endangered the ecological state of the area, the *Randen Association* influenced cantonal and state administration for several years. Therefore, the *Association* ensured that the redistribution was undertaken with respect to nature and landscape conservation goals. In the redistribution, protective areas, such as the largest wild plant refuge in the Canton of Schaffhausen, were cataloged and allocated. The *Randen Association* successfully organized state and cantonal nature and landscape conservation subsidies to go into the community, but it could not gather the support of the whole population. Nevertheless, contrary to redistributions in other parts of the Canton, no court proceedings in Merishausen ensued.[15]

Still, the traditional landscape changed. Farm road improvement made mechanized agriculture on the higher Randen areas possible. Corn, cereals and rape seed were grown, as a consequence species-rich dry grassland declined. Marginal fields were abandoned, and old-field succession started. Among the non-agricultural population, concerns about conservation issues grew. In 1977, the Randen was listed at the *Inventory of Landscapes and Natural Monuments of Nationwide Importance* (BLN, Bundesinventar von Landschaften und Naturdenkmälern von nationaler Bedeutung). While both the *Randen Association* and the *Schaffhauser Scientific Society* were very active in cataloging the Randen flora and fauna, the Federal Council entered the Randen as one of the first landscapes to the BLN. Though the BLN does

14Huber 1988, pp.16

15ibid.

not include specific and binding conservation instruments, it supported the activities of the *Randen Association*.[16]

Danger and Chance of 1991

While Switzerland observed its 700-year anniversary in 1991, the *Canton of Schaffhausen* officially appointed a commission to include a special cantonal project. The commission suggested that a leisure park be built in the Randen region. The variety of organizations for nature conservation in Schaffhausen rejected the plan and suggested their own projects, which were considered by the cantonal administration. Meanwhile, the Federal Assembly had created the *Foundation for the Conservation of Cultural Landscapes* (FLS). The Federal Assembly, inspired by on-going or planned conservation projects, designed the foundation to sustain natural landscapes while also maintaining their cultural heritage.

In the Randen, a new institution was founded to establish close links to the Foundation: In 1993, the *Regional Association of the Cultural Landscape Randen* (KURA, Arbeitsgemeinschaft Kulturlandschaft Randen) was founded on the initiative of local politicians. The KURA contains all groups with a stake in the Randen landscape: *Association of Randen Farmers* (Vereinigung der Randenbauern); public administration of the Randen communities and the Canton Schaffhausen; the *Schaffhauser Randen Association* (Schaffhauser Randenvereinigung); the *Schaffhauser Scientific Society* (Naturforschende Gesellschaft Schaffhausen); other organizations for the preservation of nature and the landscape; scientists; state representatives; and individuals. The KURA designed several projects that have been supported by the Foundation.

Intensive agriculture or abandonment still endangered ecosystems such as dry grassland, hay meadows, and field and forest margins. If the traditional use of species-rich, nutrient-poor meadows and pastures is interrupted, the vegetation changes due to natural succession. Such landscape elements require specific management with little economic return. The costs are not completely covered by the *Ecological Direct Payments* of *Article 31b* of the *Federal Law on Agriculture*. Farmers who accept the management requirements of Article 31b or engage in maintenance of rare landscape elements receive additional compensation by the *Foundation for the Conservation of Cultural Landscapes* (FLS).

The KURA employs the Randen farmers as an agent of the FLS (Huber 1998, p. 101). A regional ecosystem connectivity plan was designed and

16Huber 1998, pp. 93

established by the people and organizations involved. In the project "Forest," Randen farmers thin out the forest to support rare plants, clear shrubs and take care of old stands of pine trees. In the project "Species rich meadows," the KURA has made specific conservation-directed management contracts with almost 80 farmers on more than 160 dry grasslands.

Until 1998, the FLS supported the work of the KURA with almost sFr. 1.3 million. A regional foundation, the *Dr. Bernhard-Suhner-Foundation*, offered sFr. 120,000 for a project conserving rare Randen butterflies. During the 1994 Christmas season, nationwide candy fundraising by the *Bund für Naturschutz*, a Swiss NGO for nature conservation, contributed another sFr. 150,000. Yearly member charges amount to some sFr. 12,000. Altogether, the KURA has raised almost sFr. 1.7 million for the protection of the Randen biodiversity.

The Randen case shows that ecological farming and the management of rare landscape elements by farmers is possible if they receive compensations for additional work. During more than fifty years, the relationship between farmers and conservationists evolved from confrontation to cooperation. The KURA can be seen as the successful result of this development. Although the institutionalization of conservation activities in the Randen was important in preserving its biodiversity, most of the activities would not have been possible without financial support by the FLS. Future environmental damage is avoided, which benefits society as a whole. Because national and cantonal budgets and private donations finance the FLS, it follows the collectivity-pays principle. The ecological function of agriculture is strengthened and incomes in agriculture are maintained.

4. Ecological effectiveness, political economic considerations and the international perspective

Presented cases in this section include three important aspects: ecological impact, political-economic considerations, and the international perspective. An evaluation of ecological effectiveness is required for further analysis of financial instruments for biodiversity, as ecological standards should be met with the help of these instruments. Although ecological direct payments support the removal of perverse subsidies, they remain subsidies nonetheless. Therefore, the government needs to legitimize the distribution of taxpayers' money. Political-economic considerations take a closer look at the shape and structure behind government policies and influence groups. While economies are globalizing, WTO demands certain requirements. Therefore, a short glimpse at the international discussion on agricultural policy is necessary.

4.1 Ecological Impact

In 1997, the *Swiss Federal Research Station for Agroecology and Agriculture* (Forschungsanstalt für Agrarökologie und Landbau) in Zürich-Reckenholz was assigned to evaluate the overall ecological effectiveness of Article 31b regulations. Unfortunately, no baseline studies of the ecological situation on the farms in 1993 were carried out. Although it might take several years to develop data sets that allow valid statements on the effects of Article 31b on biodiversity (e.g. Ammann, G. 1998, p. 11), a number of smaller studies conducted in the past allow a preliminary assessment of the ecological impact of the incentives. [17]

A study on 110 pilot farms in Switzerland by the *National Group on Ecological Pilot Farms* (Nationale Projektgruppe Öko-Pilotbetriebe, Bern 1998) covers data from 1991 to 1996. The results justify a positive evaluation of the "greening" of Swiss agriculture. Farms participating in the Integrated crop/ livestock production (IP) or Organic Farming (OF) scheme showed a higher share of ecological set-asides than other farms[18]. Because of changes in the production scheme (crop rotation, cover crops) IP- and OF-farms reduced the danger of erosion or nutrient leaching. In all IP- and OF-farms, the use of nitrogen and phosphorus fertilizers was significantly reduced, producing a *negative* nitrogen balance in OF-farms. The use of pesticides at IP-farms was also reduced (Nationale Projektgruppe Öko-Pilotbetriebe, Bern 1998).

The analysis of the impact of ecological direct payments on biodiversity, however, was not part of this pilot study. An increase of ecological set-asides does not provide results on the qualitative ecological assessment of these areas. A study by the NGO *Pro Natura*, undertaken in three municipalities, criticizes both quality and spatial distribution of the set-asides. In the area of this pilot study, 1/4 of the ecological set-asides are low-intensity grassland, where use of artificial fertilizer is still possible. The ecological quality of these areas was evaluated by different methods.[19] 44% of the low intensity grassland showed a satisfactory quality, almost 1/3 were considered fairly poor. Conservation biologists recommend an augmentation of unfertilized, nutrient-poor areas because of their importance for biodiversity. Presently, these grasslands represent only 6% of the set-asides, with almost 2/3 of these areas showing a satisfactory quality.[20] Highstem

17 The Swiss NGO Pro Natura criticizes the low budget for the evaluation the Institute was assigned to, which is just 3 ‰ of direct payments for ecological set-asides: Ökologischer Ausgleich in der Landwirtschaft – Pro Natura Bilanz und Ausblick. Pro Natura 1998, Basel, pp. 21

18 Integrated crop/ livestock production (IP): almost 10% of total area covered in the study, Organic Farming (OF): almost 16% of total area covered in the study, other farms almost 4% of total area covered in the study.

19 For details, see Swiss Agency for the Environment, Forest and Landscape (Bundesamt für Umwelt, Wald und Landschaft BUWAL) (Hrsg.): Ökologischer Ausgleich, Umwelt-Materialien Nr. 82, Bern 1997, pp. 75-88

20 Swiss Agency for the Environment, Forest and Landscape (Bundesamt für Umwelt, Wald und Landschaft BUWAL) (Hrsg.): Ökologischer Ausgleich, Umwelt-Materialien Nr. 82, Bern 1997; Ökologischer Ausgleich in der Landwirtschaft – Pro Natura Bilanz und Ausblick. Pro Natura 1998, Basel, pp. 18

standard fruit trees were also evaluated in this study. Only 40% of the trees were of a satisfactory quality. Very often, extensive grassland underneath or nearby the trees was missing. The low quality of large parts of the grassland and of the standard fruit trees raises doubts about the ecological effectiveness of the implemented ecological direct payments scheme. Standard fruit trees alone cover 1/3 of the total ecological set-asides and receive almost 40% of direct payments for ecological set-asides in 1996.[21]

The studies reflect that "greening" of Swiss agriculture is on its way, although it is necessary to more precisely define environmental objectives. For example, the official statistics could be more detailed. Extensive grassland, hedges and shrubs, and litter-crop meadows constitute a single payment category, although they have different ecological importance. Furthermore, the statistics do not indicate if the area existed or the management technique was applied *before* the incentive existed, or if the area was newly "ecologized." A statement on the improvement of the ecological situation would require this information. Finally, the statistics do not point out the amount of subsidies given by the Cantons that can be combined with Article 31b incentives for additional ecological achievements according to the *Federal Law on the Preservation of Nature and the Landscape*.[22] The transparency of the statistics could be improved by listing the financial and governmental sources providing subsidies for specific areas or management techniques.[23]

4.2 Political-economic Considerations

From a theoretical point of view, political economics explains and criticizes the combination of agricultural and environmental policies through the establishment of agri-environmental incentives (Scheele 1987; Hagedorn/ Schmitt 1985). Why agricultural policy is exposed to the influence of interest groups, and why these interest groups are especially strong in the pursuit of their goals will be discussed in this section.

Agri-environmental incentives to enhance biodiversity can be seen as the internalization, or even generation, of positive external effects that might not have been produced otherwise. Federal subsidies for the improvement of environmental quality are influenced by political mechanisms and not by market coordination. Cultivation requirements can be seen as norms set by the government. These norms affect allocation while they are subject to influence by different interest groups in the norm-setting process.

21Ökologischer Ausgleich in der Landwirtschaft – Pro Natura Bilanz und Ausblick. Pro Natura 1998, Basel

22See table 2, page 5, for the law: NHG, article 18a-18d, SR 451

23Ökologischer Ausgleich in der Landwirtschaft – Pro Natura Bilanz und Ausblick. Pro Natura 1998, Basel, pp. 15

Depending on the power of these interest groups, social preferences might become distorted (Olson 1985).

Because of nature's complexity, uncertainties and little knowledge are present. The aggregation of preferences on biodiversity protection for collective choice, therefore, requires prohibitive information costs and will be difficult or even impossible to achieve. Political articulation and the exercise of organizational power during the norm-setting process are not without a price (Scheele 1987, Olson 1985). If environmental policy goals will result in high adaptation costs and therefore influence private income distribution, affected interest groups or organizations will start to exercise their power in order to maintain the status quo. Especially in agriculture, adaptation costs to environmental policy are considerable because of high and irreversible investments undertaken in the past.[24] Irreversible investment serves as an entry barrier to become a member of the market, interest group or organization. The entry barrier creates a quasi surplus for the current members. However, a deterioration of the economic situation or a change in the institutional frame that rises expected adaptation costs hampers exit barriers. Interest group members will defend quasi surpluses (Hagedorn/ Schmitt 1985). As is the case for agriculture, the higher the past irreversible investment, the stronger the rent-seeking effort and exercise of power (Scheele 1987; Buchanan/ Tollison/ Tullock 1980).

Agricultural interest groups possess a high organizational capability: (*i*) While agricultural markets are polypolistic, it is difficult for farmers to maintain private surpluses created by innovation over a certain amount of time because they must bear structural change costs (e.g. innovation costs). (*ii*) Farmers are collectively disconcerted by income disparities between sectors: in European agriculture, property rights on labor, capital, and especially soil still belong to small groups because most farms are run by families. A deterioration of the sectoral economic situation is not "solved" by mobility among different sectors, because this "migration" would not necessarily take into account overall costs for the farmer and the family. Adaptation costs, however, will be borne individually. Because factor and product markets are highly interdependent in polypolistic markets, the whole primary sector will face income reductions. Farmers collectively understand this reduction as a threat to their social and economic state (Hagedorn/ Schmitt 1985). Due to the strength of agricultural interest groups and their influence in politics, political economists predict what actions these groups will take.

24 The concept of irreversible investment is relatively broad, containing physical capital, accumulated human capital, and intangible assets (for example social integration); (Hagedorn / Schmitt 1985).

The reaction to institutional changes by affected organizations and lobby groups might not result in the prevention of the planned changes in environmental policy, but might focus on compensation by financial transfers. In political economics, this reaction is called log-rolling (Scheele 1987; Bernholz 1973). Log-rolling does not mean the maintenance of the status-quo, but the implementation of rent-seeking into policy areas where opposition is expected to be lower. In fact, politicians tend to prefer minorities who are successful in exercising their power because their organizational capability is high. Politicians expect positive returns, whereas the monetary compensation the minority receives is distributed among the whole population. Per capita burden will be low, and strong opposition is not to be expected (Scheele 1987).

Because of ongoing liberalization, agriculture is subject to important economic change. In the past, agricultural policy was dominated by support for prices and sales. The result was a high production level, water contamination due to fertilizers and pesticides, and a decrease of biodiversity (Sachverständigenrat 1985; Scheele 1987). Income policy has maintained agricultural structure and is now replaced by monetary compensations for so-called social or ecological achievements. The open question remains: do these compensations force structural change towards higher environmental quality, or have political economists' fears of compensations maintaining the status quo due to the organizational power of agricultural interest groups come true?

The integration of agricultural and environmental politics in Switzerland is considered to be more a response to GATT/ WTO requirements than to environmental considerations (Curry/Stucki 1997). Farmers adopted integrated crop/livestock production standards relatively quickly, and some farmers did not have to alter their practices (Ammann 1998). For example, in Switzerland's mountainous regions, farming has been relatively environmentally sound. The influence of interest groups for *organic* farming has also increased steadily, creating a countervailing power. These new groups articulated their interests while Article 31b regulations were being developed.

4.3 International Perspective

The two presented cases are just part of Switzerland's overall *national* strategy for the protection of biodiversity. Switzerland's contributions to *global* biodiversity protection goals and economic instruments have not been analyzed here.[25]

25See: Swiss Agency for the Environment, Forests and Landscape 1998: National report of Switzerland for the Convention on biological diversity, Bern

Considering the cross-sectoral character of agri-environmental incentives[26], their compliance with the GATT/WTO agreement must be examined. As shown, the increase in direct payments outweighs the decrease of federal support of sales and prices.

On one hand, during a recent conference on agriculture organized by OECD, several high-income countries articulated resistance towards further liberalization in the WTO scheme.[27] On the other hand, the Cairns-Group demands the abolishment of export subsidies, lowered entry-barriers, and a reduction of direct payments.[28] Its member countries fear that under the title "multi-functionality," classical protectionism of agriculture continues along the same line as the thoughts of political economists (as discussed in chapter 3.2: political-economic considerations). High-income countries might use the argument that agriculture must ensure rural employment and culture, population structure, and biodiversity in order to deny further liberalization of international trade.[29]

5. Conclusions

This discussion explained and analyzed two instruments for biodiversity protection implemented in Switzerland: *Ecological direct payments* as agri-environmental incentives within Swiss agricultural policy, and the *Swiss Foundation for the Conservation of Cultural Landscapes* within Swiss nature protection policy. It has been shown that the removal of perverse subsidies in agriculture supports the implementation of the *Convention on Biodiversity*. Affecting farmer's property rights, agri-environmental incentives such as compensations increase the use of ecological cultivation requirements. Participation rates and area covered by the integrated production scheme are impressive. Though the transition from conventional to ecological farming started relatively fast, it certainly cannot be considered complete. If Swiss agricultural policy should maintain its ecological trajectory, policy changes must be made. Cultivation requirements have to focus on their biodiversity effectiveness, demanding an adjustment of paid incentives. The overall ecological quality of an area could also be improved by specifically defined agri-environmental incentives. Farmers often understand themselves as entrepreneurs. If they produce the good „ecological quality" demanded by the general public, their contempt for the profession of „landscape gardeners" might give way to a different understanding of their business. Overall ecological quality as the target

26Cross-sectoral here means that these incentives are as important for agricultural policy as they are for environmental policy.

27N.N., Neue Zürcher Zeitung April 7th, 1998 a

28The Cairns-group consists of countries with competitive advantages in agriculture, like Argentina, Brazil, Canada, New Zealand, Indonesia and South-Africa

29N.N., Neue Zürcher Zeitung, April 7th, 1998 a

might also allow structural change, leading to a more market-oriented incentive scheme. Comparing the organizational structure of the Swiss Foundation for the Conservation of Cultural Landscapes (FLS) with the ecological direct payments scheme, the FLS can be named as a bottom-up approach, whereas the direct payments scheme is a top-down approach. Both strategies seem to be necessary if policy makers want to pursue biodiversity conservation in its whole range.

Referring to criticism, policy changes are already under way. In the near future, income-oriented direct payments according to Article 31a of the Federal Law on Agriculture will be restricted to the Integrated crop/livestock production scheme. There will also be income and wealth restrictions. Farmers with a property of SFr. 1 million or more will no longer receive direct payments. Direct payments will not contribute to incomes (before tax) of over sFr. 120,000. a year. Today, support for sales and prices amount to almost sFr. 1,300 million, which is planned to be reduced to sFr. 800 million by 2003. Ecological direct payments are expected to increase another sFr. 500 million by 2003.[30]

6. Summary

Direct payments in Swiss agricultural policy and the Foundation for the Conservation of Cultural Landscapes (FLS) represent examples of the innovative use of financial instruments for the protection of biodiversity in Switzerland.

Forced by the GATT Uruguay Round, Swiss agriculture was reformed in 1992. Agricultural price and income policies were separated, and domestic support prices were decreased. On one hand, direct payments were introduced to ease the transition of Swiss agriculture towards global and free-market conditions. On the other hand, direct payments should compensate farmers who are willing to accept more ecological and biodiversity-sound management practices. Ecological direct payments are divided into payments that avoid environmental damages, and payments that support ecological achievements in the public interest. Farmers adopted the required management practices very quickly, especially the integrated production scheme. The growth of organic farming, however, was slower.
The FLS, founded in 1991, supports specific projects for nature and landscape conservation. Compared with direct payments, the FLS is more a "bottom-up" approach for biodiversity conservation than "top-down" agricultural policy. The FLS finances very different projects, such as the conservation and sustainable use of old orchards, the connectivity of

30N.N., NZZ June 16th 1998 b, p. 13

regional ecosystems, or the conservation of old chestnut plantations in southern Switzerland. The Foundation is merely financed by federal, cantonal and communal authorities. The case of biodiversity protection in the Randen area in Canton Schaffhausen shows that the FLS successfully accompanied the evolution of innovative institutions like the KURA that organized cooperation between farmers and conservationists.

Although both instruments support the removal of perverse subsidies, they remain subsidies nonetheless. Ecological standards are set by policy and should be met by the help of these instruments; therefore, the government needs to legitimize the distribution of taxpayer's money. Unfortunately, an overall evaluation of the ecological effectiveness has not yet been undertaken, although studies reveal that the ecologization of agricultural policy is heading in the right direction. Changes are necessary, however, and will be influenced by different agricultural interest groups in much the same way that they influenced the shape of the 1992 policy reforms. A glimpse at the international discussion shows that countries with comparative advantages in agriculture are taking a closer look at the compliance of direct payments to WTO policies.

Biodiversity protection policies are beginning to be implemented into agricultural and landscape policies. Because biodiversity protection is a broad concept, a concentration on funds from agricultural and landscape policies will not be sufficient; therefore, instruments focusing on other sectors with positive and negative impacts on biodiversity should be suggested.

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