

WERNER HEDIGER

CONCEPTS AND DEFINITIONS OF MULTIFUNCTIONALITY IN SWISS AGRICULTURAL POLICY AND RESEARCH

*From Agricultural and Food Economics
of Swiss Federal Institute of Technology in Zurich (ETH Zürich)*

ABSTRACT. Despite the fact that multifunctionality and sustainability are guiding principles of Swiss agricultural policy, the number of contributions from Swiss academics to the literature on multifunctionality is small. However, the quality of these contributions is quite high, as they generally address the comprehensiveness of the concept as well as the context in which agriculture is positioned. Moreover, the review of existing literature reveals a lack of analyses that investigate the relationship between the concepts of multifunctionality and sustainability, or sustainable development.

Key words: agricultural policy, multifunctionality, sustainability, Switzerland

Introduction

Despite the fact that multifunctionality and sustainability are guiding principles of Swiss agricultural policy and the terms are regularly used in policy debates, the number of Swiss contributions to the academic literature on multifunctionality is extremely small. Only few authors addressed the issue of multifunctionality, and even less investigated the relationship between the concepts of multifunctionality and sustainability. This is explained by the rather small academic community in Switzerland engaged in agricultural economics and policy analysis, and by the fact that the conception of multifunctionality evolved in the country as a political principle with changing social, economic and environmental conditions over the past decades.

National context

The understanding and interpretation of the multifunctionality of agriculture and the goals of sustainable development substantially depends on the historical and cultural context. This becomes evident, if one regards the changes in agricultural policy goals in Switzerland since World War II (Table 1). Originally, these goals were restricted to food security, the socio-economic viability of less favoured areas and the protection of peasant property. Since the 1970s, food safety and environmental concerns became equally important. With the goal of long-term preservation of productive reserves, the objectives of agricultural policy included a major issue of sustainable resource management. In the early 1990s, this movement reached the stage which is referred to as the concept of multifunctionality. This process was completed with the establishment of multifunctionality as normative principle in the new Federal Constitution of 1999, which determines together with the concept of sustainability the guidelines for further changes of agricultural policy.

Article 104 of the new Federal Constitution of April 18, 1999 states that “the Confederation shall ensure that agriculture contributes substantially by way of a sustainable and market-oriented production” to achieve its various goals. These are:

- a) the secure provision of the population with food,
- b) the conservation of natural resources and maintenance of the rural landscape,
- c) a decentralised settlement of the country.

Thus, the new constitutional framework captures and integrates key issues of multifunctionality. At the same time, it is a manifestation of changes in agricultural policy goals since World War II and of the future orientation of agricultural policy reforms in the country. Correspondingly, interpretations of multifunctionality must be regarded in the light of changing objectives and continuous policy reforms and adjustments since World War II.

Interpretation of multifunctionality at the policy level

In Switzerland, the notion of multifunctionality evolved as an important policy principle. It covers the multiple objectives which agriculture has to serve. In this regards, the new Federal Constitution requests that the Confederation shall conceive policy measures in such a way that agriculture may accomplish its multifunctional tasks. This clearly indicates that, in Swiss policy, multifunctionality primarily constitutes a normative principle, which consists of a set of societal objectives that shall be achieved at the same time (Table 1).

Table 1

Changing objectives of Swiss agricultural policy (1947-1976-1999)¹
 Zmiana celów w szwajcarskiej polityce rolnej (1947-1976-1999)¹

Federal Constitution Konstytucja Związkowa (1947-1999)	Fifth Agricultural Report 5. raport rolnictwa (1976)	Federal Constitution Konstytucja Związkowa (since 1999)
1	2	3
REGULATIONS IN AN OVERALL SOCIETAL INTEREST REGULACJE W ZAKRESIE OGÓLNYCH DÓBR PUBLICZNYCH	<i>Just distribution of the costs of agricultural protection</i> <i>Właściwa dystrybucja protekcji w rolnictwie</i>	MULTIFUNCTIONAL TASKS OF AGRICULTURE WIELOFUNKCYJNE ZADANIA ROLNICTWA
Preservation of a viable peasantry Zachowanie chłopskiego charakteru	<i>Securing the agricultural income</i> <i>Utrzymanie (ochrona) dochodów rolniczych</i>	<i>Soil and land cultivating small-farm enterprises</i> <i>Kultywowanie gospodarki rolnej małych gospodarstw rolnych</i>
Preservation of a productive agriculture Zachowanie produktywności rolnictwa	<i>Development of productive and efficient small-farm enterprises</i> <i>Rozwijanie produktywności i efektywności małych gospodarstw rolnych</i>	SUSTAINABLE AND MARKET-ORIENTED AGRICULTURAL PRODUCTION ZRÓWNOWAŻONA I ZORIENTOWANA NA RYNEK PRODUKCJA ROLNICZA
	<i>Adjustment of production to the absorption capacity of the markets, and stabilisation of the markets</i> <i>Dostosowanie produkcji do zdolności absorpcyjnych rynku i stabilizacja rynku</i>	
	Long-term preservation of productive reserves Długookresowe zachowanie rezerw produkcyjnych	
Strengthening of peasant property Wzmacnianie cech rolniczych		<i>Strengthening of peasant property</i> <i>Wzmacnianie cech rolniczych</i>
Protection of economically endangered regions Ochronianie regionów słabych ekonomicznie		Decentralised settlement of the country Decentralizacja osadnicza w kraju
	Provision of the population with high quality food in normal periods Zaopatrzenie społeczeństwa w wysokiej jakości żywność	Food security and food safety² Ochrona żywności i bezpieczeństwa żywnościowego²

Table 1 – cont.

1	2	3
Precautionary measures for war periods Zachowanie środków ostrożności na wypadek wojny	Precaution for periods with disturbed imports Środki ostrożności w okresach zakłóceń importu	
	<i>Environmentally-sound production</i> <i>Produkcja zorientowana na zachowanie środowiska przyrodniczego</i>	Preservation of natural resources and living conditions Zachowanie środowiska naturalnego i warunków życia
	Protection and cultivation of the rural landscape Ochrona i kultywowanie krajobrazu rolniczego	Cultivation of the rural landscape Kultywowanie krajobrazu obszarów wiejskich
		<i>Self-support with subsidiary policy measures</i> <i>Samotrzymanie wraz z politycznymi środkami wsparcia</i>

¹The various objectives at the given time are classified in Table 1 as follows: The major objectives and guiding principles are emphasised with capital letters and shaded areas. Bold letters indicate main objectives, and minor objectives are presented in italics.

²This interpretation does not necessarily follow from the Constitution text, which calls for a “secure (food) provision to the population”. The issue of food safety is indirectly included in Article 104 of the Federal Constitution, which requests the federal government and parliament to legislate on the declaration of origin, quality, production and processing methods of food.

This policy framework, and thus the interpretation of multifunctionality in the context of agricultural policy in Switzerland is comprehensive in its conception, and it jointly addresses the multiple societal objectives agriculture has to fulfil. Thus, as it is established in the legal and constitutional framework in Switzerland, multifunctionality is an integrative concept, rather than restricted to single and particular issues of agricultural activity as in the majority of contributions in international debates and seminars¹.

Given this comprehensive conceptualisation, Swiss officials directly link multifunctionality to sustainability, saying for instance that “Switzerland, with its multifunctional agriculture, is on the road to sustainability”. However, neither the concrete meaning of

¹Recent events with participation of policy makers and academics from various countries, where conceptual issues related to the multifunctionality of agriculture have been discussed, have been the “Seminar on agriculture and its contribution to society”, organised by the Swiss Federal Office of Agriculture on 8-10 September 2004 in Charmey, Switzerland, and the 90th EAAE Seminar on “Multifunctional agriculture, policies and markets: understanding the critical linkages” held in Rennes, France, on 28-29 October 2004.

the terms nor the relationship between the two concepts have been made clear and examined with the rigour of academic analyses.

Concept(ion)s of multifunctionality in academic work

In Swiss academia, the concept of multifunctionality is mainly discussed by economists. They acknowledge that the notion of multifunctionality has originally been introduced in GATT/WTO negotiations to establish that agriculture has other functions than food production, and that liberalisation of agricultural markets and trade can therefore not be the sole objective. However, various economists point out that the term multifunctionality has been put into political discussions without clarifying the concrete meaning. Moreover, they emphasise that the concept has been introduced without relying on economic analyses of the various functions and circumstances or concrete information about adequate policy measures. Also the number of empirical studies dealing with multifunctionality is extremely limited. Nonetheless, the small number of contributions shows a considerable variety of conceptions and points of emphasis, always dealing with the comprehensiveness of the challenge on a conceptual basis rather than with single issues and particular functions in isolation.

Early contributions (**Rieder and Anwander Phan-huy** 1994, **Baur et al.** 1995) emphasise the relevance of economic characteristics and social tangibility of the various functions of agriculture in different local settings and contexts, which is crucial for policy design. More recently, contributions in the field of agricultural environmental economics (**Hediger and Lehmann** 2003, **Hediger** 2003 a) clarify the need of jointly taking into consideration the multiple functions of agriculture by providing a welfare economic analysis and information for policy design in the presence of both positive and negative externalities.

An OECD mandated review (**Anwander Phan-huy et al.** 2001, **Kopainsky et al.** 2001) reveals that the jointness of production has mainly been investigated with respect to environmental issues. This gives evidence for physical linkages between agricultural production and effluent of pollution (negative externalities) and between agricultural production and the landscape (amenity benefits), while the degree of jointness seems lower with respect to biodiversity and is even less certain as far as decentralised settlement and equitable distribution of income are concerned. Other reviews present multifunctionality on a more conceptual basis with regard to political and scientific perspectives on both Swiss national and international levels (**Zuber** 2003), and in the context of ongoing WTO negotiations (**Dorsaz** 2002), respectively.

The most comprehensive among the few empirical studies in Switzerland (**Pillet et al.** 2000) provides a definition of multifunctionality which comprehends the economic values of productions for the market (economic function), enforcement of environmental benefits and reduction of negative effects (ecological function), and enforcement of benefits and reduction of negative effects for society (social function). It captures effects that are usually referred to as true externalities, pecuniary and spill-over effects, and resource rents or royalties. The latter is a fundamental concept of natural resource economics, and measures the value of the resource base (land) which goes as income to the resource owner, and therefore must not be included in the assessment of external costs and benefits. Yet, if the resource base (stock of natural capital) is degraded over

time, and therefore the resource rents decline, this effect is relevant from a perspective of sustainability. The latter is usually defined in terms of capital values (**Dorenbos Theler** and **Hediger** 1999, **Hediger** 1999, 2000). Thus, the concept of total economic value of agriculture might be important for evaluating agriculture's contributions to society in a framework of sustainable development (Hediger 2004 – oral presentation).

In the most recent academic publications the multifunctionality of agriculture is regarded as a supply-centred concept where technical progress and jointness in production play an important role. Moreover, it is regarded from a perspective of perception and valuation by stakeholder groups (**Lehmann** 2002 a, b, **Miéville-Ott** 2003). The special position of agriculture and forestry is emphasised with respect to their use of land in a way that the landscape can keep its semi-natural character and resources can be (sustainably) used in the long run. This is directly related to social demands on resource quality and environmental services. These exhibit the character of non-depletable externalities which must be internalised for social welfare maximisation and elimination of market failure (**Hediger** and **Lehmann** 2003). In this context, a fundamental asymmetry exists between effluent charges and subsidies to farmers for reducing rural water pollution. Correspondingly, recent analyses show that subsidies for pollution abatement might induce welfare losses and trade distortions. This is just one case which elucidates that the extension from partial analysis (**Cretegnny** 2001, 2002) to policy design in a context of multifunctionality is not straightforward. In addition, recent works show that the existence of non-marketable “products” is relevant for the discussion of multifunctionality. On the supply side, this may confine options of land use and the resulting landscape. On the demand side, it involves the degree of tangibility, individual tastes and preferences, and the willingness-to-pay of different stakeholders. Altogether, this leads to trade-offs between competitiveness and location rents, and the demand for compensation payments. Apparently, these linkages must be further investigated, which calls for jointly addressing issues of efficiency, equity and effectiveness.

Multifunctionality and sustainability

As in other countries, the relationship between multifunctionality and sustainability has not been investigated yet. Only recently, we have initiated research on the epistemological and conceptual basis to improve our understanding about the linkage between the two fundamental concepts (**Hediger** 2003 b, 2004). However, there remains substantial research to be undertaken².

Conclusions

Existing literature reviews reveal a lack of studies that have comprehensively addressed the nature and degree of jointness in a way that would completely reflect the

²In this context, one must remind that both concepts of multifunctionality and sustainability have origins in principles of forest resource and ecosystem management (**Schuler** 1997, 1998).

multifunctionality of agriculture. This lack of research comprises both theoretical and empirical investigations. Moreover, the present review indicates that various aspects of multifunctionality must be taken into consideration in a comprehensive analysis. These include all stakeholders on the supply and demand side, and require simultaneous consideration of technical progress, property rights, jointness in production and economies of scope, as well as tastes, preferences and willingness-to-pay of different stakeholder groups. In addition, environmental economic analyses reveal a fundamental asymmetry between effluent charges and subsidies to farmers for reducing rural water pollution. This indicates the need of further research in the domain of environmental policy design when multiple functions of agriculture (external costs and benefits) are included. Finally, there is a need to clarify the relationships between the multifunctionality and sustainability of agriculture and rural areas. This requires an integrated approach of sustainable rural development rather than a patchwork of traditional approaches dealing with partial aspects of multifunctional agriculture and sustainable development.

Literature

- Anwander Phan-huy S., Kopainsky B., Rieder P.** (2001): Multifunctionality: applying the OECD framework — a review of literature in Switzerland. In: OECD, Organisation for Economic Co-operation and Development, Directorate for Food, Agriculture and Fisheries, Multifunctionality: Applying the OECD Analytical Framework – Guiding Policy Design, Paris, 2-3 July 2001; consultant background papers.
- Baur P., Anwander S., Rieder P.** (1995): *Ökonomie und Ökologie in der Züricher Landwirtschaft*. Verlag der Fachvereine, Zürich.
- Cretegnny L.** (2001): La réforme de la politique agricole suisse: une approche par la multifonctionnalité de l'agriculture en équilibre. Ecole des Hautes Etudes Commerciales (HEC-DEEP) de l'Université de Lausanne, Lausanne.
- Cretegnny L.** (2002): Modelling the multifunctionality of agriculture in a CGE framework. In: International Conference on Policy Modelling, Brussels, Belgium, July 4-6, 2002; Department of Economics, University of Lausanne, Switzerland. Lausanne.
- Dorenbos Theler A., Hediger W.** (1999): Nachhaltige Landwirtschaft in der Schweiz — ein gemeinsames Projekt für Forschung und Praxis. *Agrarwirtsch. Agrarsoziol.* 1: 127-151.
- Dorsaz J.** (2002): Le principe de multifonctionnalité et l'agriculture suisse. In: *Mémoire de licence en économie internationale*. Centre de Recherche en Économie de l'Espace de l'Université de Fribourg (CRESUF), Fribourg.
- Hediger W.** (1999): Reconciling “weak” and “strong” sustainability. *Int. J. Soc. Econ.* 26, 7-9: 1120-1143.
- Hediger W.** (2000): Sustainable development and social welfare. *Ecol. Econ.* 32, 3: 481-492.
- Hediger W.** (2003 a): Alternative policy measures and farmers' participation to improve rural landscapes and water quality: a conceptual framework. *Swiss J. Econ. Stat.* 139, 3: 333-350.
- Hediger W.** (2003 b): Reflections on multifunctionality and sustainability in agriculture and rural areas (integrating multifunctionality and sustainability). In: *Multagri Workshop*, Cemagref, Paris, 27-28 January 2003. Typescript.
- Hediger W., Lehmann B.** (2003): Multifunctional agriculture and the preservation of environmental benefits. In: *Proceedings of the 25th International Conference of Agricultural Economists (IAAE)*, 16-22 August 2003, Durban, South Africa. 1127-1135.
- Kopainsky B., Anwander Phan-huy S., Rieder P.** (2001): Empirical work on multifunctionality: the case of Switzerland. *Studie im Auftrag der Organisation for Economic Co-operation and Development (OECD)*, Paris. Institut für Agrarwirtschaft ETH, Zürich.

- Lehmann B.** (2002 a): De l'importance de l'agriculture dans le cadre du développement durable des régions de montagne. In: Conférence internationale sur l'agriculture durable et le développement rural dans les régions de montagne (SARD-Mountains2002), du 16 au 20 juin 2002, Adelboden, Suisse.
- Lehmann B.** (2002 b): Multifunktionalität der Landwirtschaft aus ökonomischer Sicht. Agrarwirtsch. Agrarsoziol. 2: 57-68.
- Miéville-Ott V.** (2003): Multifonctionnalité et identité paysanne: une étude auprès des agriculteurs de l'Arc jurassien. Agrarwirtsch. Agrarsoziol. 1: 131-144.
- Pillet G., Zingg N., Maradan D.** (2000): Relevé et appréciation quantitative des externalités de l'agriculture Suisse. In: Rapport finale, Janvier 2000, Écosys SA, Economie appliquée et environnementale, Genève-Carouge, Suisse.
- Rieder P., Anwander Phan-huy S.** (1994): Grundlagen der Agrarmarktpolitik. Vdf Hochschulverlag an der ETH, Zürich.
- Schuler A.** (1997): Von der vielfältigen Nutzung des Allmendwaldes zur Multifunktionalität heutiger Wälder – Bemerkungen aus schweizerischer Sicht. News For. Hist. 25/26: 18-23.
- Schuler A.** (1998): Sustainability and biodiversity – forest historical notes on two main concerns of environmental utilisation. In: Assessment of biodiversity for improved forest planning. Eds P. Bachmann et al. Kluwer, Dordrecht: 353-360.
- Zuber M.** (2003): Multifunktionalität der Landwirtschaft – Literaturrecherche. Schweizerische Hochschule für Landwirtschaft, Zollikofen.

KONCEPCJE I DEFINICJE WIELOFUNKCYJNOŚCI W SZWAJCARSKIEJ POLITYCE ROLNEJ I BADANIACH

S t r e s z c z e n i e

W artykule przedstawiono wyniki badań nad koncepcjami wielofunkcyjności rolnictwa i obszarów wiejskich w Szwajcarii. Na podstawie badań można stwierdzić, że pomimo określenia wielofunkcyjności i zrównoważenia jako priorytetów szwajcarskiej polityki rolnej, badania szwajcarskich naukowców związane z wielofunkcyjnością są realizowane w niewielkim zakresie. Dotychczasowe badania odnoszą się do koncepcji wielofunkcyjności w innych krajach Europy i charakteryzuje je wysoka jakość. Przegląd dostępnej literatury ujawnia brak analiz, które przedstawiają relacje między koncepcjami wielofunkcyjności, zrównoważenia i zrównoważonego rozwoju.