Farm Inputs and Agri-environment Measures as Indicators of Agri-environment Quality in Hungary

Judit Kovács Katona, Péter Takács and Prof. Dr. Gábor Szabó
University of Debrecen, Hungary
Institute of Agricultural Economics and Rural Development
katonaj@agr.unideb.hu
ptakács@gisserver1.date.hu
szabog@agr.unideb.hu

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Farm inputs and agri-environmental measures as indicators of agri-environment quality in Hungary

Judit Kovács Katona[1], Péter Takács[2] and Gábor Szabó[3]

[123] University of Debrecen, Hungary, Institute of Agricultural Economics and Rural Development

The paper deals with agri-environmental indicators, examines farm inputs, on the basis of statistical data of the Organisation for Economic Co-operation and Development (OECD) (Szabó, Pomázi 2002) and the Eurostat (2004). The examined indicators are placed in the agricultural DPSIR model. The paper presents how the use of farm inputs changed in Hungary from 1980-2000. Farm inputs are related to the inputs of the EU-15, the study demonstrates that today they are below the EU-15 average. Area under agri-environmental measures in 2003 − which covered the 4% of agricultural area of Hungary − as a response indicator is also presented and based in the land-use zone system developed by Gödöllő Agricultural University (Ángyán et al., 1998).

Keywords: agri-environmental measures, farm inputs, indicators JEL Q01

In the accession countries the use of farm inputs decreased dramatically in the past decades, mostly due to a general decline of the national economy. This decline had a positive effect on environment (Kerekes, 2003). The paper tries to demonstrate the changes in farm inputs with the help of polar coordinate system.

The problem of farmers in accession countries is how to be competitive on common market. A get-out for Hungary could be sustainable agriculture, to take input changes as an advantage and provide the consumers, who are standing at the end of food-chain and have increasing demand for safe foods, products from a safer environment. To achieve this goal a strong political background is needed. Agriculture Policy is under Community regulation where all the instruments of the Common Agricultural Policy (CAP) are decided by the Council of Ministers. This enables environmental considerations to be developed, enacted and applied throughout the EU efficiently and with direct effect. (COM, 1999) The examination of agri-environmental measures in Hungary was also an aim of the study as these measures has been developed as a consequence of the CAP.

The paper follows the next structure: after outlining documents in connection with sustainable development, sustainable agriculture and agri-environmental indicators, the second part presents the changes in farm inputs from 1980-2000. The third part try to find an answer for the question how territories under agri-environmetal measures can be adjusted to the land-use zone system of Hungary developed by the University of Gödöllő with the leadership of Ángyán (1998). This part of the paper is devided into three levels. First the land-use zone system is introduced. Secondly the most important figures on National Agri-environmental Protection Programme (NAPP) are summarized and finally NAPP's territory ratio under different land-use zones is calculated.

The role of indicators in sustainable development

Sustainable development

This part of the paper is based on the Handbook of National Accounting (United Nations et al., 2003). In the book it is stated that many of the concerns related to resource depletion and environmental degradation are reflected in the concept of sustainable development. In its most widely accepted formulation, that of the Brundtland Commission, it is stated that: Humanity has the ability to make development sustainable - to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs. The Brundtland Commission left its definition intentionally vague so that the concept of Sustainable Development would not be confined to any particular category of needs. While this is helpful in terms of the simplicity and wide appeal of the message, the Brundtland definition offers little in the way of a measurable objective for sustainable development. Not surprisingly, in the time since the Brundtland report, researchers from many disciplines have attempted to operationalize the concept.Broadly speaking three currents of thought are evident within the range of views, which can be referred to for convenience as the three pillar approach, the ecological approach and the capital approach.

Three pillar approach. A widely held view of sustainable development is that it refers at once to economic, social and environmental needs. According to this view there must be no single focus of sustainability, but instead all of the economic, social and environmental systems must be simultaneously sustainable in and of themselves.

The ecological approach. Economic and social systems are sub-systems of the global environment.

The capital approach. It takes concepts from the physical sciences (especially ecology and geography) and from the non-economic social sciences and integrates them within a framework based on capital. This approach is most closely associated with the thinking of economists. Most economics refer back to Hicks' definition of income in this regard: "income is the maximum amount an individual can consume during a period and remain as well of at the end of the period as at the beginning". The income of nation can thus defined as the amount that it can collectively spend during a period without depleting the capital base upon which it relies to generate this income. Many economists have argued that the contribution of a nation's *natural capital* cannot be ignored, others have added that human capital and social capital must also be considered. This has led to the following interpretation of sustainable development from a capital standpoint: **Sustainable development is development that ensures non-declining per capita national wealth by replacing or conserving the sources of that wealth; that is stocks of produced, human, social and natural capital** *(*United Nations et al., 2003).

Since its inclusion in the Treaty (Amsterdam) in 1997, sustainable development is recognised as an overarching goal of the EU. The adoption of the EU Sustainable Development Strategy in June 2001 at the Gothenburg European Council marked a turning point: the need to pursue in a balanced way **economic growth**, **social improvements** and **environmental protection** was translated into a set of detailed objectives and actions. The strategy seeks to promote economic growth and social cohesion without impairing environmental quality.

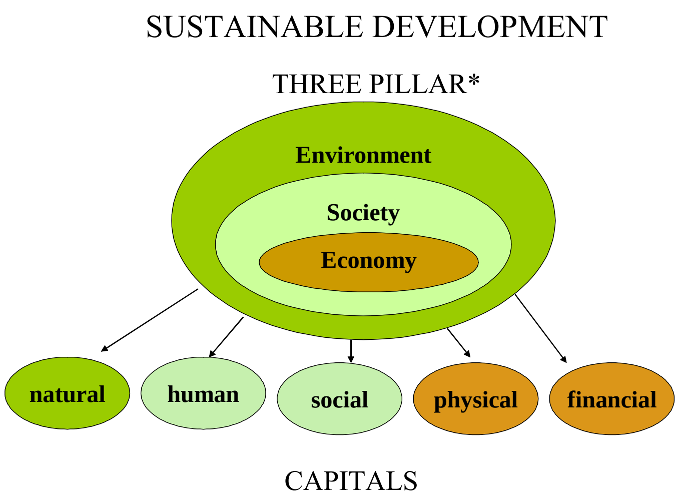


Figure 1.: One possible illustration of sustainable development from Olsson et al. (2004), completed with the capitals for the detailed investigation of the three pillars.

Conversely, it implies that environmental objectives will need to be weighted against their economic and social impacts and 'win-win' solutions devised for the economy, employment and the environment. This marks a major shift in the way, environmental policy has been conceived and designed thus far. (COM, 2003a) One illustration of environmental, economic and social development by Olsson et al. (Figure 1), where environment is assumed to define the limits for economic and social development. We added the different capitals to the figure as the three pillars can be measured through these capitals. Financial capital can be a tool through which the different capitals can be converted.

The major events in Europe's environment during 2003 were weather related. The hot summer claimed possibly as many as 35 000 lives, mainly in southern Europe. Ozone pollution levels were especially high, while unusually low water flows were recorded in the Danube, Rhine and other major rivers, in sharp contrast with the heavy flooding the summer before. The summer 2003 forest fires cost some EUR 925 million in Portugal alone. It is estimated that in Europe around three quarters of economic losses caused by catastrophic events result from weather- and climate-related events. A very conservative estimate of the annual average bill is about EUR 10 billion and rising. **These figures suggest that managing Europe's natural resources is increasingly important for ensuring the viability of Europe's economic and social capital**. (EEA, 2004a)

Sustainable agriculture

Historically, agriculture has shaped many European landscapes over centuries. This has given rise to unique semi-natural environments with a rich variety of habitats and species dependent on the continuation of farming. However, as commercial activities, agriculture and forestry are aimed primarily at production and rely on the availability of natural resources. Increasingly, the development of commercial activities has brought new environmental pressures on the natural capital stock. Technological progress and the desire to maximise returns and minimise costs have produced a marked intensification in agriculture over the last 40 years. The desired relationship between agriculture and environment can be captured by the term „sustainable agriculture".(COM, 2000)

The requirements of environmental protection became an integral part of the Common Agricultural Policy (CAP) as well. The reforms of the CAP stressed the environmental dimension of agriculture as the largest land user. Council Regulation (EEC) 2078/92 of 30 June 1992, introduced as accompanying measures to the 1992 CAP reform, is one of the **first steps toward sustainable agriculture.** (The aim of the regulation to make agricultural **production** methods compatible with the requirements of the protection of the **environment** and the maintenance of the **countryside**.)

The 1999 CAP reform — part of the 'Agenda 2000' package of EU reforms — pursued these initiatives further. In addition to further reforming market support it reorganised the CAP into two areas of activity:

- market policy (known as the 'first pillar' of the CAP);
- sustainable development of rural areas (the 'second pillar').

Integration of environmental requirements into the 1999 CAP reforms has been achieved via two major pieces of legislation. One, known as the so-called 'horizontal regulation' − it covers all direct payments established under the CAP − requires account to be taken of environmental aims in the implementation of first pillar measures; the second — the rural development regulation consolidates earlier agri-environmental measures and adds to them, thereby covering the second pillar of the CAP. Central to the new approach are the concepts of **'cross-compliance', 'direct income support', 'good farming practice' and 'modulation'**.(COM, 2003b)

The 2003 CAP reform brings greater quality to environmental integration. The reform involves decoupling most direct aid payments from production. This will mean reducing many of the incentives to intensive production that have carried increased environmental risks. Cross-compliance and modulation become compulsory, increasing further the budget available to finance measures under the second pillar. Compulsory cross-compliance refers to statutory EU standards in the field of environment, food safety, and animal health and welfare at farm level. Beneficiaries of direct payments will also be obliged to maintain all agricultural land in good agricultural and environmental condition. (COM, 2003b)

Changes in farm inputs in Hungary and the EU-15 between 1980 and 2000

Indicators

During each of its meetings, in Cardiff (June 1998), Vienna (December 1998) and Helsinki (December 1999), the European Council requested the Commission to report on the integration of environmental concerns into Community sectoral policies. As a contribution to meeting this requirement for the agricultural sector, it is necessary to develop indicators to monitor such integration, i.e. agri-environmental indicators (AEI). A set of indicators has been identified in a communication from the Commission to the Council and European Parliament (COM(2000) 20), and this set, and the statistics and other information needed to realise the indicators, is the subject of a further Commission communication (COM(2001) 144).

The recommendations of these Commission communications provide the conceptual input for the IRENA (Indicator Report on the Integration of Environmental Concerns into the Agricultural Policy) project. This project aims at developing a set of agri-environmental indicators at least equivalent to the set of 35 indicators identified by the COM(2000)20 and the related data sets needed to compile them. The IRENA project is the result of a collaboration between the main Commission services involved in the development of agri-environmental indicators. These are the Directorates-General for Agriculture and Environment, the Joint Research Centre and Eurostat with the addition of the European Environment Agency, to ensure that the maximum synergy could be obtained. The European Environment Agency co-ordinates the production of the indicator report and carries out the indicatorbased assessment. (OECD, 2002)

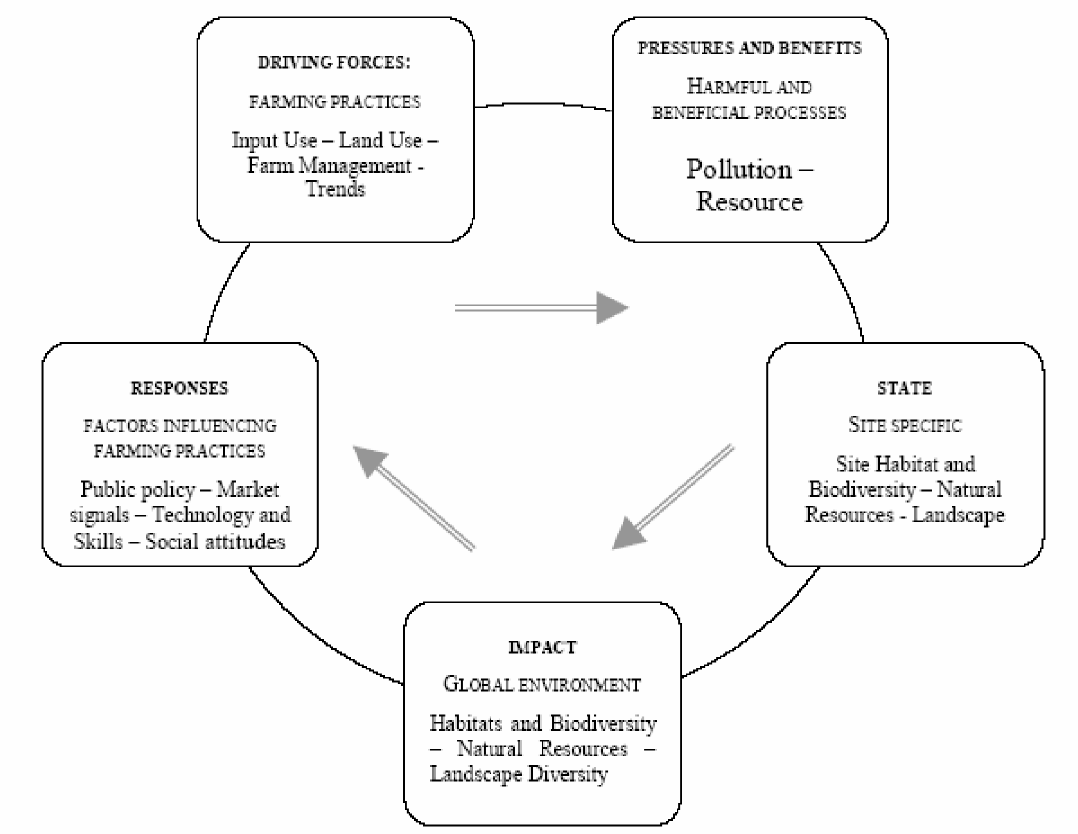


Figure 2. Agricultural DPSIR model reproduced from COM, 2000

Appropriate agri-environmental indicators can provide **information to agricultural policy makers, as well as the broader public** (Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information underlies this statement). Indicators serve multiple purposes (OECD, 2002a):

- to give information on the current state and trends of the farming environment;
- to understand and monitor links between agricultural practices and their impact on the environment;
- to identify key agri-environmental issues that are of concern in Europe;
- to provide contextual information, particularly concerning the diversity of agri-ecosystems in the European Union and Candidate Countries;
- to better target agri-environmental measures, with the aim to minimising agriculture's impact on the environment where pressures are greatest;
- to assess the extent to which agricultural and rural development policies respond to the need to promote environmentally friendly farming activities and sustainable agriculture and to communicate this to policy makers and the wider public;
- to contribute to the global assessment process of agricultural sustainability.

The analytical framework used to identify the agri-environmental indicators, as adopted in the Commission Communication(2000), is the Agricultural DPSIR model (Figure 2), derived from the DPSIR framework − Driving forces, Pressure and benefits, State, Impact, Responses − developed by the European Environment Agency.

Farm inputs

In the DPSIR model farm inputs use are situated under driving forces and four indicators are examined.

- Fertiliser consumption (IRENA 8)

Nutrients are absorbed from the soil by plants for their growth. Mineral fertilisers are widely used in agriculture to optimise production. Increase in the consumption of mineral fertilisers increases the risk of an impact on the environment.

- Pesticide consumption (IRENA 9)

The use of pesticides on crops and for other purposes poses a risk to human health and to the environment. The risks vary considerably from one pesticide to another, depending on the intrinsic characteristics of their active ingredients and use patterns.

- Water use (IRENA 10)

Irrigated area focuses on the driving forces for agricultural/irrigation water use: data on the extent of the area equipped for irrigation or the area of crops that are normally irrigated enable an assessment of the general pressure on water resources from agricultural demand.

- Energy use (IRENA 11)

In order to reduce emissions of CO2, which contribute to the greenhouse effect, agriculture in common with all sectors of the economy must use energy rationally and improve energy efficiency. It must also be encouraged to develop the use of renewable energy sources.

The paper adds two other input indicators, from the environmental data of the OECD, to compare the use of farm inputs of Hungary and the EU-15. These are the number of pigs and the number of tractors and combines (machines) which can be also illustrators of driving forces.

To illustrate the data I used the method of Brümmer et al. (2004). Statistical data for farm inputs from the OECD database are splitted along six axles. The different farm inputs are divided with the area of arable plus permanent utilised land (e.g. pig heads/ha). The derived data of the EU-15 was considered as one and the data of Hungary was compared to it. Table 1. contains the database which was used in the calculation.

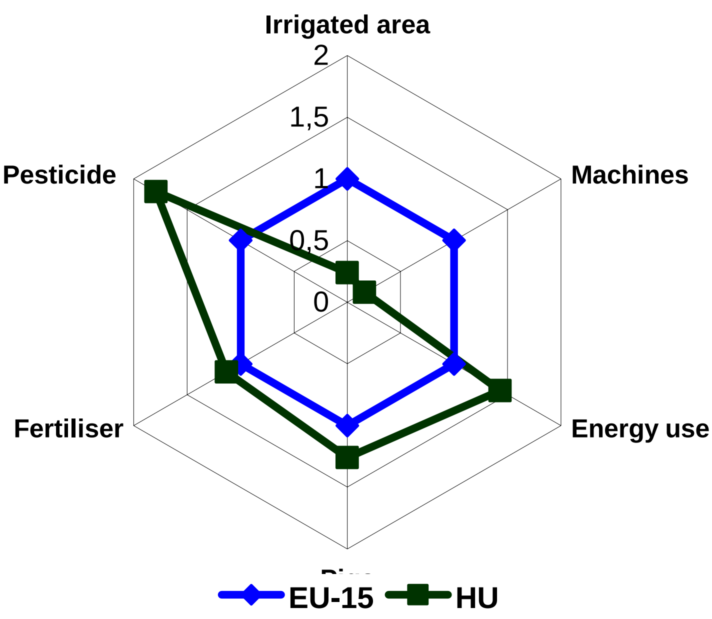
The three figures (Figure 3a,b,c) illustrate well the changes in farm inputs from 1980 till 2000. It is underlying the statement that the process of modernisation of agriculture has been disrupted by political changes and sector reforms in most accession countries around 1990. Agriculture is currently characterised by lower inputs and productivity as well as a high associated biodiversity (compared to the EU-15). (EEA, 2004b) In 1980 the use of given inputs in Hungary was higher than the EU-15 average, agriculture was production-oriented, covering little relevant environmental information. The changed market situation and the lack of capital caused drastic change in the input use and in 1990 as well as in 2000 the use of farm inputs were much lower in Hungary than in the EU-15.

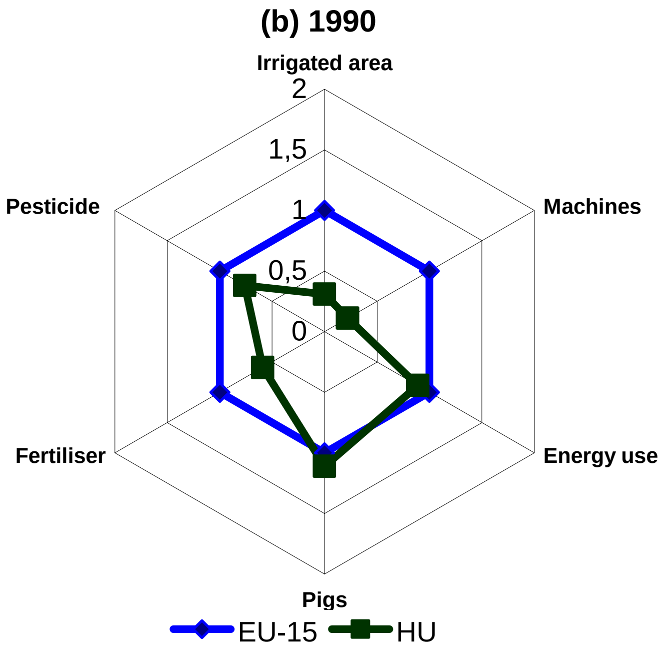
Table 1. Input indicator data for Hungary and the EU-15 from HCSO and OECD database, for the years 1980-2000

Farm input	Country	1980	1990	2000
Arable and permanent utilised land (ha)	Hungary	5 333 000	5 288 000	4 803 000
	EU-15	90 745 000	89 456 000	84 621 000
Irrigated area (ha)	Hungary	134 000	204 000	125 000
	EU-15	9 508 000	11 070 000	12 479 000
Tractors and combines (1000 pieces)	Hungary	70	102	125
	EU-15	7 416	8 013	7 593
Energy use (mtoe)	Hungary	1.44	1.14	0.68
	EU-15	17.17	21.64	22.38
Total fertiliser consumption (1000 tonnes)	Hungary	1 399	680	472
	EU-15	21 126	19 660	15 658
Pesticide consumption (active ingredients tonnes)	Hungary	33 685	24 737	5 472
	EU-15	320 087	295 289*	300 059
Pig (1000 heads)	Hungary	8 330	8 000	4 834
	EU-15	112 095	121 945	124 309

Source: EU-15:Szabó, Pomázi, 2000; *data available for the year 1991 Eurostat, 2004; Hungarian statistics: HCSO, 2003, HCSO 1991

(a) 1980





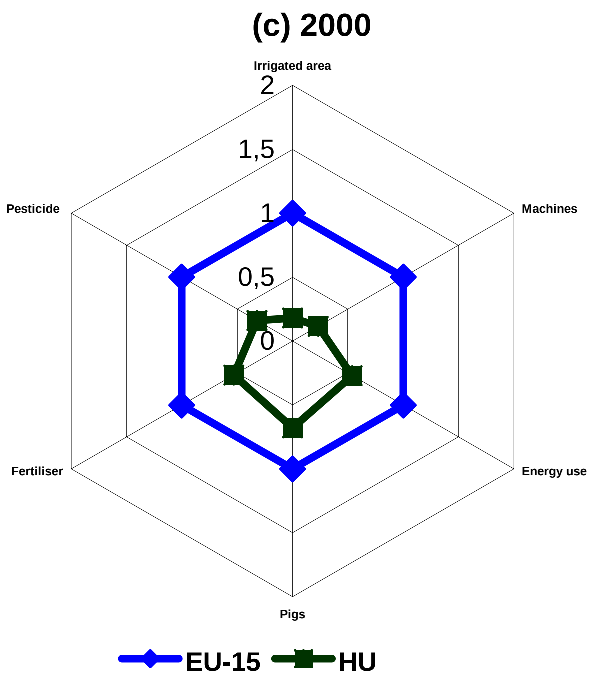


Figure 3. Hungary's farm inputs on hectar basis compared to the EU-15 average in (a) 1980, (b)1990, and (c) 2000

Agri-environmental measures based in the land-use zone system of Hungary

Land-use zone system

In October, 1997, the Institute for Environmental and Landscape Management of the Gödöllõ University of Agriculture (GATE-KTI) and its partner institute, the Research Institute for Soil Sciences and Agrochemistry of the Hungarian Academy of Science (MTA-TAKI) were charged by the EU-Harmonization Committee for Protection of Agricultural Environment, Forestry, Bio-farming and Wild Production of the Hungarian Ministry of Agriculture to undertake examinations for the development of Hungary's land-use zone system, in collaboration with other institutes. The basic aim in developing Hungary's integrated land-use zone system was to develop an objective and ecologically-based analysis in several respects, to evaluate the suitability of these areas for agricultural production (i.e. agricultural potential) and environmental sensitivity, and to make a comparison between these two sides in order to balance natural resources (agricultural and environmental standards). The land-use zone system was developed by comparing the standards of suitability for agricultural production and of environmental sensitivity**.**28 environmental standards were classified (Table 2.), all variables and categories have been weighted according to their role in the determination of agricultural production and environmental sensitivity, and in the decision process of agricultural suitability and environmental sensitivity of the area in question. The area of the country was divided into 9.3 Million 1 hectare squares by grid with a cell size (breaking down) of 100x100 metres, then the values of environmental features were determined for each hectare of the country, by placing this grid onto the map of regional distribution of the described variables. By this method 28 values of environmental features were produced for each cell. The 15 standards of agricultural suitability and the 13 standards of environmental sensitivity were summarized by observation units (1 hectare), then these values were shown on a map. By this method each hectare of the country was placed on a scale of agricultural suitability and environmental sensitivity between the values of 0 to 99. The values of environmental sensitivity (VES) were subtracted from the values of the agricultural suitability (VAS) in each cells, then 100 were added to the difference, i.e. (VAS-VES)+100. Thus scale with the values between 0 and 198 were derived, where the values under 100 reflect to the determinant role of environmental sensitivity, the values above 100 reflect determinant role of the agricultural suitability. At the two extremes of this scale the well-determined areas (agricultural and environmental areas) can be found, in the middle of the scale the mixed/intermediate areas (areas with extensive production limited by environmental features) are situated. The values were shown on a summary map. By this summary map (either with agricultural and environmental values) three scenarios were worked out in order to develop a land-use zone system. In this paper we used the second scenario where areas with a value less than 100 were ranked into the protection zone, areas with a value between 100 and 125 were ranked into the extensive agricultural zone, and areas with a value more than 125 were ranked into the intensive agricultural zone.

Table 2. Database of the land-use zone system

Variables and databases used for evaluation and qualification of the suitability for agricultural production (VAS)	*Features and databases used for evaluation of environmental sensitivity (VES)*
PARAMETERS OF CONFIGURATION for THE TERRAIN AND SOILS	FLORA AND FAUNA
1. Categories of slopes	1. Hungary's areas under nature conservation
2. Degree of soil value (100 point system)	2. National Ecological Network (NECONET)
3. Average gold-crown value of arable land	3. Regions recommended to qualify as sensitive
4. The type and sub-type of soils	4. Ramsari regions
5. The physical type of the soil	5. Bird habitats of international importance
6. Water-management features of the soil	6. Important regions for endangered meadow bird species
7. The reaction and lime-content of the soil	SOIL
8. The organic matter supply of the soil (t per ha)	1. Degree of erosion
9. The thickness	2. The physical type of the soil
CLIMATIC PARAMETERS	3. Quality of clay minerals
1. Energetic potential of agricultural production	4. The reaction and lime-content of the soil
2. Climatic potential of agricultural production	5. The organic matter supply of the soil (t per ha)
3. Standard for climatic suitability of corn production	WATER
4. Climatic standard for the quality of wheat production	1. Groundwater protection areas
5. Climatic standard for the quantity of wheat production	2. Surface water protection area
6. Standard for climatic suitability of malting barley production	

Source: Ángyán et al., 1998

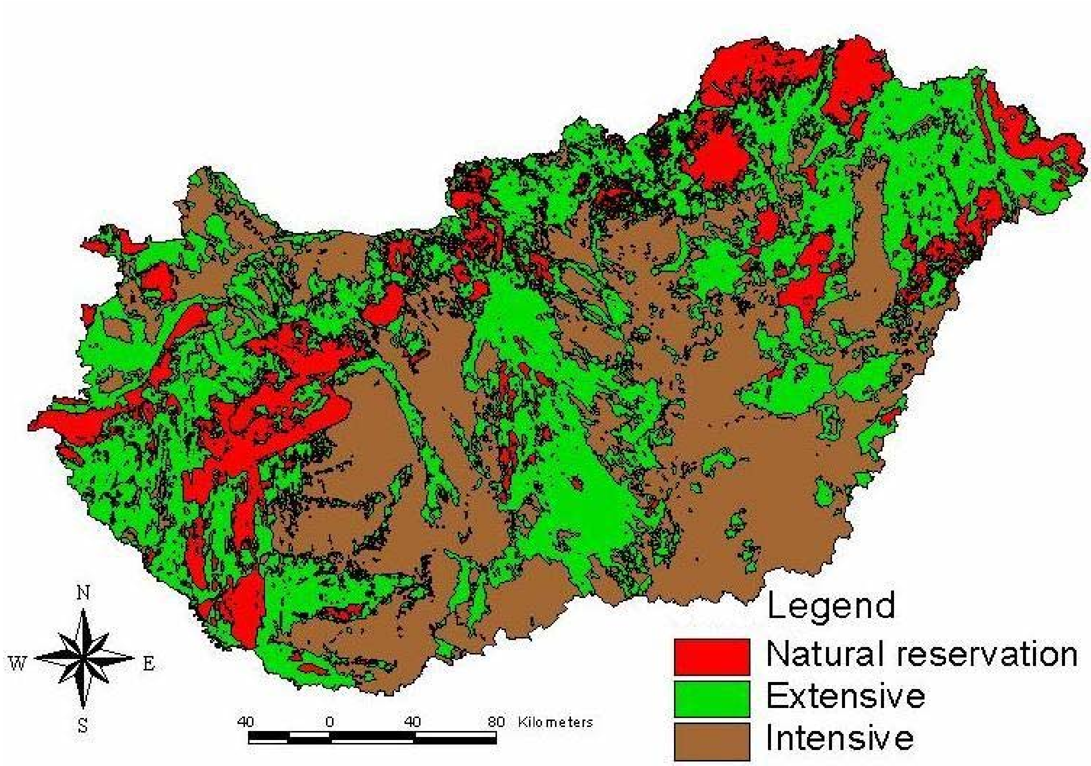


Figure 6: Map of land-use zone system (Ángyán et al.,1998)

Area under agri-environmental support

In agriculural DPSIR model area under agri-environmental support (IRENA 1) is a response indicator of public policy. Council Regulation (EEC) 2078/92 was incorporated into Hungarian agricultural policy. The National Agri-environmental Protection Programme (NAPP), which Hungary started in 2002, is based on this regulation and is part of the National Environment Protection Programme. In 2003 the NAPP provided EUR 18 million in payments (nearly double the amount available in 2002) for agri-environment protection from which EUR 2 million was spent on animal husbandry.

The programme has five nation-wide and one regional action Programmes. The nation-wide action Programmes were:

1. basic Programme for agri-environmental management, as well as an action programme for
2. integral plant cultivation,
3. organic farming,
4. pasture management and
5. wetland areas.

The regional programme supports environmentally-sensitive areas (ESAs).

In 2002, from more than 5 000 applicants, 2 691 were successful (Szabó et al., 2003), while in 2003 5 114 out of 7 529. Those farmers who took part in given action programs could apply for complementary payments for animal husbandry, around 900 applications won this kind of payment in 2003. The Ministry of Agriculture and Rural Development provided unrestricted access to the NAPP's database in 2003 and the data from approximately 8000 applications were processed. In 2003 around 240 000 ha of applications were successful under the NAPP, 4% of the total agricultural area of Hungary. Ranking the territory of the action programmes pasture management was the first with 38%, second is organic farming with 25%, ESAs gained 18% then 8%, 6% and 5% the wetland programme, the basic programme and the integrated programme respectively. Testing the NAPP in relation to

NUTS-II level (Table 3.) farmers of the North and South Great Plains showed the highest interest in the Programme. North Great Plain (NP) was the first with the territory of 72 041 hectares (30.5%), North-Hungary (NH) and South Great Plain (SP) second and the third with the rate of 21.0% and 20.0% respectively, Central-Transdanubia (CD) 10.0%, South-Transdanubia (SD) 8.0%, Central Hungary (CH) 5.5% and West Transdanubia (WD) 5.0%. The territory of NAPP on NUTS-III level and the results of the participation in different programs are demonstrated in Figure 7.

Table 3: Area of land represented by successful applications for funding under the National Agri-environmental Programme in 2003, categorised by NUTS-II region and type of land use

Action programmes		NUTS II regions							TOTAL	
		CH	CD	WD	SD	NH	NP	SP	ha	%
Basic	**ha**	**22**	**1417**	**791**	**3015**	**4072**	**3611**	**1792**	**14720**	**6**
Integral	**ha**	**1437**	**1409**	**1585**	**1500**	**1148**	**3433**	**1898**	**12410**	**5**
Organic	**ha**	**1666**	**5644**	**4230**	**5272**	**11943**	**21837**	**8931**	**59523**	**25**
Pasture	**ha**	**1628**	**9297**	**2827**	**7289**	**14334**	**32689**	**21078**	**89142**	**38**
Wetland	**ha**	**438**	**2239**	**1245**	**2021**	**362**	**6258**	**5317**	**17880**	**8**
ESAs	**ha**	**7737**	**2939**	**802**	**210**	**17833**	**4213**	**7069**	**40803**	**18**
Total	**ha**	**12928**	**22945**	**11480**	**19307**	**49692**	**72041**	**46085**	**234478**	**100**

NAPP's territory ratio under different land-use zones

Methodology for the calculation of NAPP's territory ratio under different land-use zones was the following. The spatial statistical analysis was done in ArcView 3.3 /Arc Map 8.3 environment, in the following way. The digitalized version of Ángyán's land use statistic map was overlapped with an other database, which contained the location of all settlements that applied for the NAPP. The results of the spatial overlapping (see: table 4) showed, that 49.1% of the settlements' area was covered by extensive, 42.1% intensive and 8.8% by naturally protected area. 9% of the protection zone's agricultural area, 5% of the extensive zone's agricultural area and 3% of the intensive zone's agricultural area take part in the NAPP. This means that agri-environmental measures in Hungary have grounds in all type of land-use systems but it is more important on protected and extensive areas. The database also contained, how many hectares the settlements applied, and in how many applications. The county distribution of the applications in hectares are shown in Figure 6. The spatial error of this analysis is about 10 per cent. The scale of the Ángyán database is 1:100000, the one with settlement data is 1:10000, so the first one was downscaled, the second was upscaled to 1:20000. Another error source is the fact, that no one knows the exact location of the lands for which NAPP funding was applied, as the farmers who applied for payments had to give only the name of the settlements where she is from.

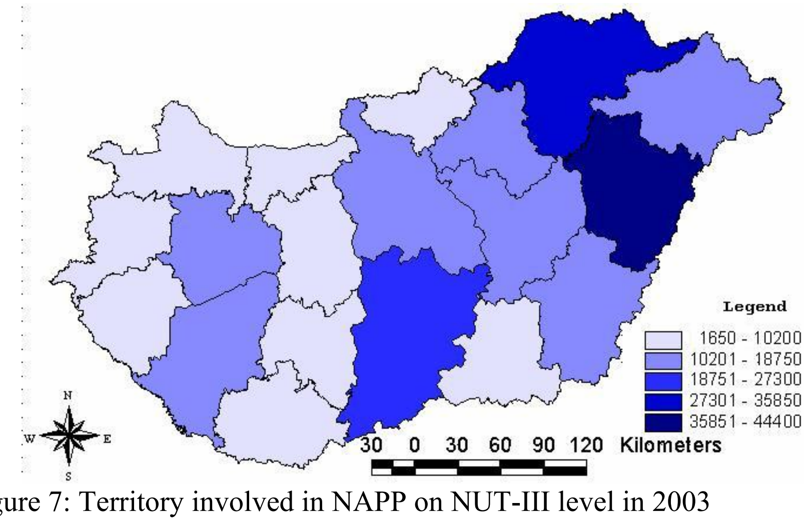


Figure 7: Territory involved in NAPP on NUT-III level in 2003

Table 4: Suggestion for the development of a land-use zone system in three categories (Second scenario, Ángyán et al.,1998)* completed with the results of the spatial statistical analysis for NAPP's territory ratio under different land-use zones

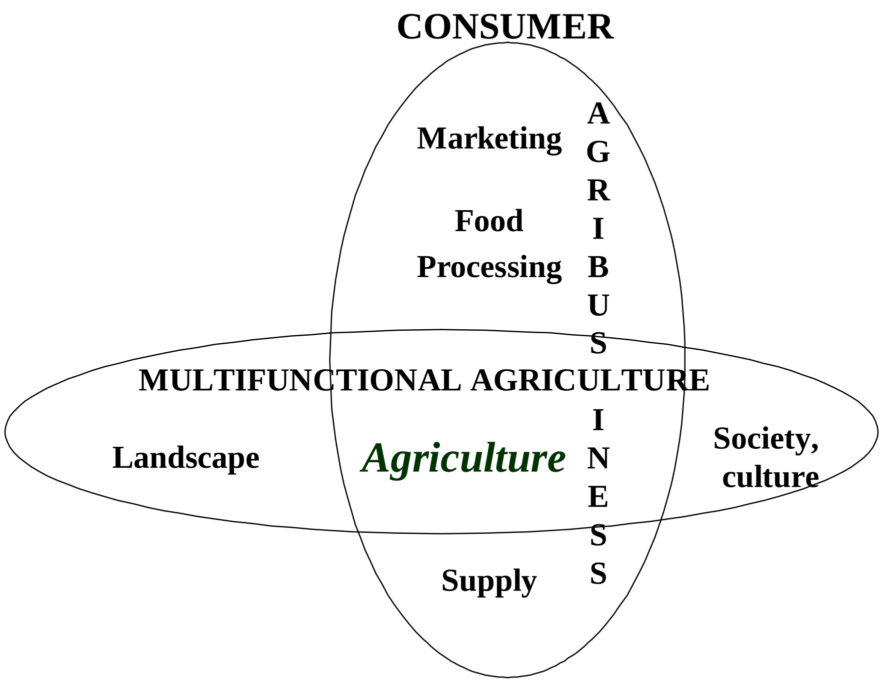
Land-use zone	Total (ha)	Agricultural land (ha)	NAPP* (ha)	NAPP/ agricultural land %*	Total %	Agricultural land %	NAPP %*
Protection zones	966095	229257	20634	9	10,38	3,74	8,8
Zones for extensive agricultural production	3827954	2196834	115129	5	49,85	45,62	49,1
Zones for intensive agricultural production	4508952	3695909	98715	3	39,77	50,64	42,1
Total:	9303000	6122000	234478	4	100	100	100

Source: Ángyán et al., 1998 * own calculation

Conclusion

The reforms of the CAP resulted the multifunctional explanation of agriculture. Environment protection as a horizontal role of agriculture is also included in multifunctionality. Figure 8. tries to demonstrate the horizontal and vertical role of agriculture. It is very important to note that consumers stay at the top of the system and they determine the whole food chain. If the consumers get enough information when buying the product at the end of the chain they can form both the horizontal and vertical relations of the system. The more developed a country is agriculture's production has a lower ratio in agribusiness. On the other hand the more developed a country is multifunctional agriculture plays a higher role.

Figure 8. Horizontal and vertical role of agriculture



The chances of market possibilities of safe and environmentally sound agricultural products and the growing demand from the whole society for healthy and sound amenity values, the rural areas can be improved without the expansion of the volume of production (Ministry of Agriculture and Ruraldevelopment, 2004). This is also reinforced by the changes in the use of farm inputs, but to achieve these goals a strong political background is needed.

The measures of the NAPP which were harmonised with the Common Agricultural and Rural Policy for Europe made a step in this direction. Between 2004-2006 the National Rural Development Programme (NRDP) will carry on the NAPP measures. These measures will be co-financed at a maximum rate of 80% from the EAGGF. In the second part of 2004, when the NRDP was announced, around 30 000 applications for about 1.8 million hectare arrived but farmers has not been informed about the results till now. It means that farmers who wanted to carry on agri-environmental measures of NAPP (which programme covered two years only 2002-2003), and showed a great interest for NRDP did not get any subsidy on agri-environment management in 2004, which worsen their competitiveness on the Common Market.

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