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**ENVIRONMENTAL PROBLEMS AND POLICIES
IN HUNGARIAN AGRICULTURE**

Masahiko Gemma
School of Social Sciences
Waseda University
Tokyo, Japan

and
Mihály L. Vörös
College of Water and Environmental Management
Debrecen University of Agriculture
Szarvas, Hungary

ABSTRACT

A review of environmental consequences of the reform measures introduced in Hungarian agriculture is important when long-term policies on sustainable development are discussed. The purposes of this paper are to learn lessons from the transformation of Hungarian agriculture and to derive policy implications on the environmental issues.

Changes in market conditions have forced producers to lower the amounts of input use. This has positive and negative impacts on the environment and the sustainability of agricultural production. The transfer of agricultural land ownership to private hands through compensation laws has resulted in some adverse effects on the environment.

A long-term strategy called the National Agricultural Policy (NAP) will bring in a more integrated approach to agricultural, rural development and the environmental issues. When the NAP is implemented, program area locations and coordination among different organizations should be reconsidered for the effective use of financial and human resources.

The breakdown of socialist systems initiated the transformation of the economies in East and Central Europe. Disciplined monetary and fiscal policies have been brought into effect for macroeconomics stabilization purposes. Government expenditure was significantly trimmed. Subsidies to public enterprises have been substantially diminished in this process. Various liberalization measures have been introduced to allocate resources through markets. The changes in the ownership structure of the means of production have also taken place as a symbol of the start of new democratic systems and as a means to achieve higher efficiency in production.

We have observed resulted macroeconomic changes in these newly created market economies. Tight monetary and fiscal controls have reduced aggregatedemand of the economies. Aggregate supply has been also shrunken. This was partly created by the increase in real interest rates and prolonged inflation. Another contributing factor has been the changes in organizational structure and institutions. Although successful privatization of small to medium sized public enterprises has been a positive factor for the economic recovery, the slow process of privatization of large scale public enterprises has created a situation of prolonged economic stagnation. Adjustments related with the changes in property rights and organizational structure seem to require longer time periods for the completion.

Agriculture has not been an exception in terms of structural changes in recent years (Gemma, 1996). In Central and Eastern European countries where most agricultural land was nationalized and had been utilized by state farms and cooperative farms, transfer of land ownership back to private hands has taken place after 1989. Disturbance related with this movement along with worsening of output-input price ratio discouraged intense use of variable inputs. As a result, agricultural production declined. It was only 1994 when Hungarian agriculture observed a positive growth in outputs under the new economic conditions.

A review of environmental consequences of the reform measures introduced in Hungarian agriculture would prove to be a beneficial excise as an effort to understand the keys for sustainable development in the economies in transition. Declined use of fertilizer and chemicals has been considered as an indication of betterment of the natural environment in rural Hungary. In this paper, an examination of the validity of this observation is carried out. The purposes of this paper are to learn lessons from the transformation of Hungarian agriculture and to derive policy implications related with the environment. This might also produce useful suggestions for other countries in transition.

STRUCTURAL CHANGES IN HUNGARIAN AGRICULTURE

Hungarian agriculture has been in a significant change in its farm structure

during the process of political and economic transition. Agricultural land ownership has been transferred to many private owners through new legislation. This alteration has resulted in a change in agricultural land use.

Hungary's agricultural cooperatives which used about 70 percent of the total agricultural land in 1988 have had to be reorganized under the new Cooperative Transition Act and the Unified Cooperative Act of 1992. These laws exclude the possibility for the government's direct interventions to the operations of the renewed cooperatives. The assets of the old cooperatives have been distributed to the members and workers of old cooperatives. The agricultural land held by the old cooperatives has been also allocated for distribution under the Compensation Acts. The agricultural land owners who gave up land for collectivization after 1947 have been compensated with vouchers for the distribution of land held by old cooperatives. Auctions have been held to excise the rights for receiving land using the vouchers. As a result, ownership changes of land and assets have taken place throughout the country.

Previously, about 1,400 large scaled farms (1,253 cooperative farms and 133 state farms in 1988 (OECD, 1994)) cultivated about 90 percent of total agricultural land with the average size of about 4,500 hectares. There also existed about 1.5 million auxiliary farms with an average use of 0.8 hectare land. They were in a close relation with the large agricultural cooperatives and state farms. Employees and members of the large scaled farms were running these small scaled farms. In most cases, they did not hold the ownership of the land they used. This sector occupied about a half of the animal production.

The average size of land use by large scale farms has been lowered to about 1,500 hectares. Table 1 depicts the recent structure of land ownership in Hungarian agriculture. Currently existing 1.8 million land owners, mostly new ones, hold very small size of privately owned agricultural land on average. The presence of fragmented land ownership is observed. The land owners who have more than 10 hectares of land take up a share of only 2.4 percent of the total private owners. However, these large scaled private landholders own 47.9 percent of the total area.

These tell the existence of a skewed distribution of agricultural land among private owners in Hungary.

Renting land has become popular for large scaled private farms. Table 2 shows the shares of own land in total cultivated land for different sizes of operation in 1995. The rest of the land they used can be considered mainly as rented land.

45 percent of the total agricultural land used is run by the private farms (Central Statistical Office, 1997). Within this about 70 percent of the land is owned by themselves. Small farm businesses are found to be employing primarily own land. On the other hand, large ones are discovered to be utilizing large shares of rented land.

ENVIRONMENTAL IMPACTS OF THE TRANSITION PROCESS

Figure 1 shows the changes in fertilizer use in Hungarian agriculture taking examples of state farms and cooperative farms. A sharp reduction is observed after 1989. The increase in relative price of fertilizer as a result of price liberalization is a major source of this phenomena. This is believed to have resulted in an improvement in surface and ground water quality (Rajkai and Gemma, 1996).

There have observed some drawbacks related with the recent changes in input use and technology. Some problems are related with the use of the artificial fertilizer and chemical use. For example, reduction in chemical use has resulted in a weakening of the effectiveness of disease control. Outbreak of diseases such as fusarium infection which had been previously under control has been observed in recent years (Szabo, 1997). Cases of production failure have been reported due to the declining use of biocide. Substitution of more hazardous chemical materials for more expensive chemicals has been also observed in rural areas. Some farmers who started farming recently with newly acquainted land do not have proper knowledge on the handling of chemicals. These hold potential for causing health problems of the producers and consumers (Santha, 1996).

The cutback in animal stock took place in the earlier stage of the transition period because of worsening of the profitability of animal production. This resulted in a lowering of liquid manure came out from swine production. This must have

lessen the danger of pollution from the swine farms (Szabo, 1997). However, this at the same time has a character of diminishing the availability of manure for crop fields.

Soil conditions have been also in partial alteration in Hungarian agriculture. Cultivation practices have been partly changed. An interview conducted at a former state farm in March, 1997 confirmed the application of a reduced intensity of tillage on the land. For crop production, two types of tillage were annually applied previously. One is shallow tillage for planting preparation in autumn. The other is deep tillage for the improvement of physical characteristics of the soil practiced also in autumn. The interviewed farm did not implement deep tillage until 1996 since they applied last in 1989 because of lack of the budget for the work. The negative impact on the sustainability of high yields may not be so immediate, but deterioration might take place over the next several years.

Outburst of a large number of new owners of agricultural land and the resulted fragmentation of land ownership have changed the pattern of agricultural land use. Many land parcels have been left unused partly because of lack of the coordination between the owners and potential borrowers. A great number of new owners live away from the acquired land. This has discouraged the intensive use of agricultural land. Although different types of rental agreements have been reached, not all land is put into use based on such arrangements. A typical result of lack of such coordination has been abandonment of agricultural land. Land rental fees as well as crop prices are so low that there is not much incentive for land owners to cultivate the land by themselves nor to put it on lease. This condition has been lowering the potential yield of the soil by worsening its physical characteristics. Weeds are grown in the non-utilized land and ditches. Considerable areas of Hungarian rural landscape have become deteriorated already. The costs required for the returning of the land to the original shape would be large.

Problems related with soil erosion have been increasingly reported. Investment on land to improve the facilities for irrigation and amelioration has been seldom done by any farm organizations under the new economic environment. Previously, stubble field was plowed through the application of the deep tillage and

straws were put into use for animal litter. Now, with the omission of deep tillage, stubble field is often burnt for saving the cost for machinery services (Santha, 1996). This is lowering the organic contents of the soil and the dynamic process of nutrient circulation is being slowed. This adversely affects the maintenance of soil fertility.

Previously, large scale cooperatives employed soil experts to maintain fertility of soil and technical information was easily obtained from various national research organizations. The contraction of public services related with research and extension in agriculture formerly provided mainly for large scale farms has been an unfavorable factor for the newly established small farms. New institutions encouraging higher use of agricultural land and modern organizations dealing with research and extension services for small farms are in high demand in Hungarian agriculture.

RECENT CHANGES IN AGRICULTURAL AND ENVIRONMENTAL POLICIES

As the eighth year of the transition period, 1997 is another important year for the development of Hungarian agricultural policies. In the middle of March, 1997, a nationwide debate on the draft of basic principles of the National Agricultural Program (NAP) started. The NAP is intended to show the future directions of Hungarian agriculture and policy tools to achieve the objectives (Ministry of Agriculture, 1997).

Two major goals of the NAP are considered. One is to cope with various problems related with transitions in the agricultural and rural economy. The other is to go forward with the preparation for the integration to the European Union (EU). The government plans to carry out the groundwork for the establishment of a new Agricultural Orientation Act in parallel with the process of finalizing the NAP. This Act is the first attempt in Hungary to formally include agricultural policies in the national legal system. The discussion on the contents of the NAP are still being continued at the Parliament. Key issues in the debates are studied here to derive policy implications of the NAP on the environment and the rural economy in

Hungary.

Under the new economic environments, Hungarian agriculture has lacked long term policies based on legitimate strategies. Inconsistency has existed in agricultural policies over time. Most policies have been also introduced by the government without having serious consultation with various groups of different interests. The subsidies to encourage poultry production were in effect for a couple of years and were suddenly stopped in 1996. Many poultry farms went out of business after investing much money for the production equipment with the help of the government. Long-term national agricultural policies should have been set in advance and should have been maintained regardless of political changes. For the stability of farm management, consistency in agricultural policies over time is inevitable.

However, the NAP calls for the agreements by all parties involved including large and small scale producers, interest groups, academics and policy makers. Representatives from these groups have been invited to give comments on the draft in various workshops at different locations and at the round table meeting in Budapest. The final version of the NAP is supposed to be produced by the end of June, 1997.

The draft of the NAP states that considering domestic needs and international conditions, the agricultural sector in Hungary should proceed towards the direction of "multi-purpose agriculture." Agriculture is considered in the NAP to play roles for rural development and environmental conservation besides food production.

The following objectives of the long-term national agricultural policies are included in the NAP.

1. To create the structure for competitive production for providing domestic markets with domestic food on reasonable prices and for meeting quality and health standards.
2. To create equal opportunity for market players to materialize proportional income distribution.

3. To utilize favorable conditions in agricultural production to promote export. (This is to effectively use the country's rich agricultural resources.)
4. To promote gradual development of the capability of rural areas to improve their revenue possibilities and living standard.
5. To develop the production structure which is harmonious to the public interests for the protection of the natural environment.
6. To promote human resource development and innovation in agricultural technology.

A series of acts and laws has been introduced since 1989 in Hungarian agriculture. These have resulted in changes in the structure of agriculture and rural economies. The disintegration of agricultural cooperatives and deterioration of the rural economy have been taken place. The process of transfer and registration of new land ownership has been slow. Land auctions based on compensation vouchers have almost finished. The land which is currently sold through the auctions has the size of less than 20 hectares. Now, there exist approximately about 1.8 million land owner families in Hungary. Among them there are about 250 thousands full-time farmers with inadequate property size, and about 60-70 thousands enterprise type larger farm businesses. The latter typically cultivates a large size of land partially borrowed through leasing arrangements. There exist needs for new land policies in the post-compensation law period to activate transactions related with land use and ownership for the better use of agricultural land.

One innovative conclusion drawn from the summary of the NAP round table meeting is that the major goals of agriculture, environment protection and rural development policies should be coherent. So far, policies have been separately introduced by different ministries. Efforts to accomplish the goals have not been

necessarily brought together because of the lack of coordination and cooperation.

There still exist unsolved problems even with the NAP. Relevant government subsidies have not been still coordinated. Resources which are scarce are separately allocated and too fragmented through the government channel. Presently, tasks of planning, distribution and allocation of subsidies are responsibilities of different government authorities and organizations even in the case that the nature of subsidies are similar. Resemblance of subsidies exists for rural Hungary in the areas of employment, regional development, environmental protection and agriculture. Consequently, it is now proper for the government to reexamine purposes, target groups, processes, organization and decision making structure of current rural subsidy system within the framework of the NAP.

Compliance with the EU's rural development policies is essential for Hungary when the country goes forward with the integration process. Integration of subsidies and changes in the bureaucratic structure are along this line. These reforms will guarantee the purposeful, problem solution oriented and most effective utilization of the limited financial resources (Fekete and Voros, 1996).

It was also concluded at the round table by the participants that the amount of the government subsidies for agricultural, environmental and rural development problems should be increased with the new integrated approach. It was approved by the government that at least 2.5 percent of the total GDP should be allocated each year for these areas. How this budget is used will be very critical for the future development of rural Hungary. The integrated plans are partly supposed to be implemented through the introduction of a proposed agricultural orientation act. This is supposed to be an embodied version of the NAP prepared by this current administration.

While long-term agricultural policies have been in the process of formation through the debate on the NAP, a crisis management loan package of 50 billion forints has been approved by the government to help financing operation costs of agricultural production for the private farms with different size. This is to meet the immediate needs of producers. Interest subsidies are to be supplied to the private

farmers including small farmers who plan to purchase land, to improve land quality and to purchase of machinery. The interest subsidy of 40 percent is considered for the period of maximum of 5 years.

Another important role of the government is to encourage small scaled private farmers to form local associations to represent their interests. This group of producers currently has low level of mutual cooperation and weak bargaining power in the market. Formation of such an association is considered as a push for the advancement of rural institutional infrastructure. A typical case is found in an example of the Association of Local Poultry Producers in Kerekegyhaza, Hungary (Gemma, 1996 and Voros and Kecskes, 1997).

To cope with environmental problems, the Act of General Rules of Environmental Protection was introduced in 1995. The Act of Protection of the Nature followed this in 1996. In these laws, the objectives of environmental protection in the elements of the environment are defined. The elements include air, water and land. These are supplemented with the additional elements of human health, buildings, the nature, landscape, wastage and noise. Agriculture and rural development issues are treated in each related element. The Acts prescribe the need for further elaboration and implementation of the Acts in the form of a new national level program which presents detail goals and the tools to achieve them. Since the middle of 1996, the action plans based on the Acts have been examined by the parliament and government as a program called the National Program for Environmental Protection. This program has not been approved by the government yet, but it will be implemented for the period of six years upon its adoption. The NAP should be organized to be consistent with this new national environmental protection program. Considering a well received case of the NAP public meetings, it would be advisable to organize public hearings to get feedback from various interest groups in the process of finalizing the draft of the program.

POLICY IMPLICATIONS AND CONCLUSIONS

By reviewing recent changes in agricultural practices and the environment,

and new agricultural policies, some important policy implications can be derived for the future development of Hungarian agriculture.

Stabilization policies based on tight fiscal policies have resulted in macroeconomic stabilization in Hungary. Liberalization of prices and trade has created competition and risks associated with prices. Compensation laws have also resulted in the transfer of land ownership to the private citizens. However, adverse effects have been observed in the environmental aspect of agricultural production as we described in the earlier section.

A possible approach to better deal with environmental problems is to introduce new institutions and organizations and to modify policies which deal with land market and farm management information. These can be introduced to avoid further worsening of the environment. Regarding agricultural land market, increase in the use of land and more investment on land are essential for this purpose. Decline in yield potential and worsening of soil characteristics can be avoided.

The government has just introduced a real-estate mortgage program in June, 1997. This scheme covers agricultural land. However, it might not prove sufficient to solve all the problems related with agriculture. A critical deficiency of this new policy is the fact that small farms are to be excluded from the benefits of this program. For the purpose of crop production, to be qualified for the loan the minimum size of 50 hectares of land holding will be required. The minimum size is to be five hectares for orchard and vineyard. The prerequisite will be one hectare for the use in horticulture. County or village level associations of land management dealing with the coordination of renting of unused land will be useful. Active participation of this type of new associations seems to be urgently needed for setting up contractual relationship between land owners and land users. If complete leasing out of their land is not desired by land owners, services on land can be provided by the contracted operators of the associations. Many cooperatives, former state farms, agricultural colleges and private individuals hold machinery and equipment. For the operators, this will be an excellent opportunity to increase the use of their fixed assets. For land owners, the cost of machinery operations can be reduced.

Investment on land will be magnified if land leasing contracts are extended to longer periods. The renter can collect what he/she has invested on land if the period of land use is long enough. Share cropping type of rental contracts may also be effective for increasing incentives of the cultivators to take care of land better. A plan for the introduction of new rule is emphasized in the draft of the NAP. This policy is planned to be materialized in the updated land law already submitted to the parliament. Early implementation is desired.

We consider the lack of knowledge and information among newly created private farms a potential threat to the environment. Formulation of a farm management information network seems to be helpful in improving knowledge in farming practices and output markets for small farmers. This will contribute to the improvement of the environment and farm management through avoiding the increase of potential hazards resulted from negligence of certain specificity of agricultural chemicals, reducing production risk and improving production efficiency. The targeted beneficiaries of this program are business oriented full-time private farms of any size. Because of their independence from cooperatives and former state farms this group of producers presently do not have access to proper information on the use of inputs including chemicals for plant protection and fertilizer, integration of plant production and animal production and market strategies to improve farm income. Disease control for certain crops such as tomato production requires specific and detail farming knowledge and production failure due to lack of knowledge is easy to occur.

A group of newly founded organizations called Hungarian Agricultural Chamber is supposed to play a leading role in forming an information network. This organization was to be involved in information dissemination to agricultural producers and data collection for policy decision makers. Local branch Chambers exist as the arms of the national organization. Since this network was established based on the Chamber Act, the government is financially supporting this civil organization. For the producers to get any subsidies from the government, it is now mandatory to register with the local Chamber. Fees are necessary to be paid for

registration.

Unfortunately, this group of organizations has not still been functioning full as they have been expected because of the lack of resources, especially human resources. Local agents are not really capable of supplying necessary advice to producers. They only collect data and convey messages to the central organization. The fee paying producers are not getting what they pay for.

Another problem is related with the lack of an obvious division of roles and tasks (Voros, 1996:1). There exist conflicts in the functions of the Chambers with the data collection and database making activities of the Ministry of Agriculture, Research and Information Institute for Agricultural Economics and Central Statistical Office. This organization has been expected to collect information and maintain database, but their performance has not been sufficient yet and the collected information has not been utilized by outside organizations. This Chamber's dominance in agricultural and rural information would not benefit the Hungarian agricultural community in the future.

Exact roles of Hungarian Agricultural Chamber and other concerned ministries and agencies in information gathering from rural areas should be clearly defined in the NAP. At the same time, a well diffident concept of the farm management information system financed by the Ministry of Agriculture should be outlined within the framework of the NAP. Part of the information should be presented to the public and should be shared with governmental, research and educational institutions to increase the understanding of Hungarian agriculture and rural economies.

In the process of forming a new type of information system which replaces the old research and extension network which served mainly large scale cooperative farms and former state farms, local efforts should be combined. Local conditions are different in terms of soil characteristics, climatic conditions and markets to sell the products in Hungarian agriculture. Considering this difference and the new decentralized system of the government, the basic unit of the network should be at the regional level (Voros, 1996:2). A few counties which share same problems and

issues can be combined to form a new program area for the network. This new area does not necessarily follow the conventional boundaries of the counties (Ministry of Environment Protection and Regional Development, 1997).

A national body organizing and coordinating the network will be also necessary. This national body can be effective if it has a close contact with the Ministry of Agriculture and the Ministry of Environmental Protection and Regional Development. Regional Development Council has been established under the Ministry of Environmental Protection and Regional Development. This have been expected to play such a role. However, their role in regional development has been rather limited because of the lack of clear policies for rural development and insufficiency of coordination with agricultural offices. The office has mainly served as the central organization for distributing budget to the local offices in the regional and county levels. No active roles have been played in rural development. Clear pictures regarding rural development policies and stronger coordination with the Ministry of Agriculture are essential now.

The flow of information should not be one way to the producers from the central body. The farm level information should be aggregated and sent to the central government to be utilized for the analysis of the agriculture and rural economy. The findings can be utilized for policy decision making.

So far agricultural, environmental and rural issues have been separately taken into account and the policies have been independently implemented in Hungary. Financial and human resources have been wasted in this regard. This current opportunity to go forward toward the integration to the EU gives a new prospect for integrated rural development. To make the integration process smooth, the rural economies in Hungary are expected to diminish the gap with urban areas and to establish environmentally sustainable procedure in agricultural production. Although the NAP emphasizes the importance of rural development and environmentally conscious approach, more comprehensive and problem solving oriented policies should be introduced.

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- Seniority in authorship for his paper is shared. Masahiko Gemma is Professor of Applied Economics at the School of Social Sciences, Waseda University, Tokyo, Japan. Mihály L. Vörös is Professor of Farm Management at the College of Water and Environmental Management, Debrecen University of Agriculture, Szarvas, Hungary. This paper has been prepared through collaborative research activities. Financial support from the Japanese Ministry of Education, Science and Culture through grant-in-aid for scientific research (07041072 and 07660302), the Japan Society for the Promotion of Science (S-97188) and Waseda University through grant-in-aid for special research projects (95A-293 and 97A-356) is gratefully acknowledged.

Table 1 Land Ownership and Land Use by Size in Hungarian Private Agriculture (1995) in Percent

Size of land (ha)	Land Ownership (households)	Land Use
- 0.2	57.0	3.4
0.2 - 1	22.4	7.5
1 - 10	18.3	41.2
10 - 50	2.1	29.4
50 -	0.3	18.5
Total	100.0	100.0

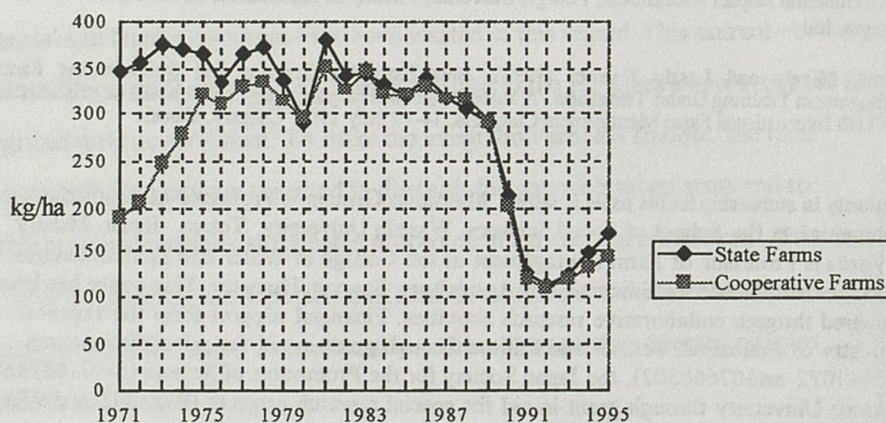
Source: Central Statistical Office (1997)

Table 2 Shares of Owned Land in Hungarian Private Agriculture (1995)

Size of land Use (ha)	Share of Owned Land (in percent)
- 1	80.6
1 - 5	76.1
6 - 10	60.8
11 - 20	51.7
21 - 50	35.6
51 - 100	22.8
100 -	26.3
Total	67.2

Source: Central Statistical Office (1997)

Figure 1 Changes in Fertilizer Use in Hungarian Agriculture (in Active Ingredients)



Source: Research and Information Institute for Agricultural Economics (various issues)