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M. Pajo, M. Tamm, and R. Teinberg

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Estonian Ministry of Agriculture
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THE RESTRUCTURING OF ESTONIAN AGRICULTURE

Historical Background

Estonians have lived on their land for more than 5,000 years. Agriculture has always been a primary activity of Estonians. As early as the 13th century, the primitive communal system was being changed to family farm management. After the occupation of Estonia by German and Danish crusaders in the 13th century feudal estates were established. The wish to own a family farm has always been very characteristic of Estonians and 150 years ago they started to rent and buy land from feudal estates. At the beginning of World War I, about one-half the total agricultural land belonged to family farms. In 1919-20, when Estonia was reestablished as an independent country, one of the first government actions was to divide estates into family farms. In the lifetime of one generation Estonians became landowners.

Agriculture based on private family farming survived in Estonia until the Soviet occupation before World War II. In 1939, there were 140,000 family farms. Their distribution by land area was: from 1 to 10 hectares, 25.5 percent; from 10 to 30 hectares, 47.3 percent; and more than 30 hectares, 26.9 percent. The average area of a farm was 22.7 hectares, including 8 hectares of arable land. As a rule, farming was based on family labor; only one-sixth of the people employed in agriculture were hired workers. The level of farm mechanization was low. The land was cultivated mainly with horses, but two-thirds of the farms had only one horse. Nevertheless, some farm machinery was used. Some farm machinery was produced in Estonia but threshers, tractors, and combines were imported. Estonia was self-sufficient in agricultural products, and meat, butter, and other milk products were exported to western countries. The Soviet Union market, however, was closed until the end of the 1930s, when some meat and milk were exported, but this market became inaccessible.

Farming during the Soviet period underwent serious structural reforms. As a result of this process production decreased. The pre-World War II level of crop production was reached again in 1948. Animal production at this time was about two-thirds of the prewar level.

At the beginning of Soviet occupation land from 30-hectare or larger farms was nationalized. Based on the system of obligatory procurement, all farms had to deliver 18 to 20 percent of their

grain, 6 to 10 percent of their potatoes, 20 to 25 percent of their milk, 17 to 22 percent of their meat, 15 to 30 percent of their eggs, and 13 to 15 percent of their wool to the state, but the farmers were rarely paid for what they delivered. Of total farm income, only 4 to 6 percent came from payments from the state.

At the beginning of collectivization in 1947, state farms produced only 3 to 7 percent of total farm production. In the same year the first five collective farms were organized. By spring 1948 there were 58 collective farms, which had no obligatory payments to the state budget. At the same time, taxes for private farms were substantially increased. By March 1949 there were 641 collective farms in Estonia, and they employed 8.5 percent of all rural people. On March 25, 1949, more than 20,700 Estonians (2 percent of the total population), mainly rural people who owned the larger farms, were deported to Siberia. Of the deportees, 20.8 percent were men, 49.4 percent women, and 29.8 percent children under 17 years of age.

After this mass deportation, forcible collectivization began and by the end of 1949 about 80 percent of the rural people were members of the collective farms. During the next two years all the rural population became involved in collective farming and family farms were practically abolished.

The collective farms as a farming form were inefficient and failed for several reasons.

1. Their products had to be sold to the state in natural form and the prices set for them by the government were so low they did not even cover transportation expenses. Also, the quantities of products to be delivered to the state increased continuously and there was often no seed grain left, to say nothing about feed grain.
2. The farmers sold most of their cattle and production equipment before entering the collective farms and the collective farms did not have the means or access to purchase the necessary inputs. This resulted in a weak production base.
3. The more educated rural people migrated to towns, escaped to other countries, were drafted into the military, or were arrested or deported.
4. The leaders of collective farms were political appointees, and often did not have expertise in agricultural production and did not understand the importance of quality farming practices. They followed directives from party agents who had little or no agricultural background.
5. Collective farms had no agricultural machinery. All machinery and equipment were gathered at special "machine and tractor stations." The stations were supposed to do all mechanized agricultural work, but in practice they had no interest in good quality and timely work. Often the work was not really done or was useless, but it had to be paid for in kind, such as in grain, potatoes, or other crops.
6. Poor weather conditions in 1952 and 1953 complicated the situation, resulting in only part of the grain being harvested. In addition, an outbreak of foot and mouth disease decreased the dairy cattle numbers substantially.

7. Grain yields decreased continuously from improperly applied fertilizers, especially manure. There were no machines to spread fertilizer or to transport manure to the fields.
8. There was no motivation for productivity increase or hard work because the income of collective farms was very low and they were not able to pay regularly for work.

The families of collective farm members could have subsidiary land plots not exceeding 0.6 hectare. They were also allowed to keep one cow, one heifer, one pig with piglets, a few sheep, and some chickens. Pasture and meadow were provided in return for a minimum of 175 working days in the collective farm. There were taxes on land, and when minimum working days were not fulfilled, the taxes were increased.

In Khrushchev's time the situation improved. The deportations ended and higher procurement prices were paid for products sold to the state. The incomes of collective farms increased. In the late 1950s, monetary payments to members of collective farms began in Estonia, expanding later to the whole of the Soviet Union. Labor discipline improved as well as the quality of work, but the cooperative character of collective farms began to disappear. Prices of agricultural products increased and outstanding credits were paid off. Several collective farms were reorganized, becoming state farms, and they were subsidized by the state. Because Estonian milk and meat production were comparatively more efficient than in other regions of the Soviet Union, larger quantities of imported grain were provided from the centralized state grain funds in return for meat and milk products. Cheap transportation made it convenient to concentrate animal production on large farms.

Soil quality was not determined, so the collective and state farms with better soils had higher incomes because of better yields. In order to equalize the income levels and thereby soften the differences in the standard of living, less productive and profitable farms were merged with more successful ones. The period of maximum concentration was during 1985, when there were 150 collective farms and 152 state farms. Poor management and low productivity resulted in yet another government policy shift. Some of the farms were repeatedly divided into separate parts, so once again there were more farms but they were smaller (Tables 1 and 2).

Rural families maintained individual production in the country. Their land plots were 1.5 percent of total arable land and one-half of this was used for home gardens. In 1969 these household plots produced 42.5 percent of Estonian total agricultural production. Hay from natural meadows, pastures, and arable grasslands was used to feed their animals. They also used natural meadows and pastures and arable grasslands for getting hay. During the early 1970s the production on collective and state farms increased and the share of production from individual plots declined to 28 percent of

the total by 1973. In 1960 production from individual plots was used primarily for family food and only 20 percent was sold commercially. Further declines resulted in a decline of the share of commercial production to 12 percent in 1980, where it stabilized. Individual households had 10 to 30 percent of the total number of cows and 4 to 9 percent of pigs, depending upon the particular region. About 90 percent of wool was produced by individual households, and 85 percent of fruits and berries were grown on individual plots. Commercial production of fruits and berries from individual households was 66 percent of the total sales in Estonia. Beginning in 1970, land for "gardening cooperatives" was distributed to city dwellers, and they were allowed to build summer houses on the land and to grow fruits and vegetables for sale. About 25 percent of fruits and vegetables came from these plots.

While Estonia was controlled by the Soviet Union, national income was redistributed through the system of indirect taxes and through the state budget. Culture, medical care, social security, and education were financed by the state, and prices for food products and housing were subsidized. Local government expenditures were paid by the state budget. All local government responsibilities and services were carried out by the collective and state farms and there was not really any local government in rural areas.

The Situation in Estonian Agriculture by Spring 1992

As a result of the centrally planned, command economic system in Estonian agriculture, a very specialized farming structure evolved. It was strongly oriented toward meat and milk production, both of which use a considerable amount of imported grain in feed rations. Estonia exported 24 percent of meat and 34 percent of milk produced in the country to other Soviet republics and imported grain, sugar, vegetable oil, fruits and berries, vegetables, and other products.

The restructuring of the national economy, which started after Estonia regained its independence from the USSR and was internationally recognized in the fall of 1991, had a strong impact on the situation and on the structural adjustment in the agricultural and food industry. Agricultural producers found themselves in a critical situation. In 1991 and 1992, the number of cattle and hogs declined sharply. According to official estimates the commodity production of meat in 1992 would have been about 50 percent and for milk 60 percent of 1990 levels. There are no reliable data about exports to Russia. Estonia is reaching the point where agriculture is not capable of meeting its own needs for basic food commodities. The decrease in production is likely to continue for some time. The dynamics of Estonian agriculture and food industry are reflected in Tables 3 through 8.

The primary reasons for the crisis in agriculture are:

- The sharp decrease or even end of importing resources from the former Soviet republics, such as grain, fuel, equipment, spare parts, metal, and veterinary medicines;
- The collapse of the command system with no guidance for the transition to a market economy;
- The hyperinflation of the ruble, affecting the Estonian economy;
- The unsatisfactory condition of farm buildings; and
- The delay with privatization because of political disagreements and confusion about changes in previous structures.

In 1990 the Estonian collective and state farms had an inventory of machinery, chemicals, fertilizers, fuel, and other inputs with a total value U.S. \$1 billion, valued at world market prices. About 90 percent of this inventory was obtained at comparatively cheap prices from other Soviet republics. Main agricultural inputs were also imported from other countries for convertible currency—for about U.S. \$100 million per year (1 ruble = U.S. \$2). Large amounts of grain were imported from other Soviet republics and part of it was imported from other countries to the Soviet Union and paid for with convertible currency the Soviet Union received from sales of crude oil. Imported grain constituted one-third of the feed ration. The annual commodity production of collective and state farms made up about U.S. \$400 to \$600 million in world market prices, but exports totaled only U.S. \$30 million.

After the declaration of independence in August 1991 Estonia tried to fulfill the contracts to sell milk and meat to the Soviet Union, but the Soviet side did not reciprocate by providing fuel and other products. Estonia would like to maintain a business relationship with Russia, but there are no trade agreements signed at this time. Considering the economic situation in Russia it does not seem realistic that they would be able to sell as much grain, fuel, metal, and machinery as they did before the break-up. The prices are also quickly approaching world prices and they must be paid in convertible currency.

Adopting world prices for inputs for Estonia would mean that the relative price of industrial commodities would increase. For example, before price liberalization the price of an 80 horsepower tractor was equal only to the price of 2 tons of beef, but now it is 10 to 15 times higher.

Such an inefficient agriculture, based mainly on inputs from the East, cannot be reconstructed by preserving state and collective farms as the farming form. The only way is privatization, and until this is completed, all reorganization of agriculture will be delayed. The grain aid from the United States solved the feed problem to some extent, but programs for saving energy have not yet been

initiated. There were sufficient stocks and purchases of fuel for heating residential dwellings and livestock facilities for the winter of 1992-93 and climate conditions were favorable. Evidently, there will be no such supplies for the 1993-94 winter, and it is complicated to get them from Russia. The lack of convertible currency makes it difficult to purchase fuel from other countries.

In 1990 only 60 percent of the farm buildings were satisfactory. About 15 to 20 percent of them are empty and can hardly be repaired. Building of new cattle-sheds has almost stopped and it would take more than 100 years to restore all buildings at the existing rate of construction. Seventy-five percent of the grain dryers need substantial repair.

So the technical crisis in agriculture was preprogrammed by the forced pace of development between 1965 and 1985. All construction materials were used for new buildings and there was nothing left to repair existing assets.

Meat and milk price subsidies were abolished in 1992 during the first part of the transition to a market economy. Inputs are no longer distributed from a central location and most elements of the free market are in place. Fuel prices have risen almost 100 times. Farm-gate prices for meat and milk increased about 30 to 50 times in response to fuel and other input price increases. Meat and milk processing industries and retail trade, operating as monopolies, have experienced even higher prices. On the other hand, the domestic demand for meat and milk products is declining because of the weak purchasing power of the population.

State and collective farms were not taking proper care of their assets because they expected privatization to start soon. They did not make capital investments or improve their farm management and use of machinery, and they did not buy additional equipment and machinery because of the lack of capital and incentives. They also were able to foresee the end of the state and collective farms as a farming form. Many larger farms did not even have money to pay workers' salaries. In order to get hard currency, cattle and machinery were sold or traded for other commodities they needed. The agricultural sector was operating at one-third of its capacity.

Only rapid agrarian reform could prevent the deepening crisis in agriculture: decreasing production and deterioration of property. In such a situation changes in property rights and increases in efficiency became vital. The agrarian reform had to focus on:

- The restitution of property rights and return of land to the previous owners or to their legal heirs, land substitution or compensation, and the opportunities for other applicants to buy or rent unclaimed land;
- The return to former owners or their heirs of property expropriated during the process of collectivization;

- The privatization of the assets of state and collective farms with reorganization of these farms into smaller production units based on private property (family farms, cooperatives);
- The formation of new rural district governments according to division of the country into socioeconomic regions and municipalities; and
- The revival of the cooperative movement in the countryside.

Agrarian reform is a combination of administrative, land, and property reforms.

Privatization is carried out in state and collective farms according to the same principles. The former owners have priority to acquire the land, followed by their legal heirs and those who have been engaged in agricultural production. The state supports and gives preference for privatization of existing property in nondivisible technological units in order to insure their proper future operation. Private entrepreneurship substitutes the central command system in agriculture with self-regulation. Agriculture is reorganized and decentralized by the owners according to economic factors that are to their advantage. Private entrepreneurship requires an increase in production efficiency and efficient management. Operation in a market environment will ultimately concentrate resources in the hands of more skilled entrepreneurs.

There are a number of laws already in place to regulate privatization. The Law on Peasant Farming, adopted at the end of 1989, stated that a rural family can use the land around their household with no time restrictions. A number of former farm owners or their descendants were able to regain their family farms. The Law on Property Rights was passed in June 1991. The law confirms the restitution of property rights of previous owners to their land and assets. Claim registration ended in January 1992 and now the owners register is being compiled and decisions are being made about restitution of land ownership. The Law on Land Reform was adopted in October 1991. This law establishes the procedures for returning land to former owners, land substitution, and compensation if land is not requested in kind. Land reform could not start before the owners' register was finished and the land use law had been adopted. Collective and state farms were allowed to use land until the end of 1992. The Law on Agricultural Reform was adopted in March 1992. It determines how collective and state farm property is to be privatized and sets up the guidelines for their reorganization or liquidation. The regulations for applying this law are now in place. The deadline for applications for acquisition of shares in assets was May 12, 1992. After this deadline the allocation of shares to each farm member had to be determined and the decision on the reorganization of collective farms had to be made. The implementation of the reform had to start after the 1992 harvest.

By spring 1992 laws on cooperation, land use, property, and credits were still being drafted. These laws were supposed to form the basis for restructuring agriculture. In January 1992 there were 7,227 private farms in Estonia, with a total area of 184,700 hectares, making the average area of one farm 26 hectares with 11 hectares of arable land. The problem is that the new farms do not have adequate machinery, capital to invest, and construction materials; therefore, commodity production and incomes are low. Nevertheless, with the establishment of private farms the restoration of private ownership in agriculture has been started. By spring 1992, there were few applicants to start private farms because of the lack of capital to acquire machinery and building materials. It seemed quite unlikely that private farms could provide sufficient quantities of food for Estonians in the near future. If the reforms are directed toward restoring farms as they were in 1940 and promptly liquidating large farms, existing production capacities are going to be underused, leading to a sharp decrease in production.

The main goal of the agrarian reform is to establish family and partnership farms using the buildings and technology of collective and state farms and to establish cooperatives for the use and repair of machinery and equipment, storage facilities, and other agricultural service facilities. The meat and milk processing industry must be also reorganized on a cooperative basis.

It is reasonable to implement ownership reform in two stages. First, agriculture must be reorganized on a private ownership basis. Then processing enterprises for agricultural products must be transferred to agricultural producer cooperatives. The industry providing agriculture with machinery, fuel, and other inputs and equipment must also be privatized. The March 1992 agreement among leaders of the Baltic countries declares that no restrictions of trade or customs will be applied, allowing them to establish a common market for agricultural products and resources including machinery, fertilizers, and chemicals.

Difficulties and Constraints

There are several problems related to restructuring Estonian agriculture. The opinion that Estonian agriculture can provide, besides satisfying the country's domestic demands, products for export, is questionable. Actually, Estonia imported more than 30 percent of its grain, protein, and all mineral supplements. If Estonia does not import grain, it can provide 318 kilograms of milk and 21 kilograms of meat per person per year, which constitutes 71 percent and 26 percent of recommended nutritional standards. If part of produced milk and meat is traded in Eastern markets, Estonia may have problems providing its own people with basic food.

The perception that there is a Russian market for food commodities, especially for milk and meat products, is erroneous. First, Russia is not a reliable market and does not honor the signed agreements. In 1939 the Soviet Union broke a trade agreement with Estonia without any motivation. The same happened in 1991, when no fuel or other goods were provided in exchange for the commodities supplied from Estonia through barter trade agreements. Second, crude oil production in Russia is decreasing and there are no reliable prospects for buying fuel from there. Third, if Estonia satisfied domestic demand for food commodities, then nothing, or almost nothing, will be left to export. Besides that, when the Russian economic situation improves, it is likely that meat and milk will be produced more cheaply there than in Estonia.

At the beginning of the reform the lack of convertible currency had also worsened the agriculture situation. Agricultural products were sold for rubles, but it was impossible to get machinery or other indispensable commodities for rubles. This problem was eliminated after the introduction of Estonian currency in June 1992.

There is a certain antagonism between applying measures to inhibit a crisis in agriculture and the urgent need for rapid agricultural reforms. The government tried to avoid a decline in production by delaying implementation of land reform until fall 1992, allowing the collective and state farms to use the land until harvest time. This situation slowed the process of agricultural restructuring.

The government's support for continuing agricultural production on collective and state farms, in fact, helped to maintain the previous structures in agriculture and, thus, slowed restructuring and privatization and the transition to a free market economy. So the inefficient and wasteful collective and state farms were maintained even though the energy and other input consumption on these farms was more than three times that of Scandinavian countries. The government's support should be directed toward accelerating the reforms.

There are certain problems with the process of land privatization. Two-thirds of the former owners and their legal heirs now live in towns and they are not interested in farm management. Some political parties claim that the farms must be restituted as they were in 1940. However, the average size of the farms in the prewar period was too small and in the current situation they would not be able to compete with European or Scandinavian farms in production efficiency. Also, there are often no buildings left on the land of former households and the machinery is in poor condition. Renting land was unpopular in Estonia and now it is impossible because collective and state farms will soon be liquidated.

Since there are no legal provisions to regulate land transactions, there is no land market, and land prices and taxes are not yet set, so owners do not have sufficient information to make future land use decisions. There is a delay in establishing a land market because nobody knows what will happen to large farms after the free land market is established. Selling land to foreigners may be a serious political problem.

Estonian agricultural reform proposes the privatization of property, but there is still a certain danger in maintaining collective and state farms in the form of shareholding or stock companies. It means that no decentralization of production will occur and, instead of real owners, employees will manage farms. But hired labor has no motivation for quality work, efficient production, and introduction of innovations. Management and transportation expenses are also high. Those enterprises come into cartel agreements that would press the government to increase prices and subsidies. This leads to inflation and an unbalanced economy. Such a pseudoreform also appeals to “workers’ voices.”

There are certain difficulties in getting credit for private farmers, especially credit in convertible currency. Without credit it is impossible to buy modern equipment. There are few banks in Estonia and they do not have enough money to lend. The state cannot extend credit to the farmers because there is a budget deficit. The only available start-up capital will be the shares earned for work on the farm.

There are also several problems related to the existing rural infrastructure. For example, collective and state farms built and maintained repair shops and industries that can no longer operate due to the lack of inputs and spare parts. Some enterprises are reorganized as partnerships or stock companies. Repair shops and grain dryers could also be used by farmers’ cooperatives.

Construction teams were organized by collective and state farms as large cooperative enterprises. They are located mainly in towns and are not interested in building for private farms. Construction prices are also very high, so it is difficult for them to find enough business to survive.

Milk and meat processing are concentrated in large industrial enterprises. Because fuel prices were low, milk and live animals were often transported more than 100 kilometers from farms to processing facilities. Transportation expenses have become so high that it is no longer profitable for private farmers to transport small quantities of production. Therefore, smaller local dairies should be privatized by farmers’ cooperatives. The centralized concentrate feed producing factories and potato processing units must also be reorganized.

There is an urgent need to break up the monopoly in the processing industry in order to protect farmers' interests. But at present there is no alternative marketing channel for agricultural products. The prices of products are often arbitrary and unfavorable to agricultural producers. Large milk and meat processing plants have no competitors so they do not care about the quality, variety, or prices of their products. The milk and meat subsidies are paid through the industry, strengthening their monopoly.

Most equipment in processing plants is out of date and needs to be modernized. Smaller plants should be organized soon in order to promote competition for raw materials and for consumers. This would help to diversify the industry. Establishing joint ventures would be a reasonable way to obtain the capital to modernize and reorganize the production process.

An important role in the agricultural reform process belongs to education and extension. Agricultural courses in Estonia have been taught at Tartu University for 185 years. When agricultural specialists were needed for state and collective farms, a separate Estonian Agricultural Academy was established in 1951, and several technical high schools were founded for agricultural education. In 1991, 7,500 graduates of the agricultural university and about 16,000 certified graduates of agricultural technical schools were employed in Estonian agriculture. The knowledge level of graduates is comparable with that of European universities.

With Estonia's new economic structure, there are problems with the specialists' training. First, training has been too specialized so many agricultural technicians do not know much about agricultural production as a whole and therefore cannot give advice to private farmers or manage a farm by themselves. In addition, most of these students had no previous practical experience in farming, which cannot be entirely acquired through an education system alone.

There need to be some changes in the education of agricultural extension personnel. They need to learn the practical aspects of farming, have a broad-based background in farm management in a market economy, and speak foreign languages so they can communicate on an international level.

The teaching equipment must be considerably improved in both technical schools and the university: textbooks, copy machines, computers, software, and printing equipment must all be upgraded.

There are several other problems in agricultural restructuring and rural life. One is related to the activities of local municipalities in rural areas, which have to be reestablished in the course of agricultural reform. However, rural democratic traditions have vanished and there is a lack of leaders

who are qualified and ready to assume responsibilities. Local municipal governments are facing several serious problems with managing large apartment buildings built by state and collective farms, which are hard to privatize at once. No one has the experience to organize local education, social security, and medical care networks. At the same time, local municipalities must conduct the land and agrarian reform. There is no local law enforcement system and there are no laws against corruption and crime. Laws against speculation have been ineffective.

One of the main problems of the transition of agriculture to a market economy is the establishment of a new banking and financial system. There have been several commercial banks established during the past few years, but they were not active in supporting agriculture. Privately owned banks must be developed to put in place a credit system for private farms, establish programs to support agriculture, and organize a farmers' cooperative banking system.

The Transition in Agriculture within the Evolving Political Environment

The political and social environment of agricultural reforms is determined by previous experience and ideas of citizens who have for many years been taught that private property and owners' rights are unjustified. The land belonged to the state. Collective and state farms were only the land users, as were members of these farms with their small subsidiary plots of land. Agriculture was concentrated and specialized, which led to high transportation costs. Truck drivers were highly valued, while farm workers had little prestige. The narrow specialization and training limited the flexibility and understanding of workers. All the cultural life of the society was supervised by the communist party ideologists. Rapid urbanization, as a result of concentration and centralization, has created a situation where one-half of the agricultural workers live in town-like settlements.

The national fight for independence started with Gorbachev's democratization policy and Perestroika. The Estonians have strong democratic traditions and experience as an independent country (1920-39). Between 1987 and 1989 the social energy of the people was directed toward achieving independence, resolving environmental problems, and exercising so-called "market-socialism."

Beginning in 1988, economic laws were drafted, but the country still depended upon Eastern markets. Laws governing the economy and its transition were written and adopted. In December 1990 the Supreme Council of the Estonian SSR declared agricultural collectivization unlawful and acknowledged the rights of previous owners to their property.

Two political parties related to agriculture were established in 1989: the Land Union, which protects the interests of collective farms; and the Estonian Farmers Union, which defends the interests of private farmers. Rural people have not been too eager to join these parties and participate in discussions between them. In 1989, the results of a public opinion poll on the popularity of these parties were: 35 percent had no opinion; 36 percent supported both (rural problems as a whole); 24 percent were neutral; 5 percent were against one of them. Later the third party, the Estonian Central Land Party, was established to support radical changes and the transition toward a market economy and privatization.

By the end of 1989 there was a consensus achieved among various political parties concerning agrarian reform:

1. The rights of previous owners and their heirs must be restored, and the land and existing property must be returned;
2. The property of collective and state farms was formed on the basis of transformation of the property of private farms and through the common efforts of farm members, so the property must be given to the farm workers as their private property; and
3. Every collective and state farm must be privatized, but technological units such as cattle farms and repair shops must be privatized and used as a whole unit without further division into smaller pieces of property.

The political parties seem to contradict one another in their interpretations of the principles of privatization. One goal of privatization is to return land to previous owners, while another purpose is the privatization of the assets of state and collective farms through allocation of capital share certificates. Public opinion in 1990 was 80 percent in favor of privatization, but the beginning of this process was delayed.

Although the political parties declare the necessity of changing to private farming, the representatives of collective and state farms insist on a more moderate pace for privatization. About two-thirds of Estonians consider themselves legal heirs of former owners and they demand the restitution of their property rights. All these procedures need some time and for the time being privatization and establishing of private farms have ceased.

In 1990, working rural Estonians were surveyed concerning their willingness to own and operate a private farm: 25 percent wanted to have a family farm; 15 to 20 percent did not know exactly; 55 to 60 percent wanted to work as employees of large farms; and 3 percent agreed to work as hired labor on private farms.

The Law on Land Reform was adopted in October 1991, but as of April 1992 the return of land to former owners had not been started. A public opinion poll in March 1992 showed that 46 percent of the Estonian population expects to have their property rights restored, but 50 percent of the population is not satisfied with the implementing of reforms. One-half of the former owners want the land in kind or they wish to substitute equal property elsewhere for their land claim. One-fourth of the former owners were satisfied with receiving a portion of the land previously owned and being compensated for the remaining area. Fewer than 25 percent agreed to monetary compensation. Two-thirds of former farm owners or their legal heirs wanted to get their farms back. Future farms will probably be sized according to these estimates: less than 10 hectares, 48 percent; 10 to 20 hectares, 37 percent; and more than 20 hectares, 15 percent. So there would be relatively small resident and part-time farms in Estonia. But the ability and opportunity to buy machinery and buildings will change this structure.

The Farmers' Union and Central Land Party recommended organizing farmers' cooperatives on the basis of repair shops, grain dryers, storage facilities, and milk and meat processing plants. But there are too few farms and they are too far apart to organize into a cooperative.

Socioeconomic Implications

Rural life in Estonia is changing significantly. Central settlements at some of the former collective and state farms look like urban areas. Some parts of the countryside suffered substantial population declines as residents migrated to urban areas. The countryside is facing serious problems, influencing the everyday life of people. Previously state and collective farms, as well as the government, made significant investments in the creation and development of social infrastructure in rural areas. These infrastructure facilities were designed to satisfy the everyday needs of the rural inhabitants who relied heavily on them. But in the transition period, agricultural enterprises have no money to develop or maintain social infrastructure. The state has no resources to implement rural development programs. In the past the development of more remote villages was subsidized by the government, where most state and collective farm workers lived in apartment buildings with indoor plumbing and central heating. The rent they paid covered only a part of total housing maintenance expenses. These houses have to be privatized by families living in them. But the expenses to maintain these buildings exceed family incomes and this is a real problem in rural settlements.

Rural life in Estonia revolves around agricultural production. There are not well-developed alternative employment opportunities, such as small industrial enterprises, in the villages. Small agro-

service industries and companies must be developed in rural areas to provide local work opportunities for the residents.

Restructuring of agricultural enterprises and a significant decline in agricultural production resulted in unemployment and a decline in the living standard. This is of special concern to working people living in central collective and state farm settlements, making them reluctant to support the restructuring of agriculture.

There has already been a decline in agricultural production, even before agricultural reform began. The longer reform is delayed, the larger the decline in production may be anticipated.

The Most Urgent Programs

In order to integrate with the European Community and compete in the world economy, Estonian agriculture has to adopt their prices and quality standards. Between 1992 and 1994, production efficiency in agriculture should be improved through changes in land ownership and creation of government and private organizations that will facilitate the transition to a market economy. During this transition period, a number of programs need to be developed.

- Create a cooperative banking system for farms, agricultural enterprises, and management of foreign investment and financial aid;
- Establish an extension service with advanced education to promote development of farms, cooperatives, and enterprises and to serve as a consulting organization and source of information and training;
- Use local energy resources such as oil shale, timber, and peat as well as wind, solar, and hydro-energy as more economical means of energy production;
- Reorganize the machine-building industry to better meet the needs of agriculture;
- Break up the state monopoly of the food industry by privatizing processing enterprises to producer cooperatives and creating incentives for technical modernization and product assortment;
- Promote the expansion of grain production by establishing guaranteed prices and creating a state grain reserve fund;
- Develop targeted flax and potato production programs oriented towards export of these commodities; and
- Establish a program to ensure production of ecologically pure products.

During the 1992-94 transition period Estonia has to focus on:

- Financing agricultural education, research, animal and plant breeding, advanced training and specialization, extension service, and development programs;

- Arranging the reorganization of the agricultural machinery industry;
- Subsidizing construction of agricultural and food industry facilities;
- Supporting development of private farms and rural enterprises by regulating taxes and investments through cooperative banks;
- Promoting cooperation between the agricultural producers and the food industry, supporting establishment of new plants and restricting the activities of monopolies;
- Protecting the environment through regulations and inspections;
- Providing social security benefits and support for rural people who are unemployed;
- Buying grain and other products from farmers at guaranteed prices for state needs and reserves;
- Establishing local governments and infrastructures; and
- Promoting development of various enterprises and activities in rural areas.

Agricultural product prices must be liberalized. Land taxes will encourage the effective use of land if soil fertility and location are considered when determining land value.

A primary resource of rural Estonia is its educated people; the state must guarantee their right to be a part of the changing society. Modernizing and improving the life of rural residents and integrating agriculture into a market economy are key to the rebirth of Estonia's economy.

Table 1. Number of farms and use of land

	1970	1985	1990	1991
	(number)			
Collective Farms	317	150	221	274
Fisheries	25	8	9	9
State Farms	171	152	117	120
Family Farms	0	0	3,673	7,295
	(hectares)			
Average Cultivable Land Area				
Collective Farms	2,706	4,469	3,688	2,976
State Farms	3,717	4,567	3,821	3,513
Family Farms	0	0	n.a.	26
	(1,000 hectares)			
Total Area	2,507	2,472	2,355	
Agricultural Land	1,425	1,329	1,368	1,369
Cultivable Land	938	1,056	1,123	1,124
Arable Land	741	913	1,111	1,111

SOURCE: Estonian Ministry of Agriculture 1992.

Table 2. Characteristics of average collective and state farms in 1985

	Collective farms	State farms
	(hectares)	
Cultivable Land	4,469	4,567
Sown Area	2,909	3,094
	(number)	
Cattle	2,469	2,412
Cows	864	857
Pigs	3,228	3,345
Sheep	23	13
Tractors	63	64
Labor Force	366	453
	(tons)	
Milk Production	3,540	3,376
	(liveweight tons)	
Meat Production	813	815

SOURCE: Estonian Ministry of Agriculture 1992.

Table 3. Output of the Estonian food industry

	1970	1985	1990
	(thousand tons)		
Meat and Products	136.0	178.9	165.2
Fishery Products	-	412.6	370.1
Butter	21.6	32.0	29.4
Cheese	8.9	15.2	14.5
Ice Cream	2.8	5.7	5.8
Dairy Products (converted to fluid milk)	235.1	384.3	412.1
Flour	-	188.2	158.5
Macaroni Products	-	6.3	5.9
Beer (thousand decaliters)	-	9,233.0	7,685.0

SOURCE: Estonian National Board of Statistics 1992.

Table 4. Consumption of main food products

	1970	1985	1990
	(kilograms per capita)		
Meat and Meat Products	73.0	89.0	84.0
Milk and Milk Products	420.0	489.0	487.0
Eggs	14.0	17.0	16.0
Fish and Fish Products	29.5	24.5	24.0
Vegetable Oil	6.7	9.5	7.0
Sugar	43.6	44.7	44.5
Potatoes	151.0	113.0	103.0
Vegetables	80.0	79.0	64.0
Fruits and Berries	35.0	44.0	36.0
Grain Products	112.0	92.0	77.0

SOURCE: Estonian Ministry of Agriculture 1992.

Table 5. Use of fertilizers and chemicals

	1980	1985	1990	1991	1992
	(kilograms active ingredient per hectare)				
Mineral Fertilizers					
Total	226	250	220	209	145
Nitrogen	89	109	76	74	65
Phosphorus	54	49	56	46	30
Potassium	83	92	88	89	50
	(tons)				
Plant Protection Chemicals					
Herbicides	1,555	1,929	1,408	967	834
Fungicides	1,084	1,539	1,168	736	630
Insecticides	408	345	139	206	180
Insecticides	63	44	30	25	24

SOURCE: Estonian Ministry of Agriculture 1993.

Table 6. Average yield of field crops

	1940	1970	1985	1990	1991
	(metric tons per hectare)				
Rye	1.29	1.55		2.70	2.17
Winter Wheat	1.25	1.70		2.50	2.48
Spring Wheat	1.05	1.76	1.79	2.58	2.73
Barley	1.10	1.78		2.27	2.18
Oats	1.02	1.77		2.80	2.52
Legumes	0.87	1.18		1.37	1.32
Vegetables	9.60	21.20		16.60	18.14
Potatoes	14.70	17.80	13.70	13.60	11.26
Fodder Roots	20.10	44.00		48.02	39.87
Perennial Grasses (hay)	2.74	2.87	5.01	3.67	4.76

SOURCE: Estonian National Board of Statistics 1992.

Table 7. Year-end livestock numbers

	1940	1970	1985	1990	1991	
					Total	Private farms
	(thousands)					
Cattle	528.4	692.4	840.2	757.8	708.3	20.5
Cows	401.8	308.7	302.7	280.7	264.3	8.1
Pigs	319.2	688.0	1,073.6	959.9	798.6	11.7
Sheep	322.9	163.1	147.0	138.9	141.9	15.4
Poultry	1,604.0	3,677.1	6,911.5	6,536.5	4,117.7	n.a.

SOURCE: Estonian National Board of Statistics 1992.

Table 8. Livestock production

	1940	1970	1985	1990	1991
Meat (carcass weight, total production) ^a	72.1	136.0	216.5	219.3	183.7
Pork (carcass weight) ^a	41.3	74.2	115.56	114.5	95.2
Beef (carcass weight) ^a	-	54.7	76.5	79.9	63.6
Mutton (carcass weight) ^a		2.6	3.7	3.0	2.5
Poultry Meat ^a		3.5	20.2	21.6	22.1
Milk	781.6	1,024.4	1,260.1	1,208.0	1,092.8
Wool (tons)	847.0	319.0	-	215.0	-
Eggs (millions)	133.6	358.9	528.2	547.1	559.7
Yield					
Milk (kilograms per cow) ^b	1,976	3,315	4,045	4,170	4,135
Eggs (per hen) ^b	-	214	245	246	

SOURCE: Estonian National Board of Statistics 1992.

^aThousand tons.

^bPer year.

DATA SOURCES

Estonian Ministry of Agriculture. 1992. *Agrifacts about Estonia from 1970-1991*.

_____ . Unpublished data.

Estonian National Board of Statistics. 1992. Unpublished data.