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**OPPORTUNITIES AND
CONSTRAINTS FOR
AGRIBUSINESS IN POLAND:
A PRIVATE SECTOR PERSPECTIVE**

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OPPORTUNITIES AND CONSTRAINTS

FOR AGRIBUSINESS IN POLAND:

A PRIVATE SECTOR PERSPECTIVE

I. INTRODUCTION

This report presents the results of an appraisal of the constraints to development of the agriculture sector and opportunities for investment in agribusiness in Poland. The agribusiness activities which were examined ranged from production of agriculture inputs, such as feed and chemicals, to food processing, machinery and transport. Conclusions regarding investment opportunities in each of the major sub-sectors of the agribusiness industry are presented in summary in this portion of the report. Considerable more detail on various aspects of the agricultural sector in Poland and on conditions related to investment opportunities in various sub-sectors is provided in the annexes accompanying this report.

A. Appraisal Objectives

The primary objective of the appraisal was to identify, from a private sector perspective, opportunities and constraints to development of agribusiness in Poland. The appraisal focused on short- and medium-term business prospects that can be developed over the next five years, and that are critical to the development of a well-functioning and efficient agribusiness industry in Poland.

B. Methodology

The appraisal was conducted by a five-person team: four members of the private sector plus one representative from the AID Bureau for Asia and Near East. Three of the private sector businesspersons were agricultural experts, two of whom were fluent in Polish. The team also had the assistance of four local Polish agribusiness experts. The study was conducted from December 3 to December 21, 1989 following a period of background interviews and pre-departure preparations in Washington. Members of the team divided into groups of 2-3 persons to conduct site visits to farming regions and processing facilities outside the Warsaw area. A total of 6 *voivodships* (provinces) in the areas surrounding Krakow, Poznan and Warsaw were visited by the team members. Site visits included state farms, cooperatives, private farms and a wide variety of processing facilities ranging from slaughter houses and rendering facilities to dairies and grain and seed milling operations. Interviews were conducted in Warsaw and other locations with representatives of the Ministries of Agriculture, Finance, Foreign Cooperation and Industry, the Bank of Food Economy, the Peoples' Peasant Party (Solidarity - Green), the Warsaw Agricultural University, and agricultural institutes and research stations.

C. Current Situation

Most of the information presented in this report, as mentioned above, was gathered during the first three weeks of December 1989. In preparation for its visit, the appraisal team reviewed many of the studies of conditions in Poland conducted by other teams, some of which were completed as recently as a month before the departure of the appraisal team. Within a short time of its arrival, the team realized that changes were occurring so rapidly in the political and economic structure of Poland as to render many of the conclusions and recommendations in these earlier reports obsolete. In view of the experience of these other reports, the appraisal team expects that many of its descriptions of current conditions and some of its recommendations are likely to be overtaken by events in Poland within a short time of the publication of this report.

During the period the team was conducting its appraisal, there were announcements daily in the media describing major changes to various economic and fiscal policies and regulations. The magnitude of these changes and the rapidity at which they are being introduced has the Polish economic system and the role of government in a state of flux. As part of its rapid conversion to a free market economy, the Polish government is introducing a number of austerity measures in an effort to limit both the rate and duration of the extremely high inflation that will occur with the removal of price controls and subsidies that permeated the economy. There is considerable confusion and uncertainty about the effects of these new policies, particularly in the rural areas because the government has not been able to devote adequate attention to countering the concerns of farmers that they will bear the brunt of the effects of the austere policies being adopted.

While the long-term benefits of virtually all of the actions being undertaken by the Government of Poland are obvious, the severe measures will cause serious disruptions in Polish life and, inevitably, dissatisfaction that will sorely test the resolve and far-sightedness of the current leaders.

II. MACRO-ECONOMIC POLICY CONSIDERATIONS

The key to recovery of productivity and efficiency in the Polish agriculture sector lies in the establishment and enforcement of effective macro-economic policies that will encourage investment in agribusiness and other industries. Poland has more than sufficient agricultural production capacity to meet the needs of its domestic markets and to achieve significant levels of exports of many agricultural products. However, under the policies of the previous government production levels were consistently been below the actual capacity of the sector. This shortfall is due

to: 1) shortages of basic inputs, particularly agri-chemicals, packaging materials and farming implements resulting from policies which favored development of the industrial sector; and 2) price controls which removed all incentives to produce in excess of central planning targets.

In addition to adequate and, potentially, highly productive agricultural land, the Polish agricultural sector also has a sufficiently deep base of expertise in agricultural sciences and technology to adapt rapidly to modern farming methods, including the use of bio-technology. There is a high level of education and technical capability among the population in general, as well as among farmers and technical managers, many of whom have demonstrated creativity and considerable entrepreneurial initiative despite structural obstacles. As a generalization, Polish farmers do not need to be shown how to farm so much as they need access to the inputs that are basic to good farming practices. Faced with severe shortages of virtually every input, private farmers have typically produced only sufficient food to meet their own needs and to provide some income from sale of farm products in local markets at depressed prices.

State farms and co-operatives have been the major sources of agricultural production in Poland. Co-operatives in Poland differ significantly from their U.S. counterparts in that the Polish organizations are essentially state enterprises with only nominal ownership (typically 1%-5%) held by members of the co-op. Most state farms were large contiguous estates prior to nationalization and, therefore, had a history of operation as a large, viable economic unit. In contrast, co-operatives were assembled from a large number of farms and tracts and function more as collectives than true co-operatives.

Production levels attained by the state farms and co-operatives, as with the sector as a whole, have been below real capacity. Crop and resource allocations typically were established by central planners without adequate regard for demand which resulted in both shortages and surpluses of products that, for the most part, could have been avoided or moderated through greater reliance on market forces.

Agricultural policies of the previous government kept retail prices for agricultural products low and provided heavy subsidies for inputs. Allocations of inputs strongly favored state farms with the result that private farmers and, to a lesser extent, co-operatives could not obtain adequate quantities to meet their needs. Resulting low production levels and low retail prices for products prevented farmers and processors from accumulating sufficient capital for replacement of equipment, let alone investment in equipment for expanded production. As a result, most production and processing facilities in Poland are operating with equipment that is obsolete and essentially worn-out. Based upon its review of numerous processing operations, the appraisal team estimated that most facilities are operated at about 50% of design capacity because equipment is in poor condition or out of service. Lack of spare parts, for instance, has led to cannibalizing of entire production lines in some processing facilities.

The team concluded from its appraisal that agricultural production in Poland is constrained severely by a lack of adequate inputs, shortage of processing capacity and losses in yield attributable to inadequate storage facilities, insufficient conservation materials and inefficient distribution. It is these conditions, rather than any inherent shortcoming in agricultural skills or technical know-how, that has kept agricultural production below the potential capacity of the sector. Polish farmers and processors have, in fact, shown considerable initiative and ingenuity in working with the handicaps imposed upon them in the past.

Correcting the situation will require, above all else, significant inflows of domestic and foreign capital investment in production and processing activities. It is important that foreign investment and international donor assistance flow quickly into Poland to reduce the severity of the disruptions to the economic and social systems that are resulting from the Government's decision to make a rapid transition to a market-driven economy.

Attracting investment to the agricultural sector will depend, to a considerable degree, upon the success of the Polish Government in setting macro-economic policies that will create a hospitable climate for investment. The recent action establishing internal convertibility between the Zloty and the U.S. Dollar is a major first step in increasing the attractiveness of investment in Poland. However, it will be 2-3 years before the Zloty is fully convertible.

Parliament was still debating several pieces of proposed legislation pertaining to tax credits and investment incentives when the appraisal team departed Poland and, so, it is not possible to comment on the probable effects of these new laws. Of particular concern to the appraisal team is that the tax policies and incentive programs of the new government strike an appropriate balance between the need to encourage production for local markets, which the IMF has insisted upon as an inflationary curb, and the need to encourage development of export-oriented industries. The latter emphasis is necessary not only to generate foreign exchange, but to increase the size of potential markets and, therefore, the attractiveness of investment in capital intensive industries, such as steel and petro-chemicals which are crucial to growth of the agricultural sector.

A. Political Setting

The Mazowiecki government is well aware of what must be done to return Poland to a free market economy. Most of the required actions and changes to be implemented in establishing a free market economy are described in the *Program Gospodarczy* (referred to as the Balcerowicz Plan) developed by the Minister of Finance. The Plan is comprehensive and extremely candid in describing the probable effects of the policies and changes proposed. Although the Plan leaves the task of detailing the necessary policies and programs to the Parliament, it sets targets and urges prompt actions as a way of reducing the duration, if not the intensity, of the stress that will be placed on the social and economic systems in Poland by the reform

program. Many of the policies proposed by the Plan were being debated and enacted by the Parliament while the appraisal team was in Poland. Farmers regard many of the agricultural and other policies being promulgated as "anti-farmer", although in the view of the appraisal team many of the complaints were attributable to the failure of the Government to provide adequate explanation of the policies, rather than to poor policies.

Rapid conversion from a state-managed system to a free market system as prescribed by the Balcerowicz Plan is creating many dislocations, not just in the agriculture sector, but at all levels of the economic, social and political structures of Poland as well. It is only a slight exaggeration to describe the current situation as one in which the political leaders of Poland are virtually dismantling the administrative structure of the previous government. With the abandonment of the central planning process many large organizations previously responsible for managing the allocation of resources and achieving production targets have been left totally marooned in the wake of the rush toward entrepreneurial activities and economic independence. Managers and engineers, who until very recently took their directions with regard to planning, production and investment decisions from the State's bureaucratic apparatus (*nomenklatura*), are now finding themselves in charge of enterprises which are still State-owned but are expected to be operated as private corporations. Many of these managers are able technicians and administrators, and are enthusiastic about assuming greater responsibility and accountability. In the case of most of the enterprises, it is important that the managers continue to assert their supervisory role in order to keep the enterprise in operation. However, this role and the right of the managers to it is questioned in many instances by the workers, particularly in the less well-run enterprises. Managers, on the other hand, are questioning how they can bring about the necessary improvements in worker motivation and productivity if their authority is not recognized.

Removal of all price controls while freezing wages at current levels to dampen inflationary effects will cause considerable economic and social hardship. Even with these stringent measures, the Government expects that inflation will reach an annual rate in excess of 500%, and was considering although it had not yet established a food stamp program to assist the lower-income groups.

1. Tax Policies

Restructuring of the Polish economy is being accomplished to a considerable extent through major tax reforms. While these reforms will affect all industries, small farms in particular will be hard hit by the recently enacted increases in the farmland tax-- the only tax levied on private agriculture production in Poland. The rate that will apply represents a compromise with advocates of an even higher rate. Beginning in 1990, the tax will be equal to the current market price of 0.25 tons of rye per calculation hectare (rye is a principal grain in Polish crop production and the calculation hectares is a unit of measure that takes into account the quality of soils, distance from markets, state of rural infrastructure, etc.)

Grain yields in Poland typically are in the range of 3.0 tons per hectare which means that the farmland tax would amount to about 8% of the market price. This represents a significant increase over previous tax levels. Livestock production, however, is not taxed, with the exception of industrial poultry feedlots.

2. Investment Policies

A number of revisions to the investment law are being considered by the Parliament. Investor reaction to the previous revisions to the law in August 1989 prompted some of the changes, but most are in response to conditions insisted upon by IMF in the negotiations related to the stabilization loan agreement. Significant revisions to the investment law that are being considered include the following:

- Elimination of foreign currency accounts for joint venture companies.
- Financial operations denominated in Polish currency only, which would require that all foreign currency earnings be converted into Polish currency.
- Elimination of export incentives by setting the corporate tax rate at 40%. Previously a formula related to export volume reduced the corporate income tax for export-oriented companies.
- Extension of tax holidays from 3 to 4 years for most joint venture companies, tax holidays for the preferred industries was left at 6 years.

The first three of these proposed changes are detrimental to efforts to attract foreign investment. However, establishing full convertibility of the zloty with the dollar is the single most important step that Poland can take to encourage foreign investment in a country which is woefully lacking in products of all types. The size of the Polish market and, therefore, the incentive for investment can be increased even more if adequate encouragement is given to export-oriented industries. Poland provides a convenient access to USSR markets and can provide an attractive entry for U.S. companies to the European Common Market through the special relationship that exists between Poland and the Common Market and which is expected to continue beyond 1992. Realizing this potential, however, is dependent upon the zloty being fully convertible.

The attractiveness of investment in Poland, even under its current foreign exchange regime, has already been recognized by a large number of non-U.S. companies. To date, there have been 930 joint ventures established in Poland of which over 600 are with German partners, and approximately 100 of which are with Swedish firms. The remaining joint ventures are, in descending order, British, Austrian, French, Dutch, Danish, American and Russian.

3. Agricultural Policies

Five agricultural activities have been singled out by the government as being of particular concern and appropriate targets for special government programs, al-

though the details of the programs have yet to be defined. The five areas are:

- Progress and development of agriculture, especially for the purchase of seed and semen, and for restructuring of the government extension programs.
- Drainage and irrigation programs
- Social security
- Production of inputs, specifically: in herbicides and pesticides. This program will be discontinued after 6/90.
- Agricultural industry food subsidies for staple goods, *i.e.*, bread, milk and cheese.

Assistance to these areas is likely to include preferential credit to encourage investment, as well as to address seasonal effects on food processing and storage requirements. Parliament currently is considering a proposal from the Ministry of Finance that preferential credit be available for the following:

- activities that create progress and development of agriculture, *i.e.* buy seed and cattle, but not tractors;
- activities that will create small and medium rural processing entities to compete with large state entities;
- infrastructure development;
- irrigation and drainage;
- mining of lime.

5. Social Policies

Farmers, the largest economic group, are likely to fare much better than urban workers during the period of severe anti-inflationary measures, but probably will be more visible and vocal in their criticism of government policies. This is due in large part to the magnitude of the changes that will be wrought on the agriculture sector by the economic reforms being enacted.

Economic reform, as envisioned by the Balcerowicz Plan, will essentially eliminate the contribution of farms of less than 5 hectares to total Polish agricultural production. Of the total 2.7 million farms in Poland, 1.5 million, or 60%, of the farms consist of less than 5 hectares of arable land. Moreover, these farms only cover 20% of the arable soils in Poland. The Balcerowicz Plan estimates that as many as 600,000 personnel currently engaged in farming will be unemployed as a result of the demise of these unproductive units. The figure would be higher were it not for the fact that many of the small farmers hold jobs off the farm, and farm only on a part-time basis. A rural development program is proposed in the Balcerowicz Plan to train unemployed farmers and to encourage them to establish service and retail establishments that are badly needed in most rural areas.

Efforts to implement the rural development programs, however, are likely to encounter resistance from the affected farmers because of Polish peasants' strong ties to the land and the security that it provides. In addition, there is considerable mistrust of government programs in the rural areas stemming from the efforts of the previous government to collectivize land holdings for nearly 50 years. However, some of the problems associated with taking small farms out of production might be lessened by the effects of attrition. More than 25% of the affected population are over the age of 65. Another 20% are already employed in industry on a full- or part-time basis. It is clear, however, that strong incentives will be needed to encourage farmers to consolidate their holdings into 20 ha. or larger units, or to turn to other occupations.

Limitations affecting the sale of existing or new housing and rental rates are also being removed to eliminate any potential barriers to sale of farm dwellings. New legislation is also being prepared that is intended to encourage investment in the rural service sector and in small- and medium-sized agricultural processing facilities. Job creation through development of the agricultural service sector and related industries is critical to reducing the severity of the effects on the agrarian structure of the inevitable conversion to dependence on more efficiently sized farming units.

B. De-Monopolization and Privatization

The Polish Government has removed all controls which protected State-run monopolies, and is now encouraging the formation of private enterprises to compete with the former monopolies. These monopolies are no longer State-run agencies; they are under independent management and will survive only if they are able to compete successfully with private firms engaged in the same activities. These State-owned enterprises can also reorganize as private firms when and if they can raise the capital to buy out the State share of ownership, *e.g.*, through share offerings, joint ventures or leveraged buy outs.

The Mazowiecki Government has made a strong and sincere commitment to privatize virtually all State-owned enterprises (SOEs). Progress in privatization has been slow, however. Not because of lack of political commitment or of understanding of how to effect privatization, but rather because of the severe lack of capital to purchase the State's equity interest and to finance the purchase or rehabilitation of machinery and equipment. Recognizing that workers lack the capital required, the government has set the following priorities for the purchase of the government's share of the enterprises:

- First - employees of the state enterprises
- Second - management

- Third - local investors (those within the community)
- Fourth - Polish investors
- Fifth - Foreign investment

The priorities reflect the new Polish Government's concern with reducing the possibility of foreign investors, particularly Western Europeans, buying out entire industries. Additional controls are likely to be included in the addendum to the foreign investment law that are expected to be released by March 1990. Appropriate methods for valuing the assets of the State enterprises also need to be established.

It was the conclusion of the appraisal team that little can or needs to be done to accelerate the privatization process in Poland, as the process will proceed at a pace that will be governed almost entirely by the rate of flow of investment into the private sector. For the time being, however, the portion of the equity that is not held by investors will be held in trust by the State.

1. State Farms

State farms were created from formerly private estates that were confiscated by the previous government. State farms, therefore, do not have shareholders or members. Investment in State farms represent prime opportunities for acquisition by the existing workers and local investors. While workers at State farms already have been given the opportunity to buy the farms, the appraisal team encountered several instances in which the workers elected to take the income generated by the farm operations in cash rather than to apply their income to purchase of ownership shares.

In the interests of removing any perceived risks and in an effort to gain the trust of State farm workers the government is introducing legislation eliminating any limits on the size of individual farms. It is also reviewing legislation governing the transfer of land and rights in ownership.

2. Co-operatives

Co-operative farms in Poland present a different situation than exists for State farms. Workers already hold shares in the co-operative and, therefore, have a sense of ownership that is lacking among State farm workers. In most instances, however, the members' share of ownership is quite small-- amounts of less than 1%-5% of total assets of the co-op are typical. Memberships in the co-ops were established by the State when the co-ops were first organized as a form of Socialist "participatory" membership, and conveyed the right to vote on matters affecting operation of the co-op. Given the smaller size of co-op holdings relative to State farms and the strong interests of the members in assuming total ownership, privatization of these farms is likely to occur more rapidly than it will at State farms. Interest in assuming ownership seems to be shared equally by management, workers and farmers.

As with other sectors of the economy, the major obstacle to rapid privatization of the co-ops will be the lack of capital rather than any serious lack of knowledge of how to privatize or what needs to be done to increase the efficiency of production. In the course of its field work, for example, the appraisal team encountered several small co-operatives that had started up dairy and vegetable/fruit processing facilities with capital raised by the members.

3. Private Agribusiness

A considerable number of small private agribusinesses were encountered by the appraisal team that had recently been established to provide meat production, rendering, vegetables/fruit processing, and farm machinery manufacturing and repair. During its visit, the appraisal team also witnessed the start-up of distribution of private farm products and consumer goods in all of the metropolitan areas covered by the study. Local officials expressed justifiable concern with the health threat posed by poor sanitary conditions (for example, uninspected meat is being sold at the curb from non-refrigerated trucks), and are expected to halt the sales. The team is hopeful that the farmers and other private distributors will be allowed to use the largely empty state produce stores and that the authorities can make arrangements for inspecting the products, rather than stifling this private sector initiative.

C. Donor Activities

Multi-lateral and bi-lateral donor assistance to Poland is taking essentially two forms: food aid and management training programs. Several EEC countries are providing food aid, primarily butter, meat, and vegetable oil. For the most part, the food aid programs are not coordinated and are flooding local markets with products of which are already in adequate supply. The resulting surplus is severely depressing the prices for local products and impeding the transition to a free market for agricultural products. For example, the team encountered instances of 10 lb. boxes of butter being sold off the back of trucks for the equivalent of \$0.25 and heard several reports of truckloads of butter being dumped in the woods. With the exception of a small deficit (10 to 20%) of cooking oils, the appraisal team could not find any evidence of food shortages and was urged by several government officials to recommend against any additional food aid.

A second area of donor activity consists of assistance in the form of educational and management programs. Most of these programs have only recently been announced and are not in operation. It is difficult to assess what effect these programs will have on the agricultural sector. The team did encounter one instance of an in-place project providing technical assistance at a pilot dairy project in Lomza sponsored by the Dutch government. The project is valued at \$800,000 and is financing a team of 12 Dutch farmers that are transferring knowledge of dairy production and marketing to a rural community. It is intended that this project will provide a model for organization and operation of other production and marketing cooperatives throughout the country.

To a person, the Polish farmers and processors that the appraisal team members met with all stated, sometimes quite vigorously, that what is really needed is feed commodities and ingredients, especially protein ingredients, vitamins and premixes, rather than food aid. For the near term, aid in the form of fertilizers and agri-chemicals to protect this year's harvest would also be welcomed.

It is important that aid to the agriculture sector be coordinated among the donors and with the recipients to minimize bottlenecks resulting from port congestion and the limited capacity of the rail system to handle additional freight volume. Moreover, the donors should assure that State farms are not the only recipients and that the aid is also made available to all agricultural producers.

At present, because the cost of importing and distributing the aid is borne by the individual recipients, small farmers cannot afford to purchase the products. As a result, most aid is going to State farms and cooperatives and farmers located close to the port at which the products are off-loaded. For example, the cost to transport 40 tons of corn by rail from Szczecin to Siedlce (West of Warsaw) was 1.6 million zł (1st week of December). Average farm earnings are approximately \$200 per month, which means that the cost of shipping the corn would represent one year of income to the average farmer. Clearly, these costs are prohibitive and indicate that donors must subsidize the cost of internal distribution of donated assistance if they expect small private farmers to benefit from the aid.

III. AGRICULTURE SECTOR CONDITIONS

As indicated in earlier sections of this report, elimination of State planning and its associated control and intervention in agriculture production has caused major changes in the supply of inputs and the demand for the agricultural products. As was also the case in other sectors, the central planning process when applied to agriculture emphasized meeting production targets without adequate regard for the cost of production, product quality, and consumer demand.

For example, Poland has emphasized potato production at the cost of the production of other needed agricultural commodities. Over-production of potatoes not only represented an inefficient allocation of scarce input resources but also led to extensive use of potatoes for hog feeding. This practice is in itself inefficient because of the low feed value of potatoes. Furthermore, a minimum of 25% of the potato crop was lost each year because of inadequate storage facilities.

To understand the constraints to development of a more efficient agricultural sector in Poland it is necessary to examine the conditions affecting inputs and production separately.

A. Availability of Inputs

The serious shortages of basic inputs to the agricultural sector are explained by several policies and practices of the previous government:

- Centralized planning did not adequately take into account input needs of agriculture, particularly the needs of small farmers;
- Large scale State enterprises, were favored in the allocation of resources;
- Large industrial and agricultural complexes, *i.e.*, processing facilities, were located on the basis of political considerations rather than in proximity to product sources or with adequate regard for collection and distribution costs. The facilities available to farmers are frequently too large and poorly located in relation to their sources in rural areas. The almost total lack of input services in the rural areas has led to higher input costs to farmers and has generated significant logistical problems. For example, farmers typically must travel 200 km to get a tractor repaired and might have to wait up to one year to have the repairs completed. State enterprises, however, generally receive immediate attention to tractor and other equipment repair needs.
- Insufficient investment in replacing obsolete and worn-out production and processing equipment. Most Polish agribusiness processing plants were built just after WW II and are still operating equipment installed at that time.
- Overemphasis on exports to earn hard currency encouraged exports of raw materials and commodities rather than added value production. As a result, there is a serious shortage of processing capacity in several sub-sectors, such as fruit and vegetables, meat processing, edible oil processing and dairy.
- Major shortages of farming equipment and implements ranging from pitch forks to small tractors and their implements to combines were allowed to occur. These shortages are particularly acute at the medium and small farm level. Appropriately sized equipment for small and medium farms is not available because allocations favored the production of large scale equipment for State farms. Their preferential status has also enabled State farms to hoard sizable quantities of machinery and equipment.
- Insufficient production of spare parts led farmers to cannibalizing equipment which further reduced the availability of machinery and equipment available to the agriculture sector.

B. Production

The agriculture sector in Poland not only has sufficient production capacity to meet its own food needs, but could be a major exporter of a wide range commodities and added value products. Poland had achieved this condition in the years prior to WW II. Its potential production capacity is not being realized now, however, because of inadequate supply of inputs as described above and because of:

- Excessive fragmentation of farm land which has led to inefficient use of arable land;
- Controls, subsidies and monopolistic purchasing arrangements that have set prices too low to stimulate production;
- Limited processing facilities and artificially low prices resulting in a limited market for farm products relative to farmers' capacity to produce; and
- Poor central planning policies have removed incentives for efficient production.

Of these reasons, the inability of the farmer to obtain an adequate price for his products is the primary cause of low production levels in the Polish agricultural sector.

C. Constraints

Conditions within the agricultural sector in Poland present several severe constraints to production that will not be overcome simply with the move to a free market economy. These constraints are the results of nearly 50 years of reliance on central planning and lack of attention to preserving Poland's most precious resource and will take many years to overcome. Most serious of these constraints are the following:

- Consolidation of landholding is important to achieving potential production levels, but might require a generation or more to accomplish because of the extent of fragmentation and the deep-seated nature of traditional views of land ownership. At present, medium-sized farms (20-100 ha.) account for only 2.5% of total farms;
- It will take several years to return large areas of poor soil resulting from inadequate inputs and lack of attention to drainage conditions. The water table in some areas has been drawn down excessively to meet the needs of industries situated in locations that are inappropriate; and
- It will take some time to establish and equip the many storage, processing and distribution facilities that are required at the rural level.

There are other constraints to achieving the production potential that are more short-term in nature:

- **Increased Costs of Inputs.**

Elimination of subsidies will cause dramatic increases in the cost of inputs and, therefore, the cost of production. This will hasten the demise of small and inefficient farms, but also will reduce the demand for many products because wage controls will place the prices for these products beyond the reach of most of the population. A price support mechanism will probably be required, and is under consideration by the government, to

assure adequate supplies of basic food commodities. As yet, the details of the program have not been defined, but an agency has been created to regulate the market through price supports and other interventions in the market for farm products.

- **Access to credit**

To curb inflation, the Polish government has adopted a policy of tight credit. Currently, the interest rate for the agricultural sector is 70 to 80% per annum while the general interest rate is 160 to 180% per annum. Current discussions in the Parliament indicate that with the exception of a few sub-sectors in agriculture, lending rates for the sector will be same as the general rates. Activities that are being considered for preferential rates include those associated with: purchase of farm land to consolidate landholding; drainage and irrigation projects; lime mining; genetic improvement of dairy and beef cattle, and feed grains; and start-ups and expansion of small and medium rural food processing industries.

- **Tax treatment**

At present, agricultural services and the processing industry are considered to be industrial and therefore subject to higher taxes than agricultural activities. This will be a dis-incentive to badly needed investment in processing facilities.

- **Shortages of Consumer Goods**

The general unavailability of consumer goods tends to discourage farmers from producing and selling products to increase earnings and disposable income.

- **Lag in Farm Prices**

Prices received by farmers for their farm products typically lag inflationary increases in retail prices. The effects of this lag are likely to be severe under the inflationary conditions that Poland will experience in 1990 and might cause farmers to curtail production for several years until they are convinced that the inflation rate has stabilized. The seasonality of farm products tends to worsen the disparity between prices for general goods and services and the prices for food products.

- **Distribution Inefficiencies**

Although the Polish government has removed all controls protecting the State monopolies, these organizations will continue to function as monopolies until such time as there are sufficient alternative sources in the private sector. Until that time, private farmers will continue to be discriminated against in the distribution of inputs and products.

D. Food Demand

Despite inflationary pressures on prices demand for certain food products remains high. There is considerable demand, for example, for pork and processed pork product, eggs, dairy and cheese, gelatin, potato starch and flour. There is little or no demand for poultry meats, beef and fish, in part because of cultural preferences, but also because adequate production of pork, milk and eggs keeps prices for those foods relatively low compared to poultry, beef and fish prices. The poultry industry had thrived in the past but is now inefficient and produces broiler meats in low quantities. Beef production is hampered by the small size of farms and the tendency to rely on dual purpose cattle breeds. Aquaculture produces sufficient fish for the largely seasonal demand for trout and carp during major holidays of Christmas and Easter. Demand for fish throughout the remainder of the year is low.

During its visit the appraisal team encountered evidence that farmers were withholding food production from the market in an effort to increase prices. This practice is giving rise to reports of food shortages in some areas.

IV. RECOMMENDATIONS

This section presents the major recommendations of the team regarding the actions necessary to encourage development of the agriculture sector in Poland. Additional information supporting these recommendations is provided in the annexes accompanying this report.

A. General Recommendations and Observations

Recommendation 1: The USG, and other donors, should discontinue food aid, with one exception (See Annex A), to avoid any further disruption of local markets and the transition to free markets..

Agriculture assistance, if it is continued, should be limited to feed aid i.e. high protein and concentrated feeds and additives to increase the yield and quality of livestock production. In addition, technological aid, e.g. improved seed varieties and semen should be provided. Used equipment

and implements, and agri-chemicals would also provide valuable assistance in increasing the productivity of the sector. Developmental assistance in these areas should be short-term and concessionary (non-monetized) in nature.

Recommendation 2: A comprehensive master plan should be developed for implementing USG developmental assistance objectives and private voluntary organizations' (PVOs) activities in Poland.

The absence of any coordinated approach by the USG, PVOs and the European Community in providing assistance to Poland is putting a considerable strain on the administrative apparatus and infrastructure of the country. It will inevitably lead to waste of many resources, and is likely to impede rather than assist the transition to a market-driven economy in Poland. Ideally, the plan will be based upon a strategy that exploits the comparative advantage offered by individual USG agencies in providing the type of assistance needed to overcome the impediments to growth of the private sector in Poland. Again ideally, the plan would be developed in concert with the other major international and bi-lateral donors providing assistance to Poland. However, an unified USG approach would go a long way toward reducing the strain on the absorptive capacity of the public and private sectors in Poland. This unified approach would help to assure that the support provided by individual USG organizations, either directly or through support provided to PVOs, would be consistent with Poland's needs and not counter-productive. The planning process should include the participation of Polish authorities to be sure that proposed activities have adequate local support.

Recommendation 3: Encourage and support U.S. private industry involvement in trade and investment relations in Poland.

The high levels of interest and activity by non-U.S. foreign investors and trade companies in Poland provides strong evidence of the numerous profitable ventures that are available. To date, U.S. investors have been more cautious in their approach, generally because they have:

- Insufficient information on investment opportunities, and the size and scope of potential investments;
- Inadequate information on the legislative reforms affecting investment, and the progress made to date in de-monopolizing and clearing the way for private investment; and
- Concerns about convertibility of the zloty and repatriation of profits stemming from short-term rather than longer-run corporate strategies.

While many Poles express a preference for U.S. investment and joint-ventures, they cannot be expected to turn away other foreign investors. And unless the U.S. private sector moves quickly it will find itself closed out of a market that can provide convenient access to markets in Western Europe and Russia. Some of the recalcitrance of U.S. business can be overcome by getting the Polish-American Enterprise Fund into operation quickly, and by encouraging the EXIM Bank and OPIC to give priority attention to project proposals related to Poland. Policy or other statements endorsing U.S. business activities might also help to encourage private sector interest.

***Recommendation 4:* Curtail the number of study missions devoted to fact-gathering in favor of efforts that involve specific business investments and related activities.**

Government officials and industry representatives in Poland are being inundated with visiting teams from the U.S., Europe and various international and bi-lateral donor organizations. The appraisal team's visit, for example, came on the heels of a visit by a Presidential Commission and coincided with visits by the U.S. Secretaries of Agriculture and Labor, delegations from West Germany and Holland and a several teams from U.S. universities. Since returning the team has learned of at least two large delegations that are being organized by states in the mid-west. The emphasis and frequency of these missions is beginning to frustrate the Poles, many of whom are getting anxious to see results after all the studies that they have been subjected to. To the extent that any control can be exercised over the purpose and scheduling of these various missions, the team recommends that preference be given to visits that involve assessments of business opportunities and that can reasonably be expected to lead to investments in Poland.

B. Recommendations Related to Technical Assistance

While the appraisal team is strongly of the opinion that capital is far and away the most important input required to promote development of the Polish private sector, there is also a need for selective interventions of technical assistance to ease the transition to a market-driven economy. Specific areas in which AID or others might offer assistance to the Polish public and private sectors are summarized in the recommendations listed below.

Recommendation 1: Offer assistance to the Government of Poland in conducting the necessary analyses and determining appropriate tax, regulatory, tariff and incentives policies needed to support the major adjustments that are being made to the economic system.

Changes that are being introduced at the macro policy level by the Polish Government will impact the entire socio-economic and political system in the country. The Government has set into motion a process that will drastically alter the complex and dynamic relationships that make up the Polish economic system. The policies that are being promulgated adhere closely to the policies proposed in the Balcerowicz Plan. However, neither the Parliament or the author of the Balcerowicz Plan had access to the analytical tools and experienced analysts that assist in the policy formulation process in other industrialized countries. In the absence of these analyses, it is likely that some of the policies being promulgated will produce results that were not adequately anticipated. In developing the specifics of some of the policies described in more general form in the Balcerowicz Plan, legislators would benefit greatly from access to analyses of the effects of alternative policies. A small team of advisors with experience in policy analysis and a small number of micro-computers could provide valuable assistance to the policy development process now occurring in Poland, and conceivably would improve the effectiveness of many key policies affecting the future of the agriculture sector, as well as other aspects of the Polish economy.

Recommendation 2: Provide training and related assistance to develop managerial skills, particularly in marketing, management, finance and accounting.

Forty years of central planning in Poland has stifled the development of middle and senior level managers accustomed to working in a profit-motivated environment. While most of the managers and workers that are now responsible for directing the operations of former SOEs and various spin-off activities have the requisite entrepreneurial spirit and considerable technical expertise, they are lacking the training and experience that is required for effective management of competitive enterprises. In the past, for example, managers have not had to be concerned with cost and pricing, marketing and quality assurance. Management training and other business advisory services will be required to accelerate the recovery of skills and motivations that have atrophied over the past 40 years.

Recommendation 3: Support the establishment of pilot projects to demonstrate current technology and integrated agribusiness methods in grain production, and in the production, processing and marketing of dairy, poultry, cattle, fish, and related processes.

Polish farmers and processors are generally aware of the improved methods and technological processes in use by other industrialized countries. However, they have no direct experience with these technologies and only limited information about them. An effective way to transfer these technologies and provide experience in their use in Poland would be to establish a small number of pilot projects in various regions of the country. These demonstration projects would make use of existing facilities, but would be furnished with appropriate equipment and a mix of permanent and visiting technical advisors.

Recommendation 4: Provide assistance in the establishment of trade and educational associations to provide liaison and technical services to the farm and rural population.

Aside from political groups, there are no organizations or associations actively representing farmers or promoting their interests. Organizations of this type could be very effective in representing farmers and the rural population before the government, and in assisting the government gain support for policies affecting rural areas. Much of the unrest that currently exists in the rural areas is attributable to a lack of understanding of the intent or probable outcome of recently enacted agricultural policies. An informed trade association could provide a useful forum for discussion of these policies and would be an effective spokesgroup in presenting farmers' concerns to the Parliament and other decision-makers. A seed or other trade association, for example, could provide a single point of contact for foreign researchers or suppliers that would be useful in establishing technical education and other advisory services for its members.

Recommendation 5: Offer to share the U.S. experience in the use of tax incentives, subsidies and credit policies to encourage agricultural production and markets.

It is unrealistic to expect that Poland will be able to promote development of its agricultural sector in the directions proposed without some form of temporary or intermittent interventions in the market for food products. A State Agency for the Agricultural Market has been established as the intervening agency, but the mechanisms that the Agency will apply to support market activities have not been agreed upon. Assistance in the form of exchanges and visits between USDA and Polish agricultural

specialists could provide valuable assistance in the formulation of agricultural policies, and in the design of price support or other programs.

Recommendation 6: Offer assistance in restructuring the organization and improving the capabilities of the agricultural extension service.

The image and role of the agricultural extension service in Poland needs to be improved. Because of its past role in administering the central planning policies, the service is held in low esteem by farmers. The plight of the service was summed up by one extension agent who said that "After years of giving bad advice to farmers we cannot expect that they will trust us when we give them good advice." Despite its past history, the service has a valuable role to play in the development of Polish agriculture. The Service has been taken out from under central control and re-located at the *voivodship* level to increase its emphasis on field activities. Agents should be provided with training and exposure to new technologies to improve both their image and their effectiveness in working with farmers. The extension service should also be encouraged to take a proactive role in disseminating and demonstrating the beneficial results of agricultural research produced by universities and institutes. At present, very little of the research conducted by these institutions is made available to the production sector despite the importance to the industry of many of the findings. A revamped extension service could help to disseminate this information through a research bulletin and through operation of demonstration plots in selected areas. Co-operation between the Service and universities similar to that existing in the U.S. agriculture research community might also be encouraged.

Recommendation 7: Offer assistance to the Polish government in implementing its comprehensive plan for long-term rural development, particularly in the delivery of worker training.

The Balcerowicz Plan recognizes the need for a comprehensive rural development program to address the massive dislocations in farm employment that will be created by the current agricultural policies. However, Poland does not have the experience that other countries have acquired in entry-level and cross-training of workers. Assistance in establishing training centers and curricula will be very valuable as the Government moves forward with this program to prepare farmers and farm workers for skilled occupations in agro-industry. The experience garnered by AID in assisting rural development efforts in many countries should be offered to Poland in the form of a team of 2-3 individuals to work with trainers and rural groups. One approach to implementing the program might be to train workers through demonstration centers set up in key *voivodships*.

For its part, AID might support programs to provide vocational training for blacksmiths, mechanics, bakers, retail managers and carpenters. Along with the training, assistance might be provided in setting up a Small Business Administration (SBA) program to provide start-up loans to small businesses in the rural areas.

C. Recommendations Related to U.S. Private Investment

Despite the state of flux and the difficult economic situation confronting Poland, the country presents a significant number of opportunities for U.S. investors with medium- and long-term investment objectives. While the window of opportunity is wide open at the present time, it is likely to narrow considerably within 3-5 years because of the high degree of investment interest evidenced by Western European companies. Korea and Japan are also likely to be heavy investors as well. Experience with comparable situations in other countries has proven that the first wave of foreign investors is generally able to establish a dominant position in the market for its product that is difficult for later investors to overcome.

Marketing activities and expertise are virtually non-existent in Poland with the result that the full potential of many markets has yet to be realized. It is expected that foreign investors, along with capital, will bring considerable experience in marketing that will be readily adopted by Polish entrepreneurs.

In its appraisal, the team identified a number of large scale and smaller scale investments in which U.S. companies are competitive in international markets.

1. Large Scale Investments

Growth of the industrial and agricultural sectors in Poland will be paced by the rate at which basic industries are modernized and expanded. Foreign investors and international lending agencies will have a key role in these modernization efforts, because the capital required to increase the capacity of these basic industries is far in excess of the amount available from domestic sources. Until this investment occurs, however, growth of all industry and particularly the agribusiness industry will be severely constrained because of insufficient capacity in the following industries and sectors:

- telecommunications
- banking and financial markets
- housing
- steel
- petrochemical, plastics, fertilizers and agri-chemicals

- **infrastructure: transportation, information services**

While Recommendations on investments in these activities are beyond the scope of this study, however, U.S. companies have competitive advantages in several of the technologies involved and should examine the potential for investment in some of these areas.

2. Specific Medium and Small Scale Investments

Investment opportunities in the agribusiness sector identified by the team are described in general terms below. Additional detail on opportunities in each major sub-sector is provided in the annexes accompanying this report.

a) Inputs and Servicing:

- **Farm equipment and implements**

There is a significant shortage of farm equipment and implements in Poland. The shortage is particularly acute for equipment in sizes appropriate for small- and medium-sized farm use. This market includes: wheel tractors from 15-25 hp, agricultural trucks of various types, rotating mowers, trailers and loaders, planting and tilling equipment, and farm units to mix and grind feed. Poland has the technology to manufacture most of this equipment. However, investment in capital equipment is required to establish modern manufacturing processes and to expand production of the industry.

- **Herbicides and pesticides production**

Poland produces some herbicides based on sulphur and copper compounds. However, approximately \$200 million in herbicides and pesticides are imported from the West annually. Of this amount, about \$38 million is imported from the US in either raw material or finished product form. In the past these imports were subsidized heavily by the State, but these subsidies will be eliminated by mid-1990. The current size of the market and its potential for growth suggest a significant opportunity for investment in local production of herbicides and pesticides. The primary source of competition for a local production company would come from the West German companies that supply most of the herbicides and pesticides imported into Poland.

- **Food retailing**

There are ample opportunities for investment in retail food operations and convenience outlets in both rural and urban areas.. These investments could take form of managerial talent and expertise in operations and marketing, as well as in facilities and inventory.

- **Laboratory and quality control equipment**

There is a general lack of modern laboratory equipment for use in the basic agro-production and food processing industries. Also, these industries do not have rapid analysis systems in kit form (eliza type and others) for use in making quick determinations of physical and chemical properties, or the presence of bacterial and mold contamination. Shortages of lab facilities and equipment also extend to the academic and scientific community, including field institutes and stations. Much of the equipment required is suitable for local manufacture and would provide a good opportunity for investment.

- **Veterinary products and feed additives**

Poland does not manufacture adequate supplies of veterinary products. Most of the supplies in use are imported. Products used by veterinarians as well as those used by the feed industry are in short supply. Past allocations of supplies favored State farms because of their ability to generate foreign currency, and they were generally able to obtain sufficient supplies to meet their requirements. Small farmers rarely could afford or obtain these products. Increases in agricultural production will create an even greater demand for veterinary products and additives and with it a significant investment opportunity in manufacturing some of these products in Poland.

b) Production:

- **Seed conditioning**

There are 150 State organizations and institutes operating seed conditioning facilities in Poland. These facilities vary widely in capacity and age of plant. A limited number of these facilities represent worthwhile investment opportunities, but will require modern equipment and marketing expertise.

- **Potato products**

Starch and potato flour are both in short supply. The situation is caused by lack of capacity and emphasis on production for export markets. The level of unmet local and export demand suggests that the industry presents significant investment opportunity.

- **Dairy and cattle industry**

Extensive reliance on dual purpose breeds and the small size of herds creates considerable inefficiency in milk production. Average milk production, for example, is 3,000 liters per cow. Farms producing 5,000

or more liters per cow are the exception. Moreover, because of the large number of farms with only one or two cows, milk collection and processing is highly inefficient and leads to high losses at the farm level. Only 10% of the raw milk produced at present is cooled.

The passing of small and inefficient farms and the consolidation of holdings into more farms of 15-30 hectares will probably result in larger milk herds and present opportunities for investment in modern collection, cooling and milk processing facilities at the rural level. Subject to the availability of stainless steel at reasonable prices, dairy plant equipment and machinery manufacture provide immediate opportunities for investment.

c) Processing:

● **Feed and milling facilities**

Poland has adequate large milling capacity to meet current and near-term needs. Investment in these facilities should be limited to establishing concentrates and premix feeds production capacity, rather than expanding general feed production. The supply of concentrates and pre-mix feeds in Poland is totally inadequate and entirely dependent upon imports. Adding these lines to large mills will satisfy demand and permit a shift in general feed milling production to the rural areas producing the grain and livestock. At present, farmers have to transport the grain considerable distances to get it milled. Setting up these rural milling capacity will require investment in mills with an average capacity of 3-10 metric tons per hour.

Opportunities also exist for investment in rural flour mills with a capacity up to 8-10 tons per hour. Again, most flour mills that exist in Poland are large centrally planned units located far from wheat production areas. In many instances the feed and flour mills could be operated jointly or at least co-located.

● **Seed crushing and edible oil refining**

While seed crushing and oil refining facilities do exist in Poland, they are operating at an estimated 50% of capacity due to a lack of capital and adequate spare parts. However, even operating at full capacity these plants cannot process the volume rape and other edible oil seeds produced in Poland. At current capacity, 50% of the rapeseed production is exported to Western Europe for processing and then is imported in meal form, an

obviously inefficient practice. Increasing the present capacity will require investment in modernizing existing plants and building new facilities.

- **Packaging**

There is an acute shortage of packaging materials affecting all industries of Poland, but it is particularly damaging to the agro-processing and food processing sectors. Virtually all packaging raw materials are in short supply, including: wood, kraft paper, carton stock, steel cans, steel and aluminum lids and caps, and every type of plastic, vacuum and portion packaging. There is also a need for modern packaging machinery. Most of this technology is not available within Poland and, therefore, will have to be imported. Achieving increased productivity in the agriculture sector is highly dependent upon the development of a packaging industry. Given the general lack of capacity of this industry at present, packaging presents a significant number of opportunities to investors.

- **Cold storage**

There is a general shortage of agro-production and food processing facilities, which contributes to significant losses in the agricultural sector. Investment opportunities exist on every level from meat processing down to the farm produce storage and cooling level.

- **Food processing**

As with other industries, central planning led to the construction of large agricultural processing facilities at locations that often are far removed from sources of supply. Furthermore, while export-producing plants are reasonably efficient, plants serving the domestic market typically are obsolete and producing at levels considerably below design capacity. In addition to the constraints imposed by lack of capital for investment in modern equipment, the food processing industry is handicapped by the severe shortages of packaging materials.

There are two aspects of food processing, meat production and rendering, that deserve separate discussion:

- **slaughter and meat production**

Centralized planning, when applied to meat production, created large meat plants in politically important locations, but failed to provide animal supply and feed lots close to these facilities. As a result, it is usually necessary to transport animals over excessive distances and incur high rates of weight loss and mortality. Machinery at slaughter and meat processing plants is generally obsolete or outmoded due to insufficient investment in maintenance and replacement of old equipment. As with other segments

of the food processing industry, investment in smaller and more efficient plants located in rural areas closer to animal production will increase the quality and efficiency of production. As evidence of the opportunities presented in the meat processing industry, the appraisal team encountered at least two instances of local investment in construction and operation of small local slaughter and meat processing plants.

Investment in the large slaughter and meat processing plants geared to export markets will require investment in new equipment to meet FDA, Canadian and EEC sanitary requirements.

- Rendering plants and systems

The rendering situation in Western Poland (Pomorania, Great Poland and Silicia) differs from conditions encountered in the other areas of Poland. In the Western part of the country, collection of animal by-products from both slaughter and farm sources, as well as from restaurants is fairly well organized. While some plants remain in need of modernization, many operators have taken advantage of credit programs offered by Western European equipment manufacturers.

The rendering industry in Central, Eastern and Southern Poland is far less efficient. There is a lack of small rendering plants to serve the need of smaller towns in rural areas. Collection is inefficient or non-existent and, there is a lack of adequate collection storage. Most rendering plants in these areas are run by the feed industry. Investment is required not only to provide plants, equipment and, cooling and storage facilities, but also training will be required to educate Poles to the value of efficient by-products collection systems.

● Vegetable and fruit processing

There is a sizable export market for Polish vegetables and fruit because of their high quality. These are particularly important crops because many are or can be grown on small land holdings and could serve as a "cash crop" replacing previously state-mandated crops. The industry cannot meet demand, however, because of shortages of packaging materials suitable for shipping. Lack of adequate packaging also necessitates exporting produce in raw or semi-finished form. As an example, West German companies send tank trucks into Poland to pick up apple and cherry juice for processing and resale to Poland as concentrates and bottled juices, thus, depriving Polish producers of considerable added value. Emphasis on exports and the lack of adequate cooling and storage capacity greatly

Recommendation 1: Conduct a training needs assessment to identify constraints in agricultural development arising from shortages of managerial and technical skills.

The brief period available for the appraisal of agribusiness conditions in Poland did not permit an in-depth evaluation of worker and manager skills, other than noting the need for certain basic skills to encourage the development of rural services. A more extensive analysis will be required to determine the skills needed to support the agribusiness industry as a whole. The assessment should also attempt to measure worker motivation and productivity and suggest approaches to raising current levels. Managerial effectiveness and supervisory ability should also be covered in the assessment.

Recommendation 2: Provide training to agricultural extension service agents.

The condition of the extension service structure in Poland was described in support of a previous recommendation to provide assistance in restructuring the service. This recommendation re-iterates the need to develop the human resources of the service in order to re-establish the service as an effective agent of change. While technical training of agents will be useful, the agents will benefit more from training in group dynamics and in methods for effecting technology transfer to help them overcome the lack of trust that many farmers have in the service.

Recommendation 3: Provide training in agribusiness operations and management to entrepreneurs.

The current generation of prospective entrepreneurs and managers in Poland has no practical experience in running companies and organizations under conditions of a free market economy. For that reason, it is important to make training available in basic management and marketing skills, including bookkeeping, business planning and analysis, pricing, and income determination.

**OPPORTUNITIES AND
CONSTRAINTS FOR
AGRIBUSINESS IN POLAND:
A PRIVATE SECTOR PERSPECTIVE**

Annexes

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January 1990

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ANNEX A:
ANIMAL PRODUCTION

ANNEX A

ANIMAL PRODUCTION

I. GENERAL SITUATION

Animal production in all three sectors of Polish agriculture (state, co-operative and private) suffers from a number of problems. These problems are magnified due to differences in scale, availability of inputs, lack of feed quality and differences in rearing technology between these sectors.

There are 2.6 million private farms with a median size of 5.8 hectares. The major constraints to profitable animal production on these farms are the small acreage size, poor land utilization and low production efficiency due to lack of inputs, lack of feed and production technology, and lack of skilled labor. Small farmers (and some of the larger private farmers on 5-15 hectare farms) do not practice specialized production. Farms may have cows as well as pigs, poultry, ducks and geese, and may utilize the cow herd for the production of beef.

It is estimated that 65% of the small farmers with less than 5 hectares of land are dually employed as workers and farmers. Often the consequence of attempting to be efficient at one comes at the expense at the other. Those that focus on farming are often poor workers, and vice versa.

Rampant inflation has caused prices the farmer receives for his products to lag behind prices for all other goods and services. Therefore the farmer cannot afford to buy what he needs, and most of the time these goods and services are not even available. Rural communities lack basic services and have fewer goods available than in the cities. This situation is currently the biggest disincentive for the farmer to attempt more than subsistence farming and increase the quantity and quality of production. Other factors which have had a negative impact on animal production are lack of capital, the high average age of the farm population, and the flight of young people to the cities. The low social status of farmers, the result of years of the state's efforts to collectivize the land or to convert the farmer into a factory worker, have tended to destroy the farmer's incentive to produce food. Most small farmers aim to produce only enough food to satisfy the needs of their immediate families.

II. POULTRY PRODUCTION

The production of broilers, layers, geese, ducks, turkey and parent stock takes place both in state farms, co-operatives and on private farms. State farms produce ducks, geese and turkeys mainly for export. Goose livers and down exports are an important source of hard currency. Plus, almost all small farms keep poultry, ducks and geese for the farmer's own needs.

Private farm production accounts for nearly 30% of the broiler and 40% of the egg consumption in the country. However, when it is considered that 28% of the population is employed in agriculture, it becomes evident that much of the broiler and egg production from private farms is consumed on the farm itself rather than shipped to city markets. Egg consumption on farms, for instance, is much higher at 280-300 eggs per capita than by the city population with 150-180 eggs per capita. Most small farmers produce only enough meat and eggs to feed their families, or neighbors with whom they exchange meat and eggs in return for other products or services. Poultry is usually not penned and feed on the farmer's own grain and what they manage to pick in the open.

There are some small private farms that produce broilers commercially. These usually have one or two poultry houses and can produce between 15-25,000 birds per turn (60-100,000 annually). But they tend to produce less due to lack of feed, poor feed or grain quality, and lack of vaccines. Conversion rates often exceed 3.0 with a mortality rate of up to 5%. The centralized socialist system gave preferential feed and vaccine allocations to state farms. Although this system has been abolished, the small producer is still hobbled by these constraints, as well as by the lack of capital, inputs, and by the distances from farm to feed mills and markets. In addition, prices are dictated to the small producer by the former state monopolies which also take disproportionally high commissions. These former monopolies are "Poldrob" and "Drobiarz." As of yet no private distribution firms have sprung up to compete with these two ex-monopolies. Because of this residual system there are no slaughter facilities available in rural communities and no market outlets to take the farmer's output, even though farmers technically are now permitted to sell to anyone. Private poultry producers have not as yet formed their own professional or marketing associations. Private commercial producers, together with the traditional producer, account for 25% of total poultry production.

Commercial broiler and egg production is carried out on both state and co-operative farms. State farms dominate the market with 90% of production, while co-operatives have only 10%. The average state farm has 5-10 poultry houses and produces 200-400,000 birds per turn, while co-operatives have an average of 4-5 poultry houses.

Poultry production in Poland grew rapidly until 1981 due to substantial imports of corn and soybeans bought with commodity credits. When these credits were cut off when martial law was introduced that year, poultry production went into a period of decline. Further depressing demand is the comparative cost of poultry to other meats; currently poultry meat prices are 15-20% higher than prices for pork. Broiler production is estimate to have fallen from 491,000 metric tons in 1988 to 480,000 metric tons in 1989. The bulk of poultry meat ex-

ports go to soft currency countries, and are estimated to be approximately 10,000 metric tons. In 1989 layer numbers were estimated to be around 48,000 with egg production at approximately 8 million or roughly 150 eggs/hen. Poultry meat consumption per capita in 1989 is estimated at 7.8 kg and egg consumption at 195 eggs per capita.

Production efficiency on state farms is higher due to the preferential allocation system for feed, protein ingredients, vitamin/mineral premixes, and vaccines which was in force until recently. Feed conversion ratios are close to Western standards, while meat and egg quality are also high. Management and sanitary control is good on the average. Nevertheless, the lack of protein and poor grain quality used in feed result in slower finishing time (9 weeks on the average) and fewer turns per year. On state farms, approximately 40% of the poultry capacity stands idle. Thus, with an assured supply of protein ingredients and higher quality grains, poultry production could be brought back to capacity in a relatively short time. But sources of protein suitable for poultry production are scarce in Poland. Until protein imports increase and grain and domestic protein production is improved, current poultry production levels can not be raised.

Agriculture ministry officials are fully aware of the need to privatize state poultry farms, as well as to create alternatives to the two monopoly organizations. There is also a need to build poultry slaughter facilities and distribution systems in small towns and rural areas to stimulate poultry, duck and geese production on private farms. Although most small farms are non-intensive producers, the availability of grain and the low cost of labor should make production economical, again, providing that high protein concentrates and premixes are made available. Smaller farmers will also need grinding equipment to grind their own grain and mixing equipment to make complete feed using concentrates and premixes supplied by the feed industry.

The Government is aware that for dietary reasons Polish consumers should be encouraged to eat more poultry meat. But the traditional preference of Poles for pork will be difficult to change even in the long run, unless the price relationship of poultry meat versus pork is normalized. Increasing consumption of poultry meat would also free larger amounts of pork and beef for export.

III. SWINE PRODUCTION

Pig production in Poland is concentrated on small farms; as a result, official statistics tend to be unreliable. The hog inventory in Poland in 1988 was approximately 18.8 million head, of which 1.8 million were sows. Of this population, approximately 70% was produced on private farms and 30% on state and state farms.

These figures show that the annual production of pigs/sows per farm is low, averaging 12 per year. The figure is lower on small farms, but reaches between 10-18 pigs/yr on state farms. The total number of farms raising pigs is 1.6 million, but only 125,000 of these farms keep more than 21 pigs, and only 18,700 keep more than 50 pigs.

Due to poor feed quality, pigs are slaughtered at higher average weights than necessary. Weights reach 110 kg (carcass weight) and back fat thickness often exceeds 1.5 cm. The resulting higher fat yields constitute a quality problem as well as a waste of feed energy and labor. But since lard is used extensively in cooking and baking, it presents little hardship for the consumer. On the other hand, it limits the quantity of pork available for export. Also, because of the excess energy in feed rations, piglets are weaned at 6-10 weeks of age instead of at 4-5 weeks, resulting in fewer pigs/sow per year and higher corresponding costs for feed, labor and inputs. Despite the high reproductive capacity of Polish breeds, only 9.7 pigs/sow/year are produced compared with 14-18 pigs in the West. Due to the lack of energy and protein in the feed, sow cycling is slower than desired, producing lower annual pig/sow numbers.

Nevertheless, although inefficient, the pig industry managed to bring output back up to 1980 levels. Production in 1989 is estimated to have reached 220 million metric tons. The most serious constraint to efficient pig production is the lack of balanced feed. Pig production has traditionally relied on energy feed with low levels of protein, but the grain quality also varies and lacks constant high energy levels. Small farmers feed pigs on grain, milling by-products, milk, whey, potatoes and slops. Polish produced grain (wheat, triticale, barley and rye) is used extensively on state farms. State farms also buy feed or feed concentrates from feed plants (mainly belonging to the Bacutil organization), but in many instances these feeds are of poor quality. Most state farms have no laboratory equipment to check the validity of label claims. This situation has given some U.S. and West European feed companies (Central Soya, Clubkraft, Raif-feisen, etc.) the opportunity to start quality feed production in Poland. Two private Polish firms have also entered the market. For the most part, concentrates (or premixes) are being supplied, allowing the pig (and poultry) producer to add his own grains. These private firms also extend feed formulation and technical help.

Protein from Polish sources consists of rapeseed meal, legumes (horse beans, lupines and peas), triticale and meat/bone meal. Production of legumes for feed use could be greatly increased. Climatic conditions in Poland favor legume production and there are a number of suitable cultivators available. But feeding this type of protein has not caught on in Poland yet due to lack of technical support and toasting capacity. Research on the use of legumes for feed has been carried out by Polish institutes, but in the past there has been little or no application of research.

The deficiency of protein is made up by importing soybean meal. Protein deficiency for swine production is estimated to amount to 50-60% of total need, which is estimated to be between 1.7-2.0 million tons. Pig pre-starters are in very short supply. Milk-replacers are non-existent, and as a result pigs are generally weaned at 6 to 8, or even 9 weeks of age, putting a heavy strain on the sow and slowing the reproduction cycle.

The corn-cob meal silage-making system (CCM) has been introduced in Poland, since the Polish climate does not permit the corn to mature sufficiently for normal harvesting. The system has been successfully adopted, especially in the more advanced western part of Poland. However, farms lack harvesting, grinding and packing equipment, as well as silage cutting saws. They also lack concrete ground silos. Silage is often stored on the ground, caus-

ing protein and energy losses due to molding. Silage additives are virtually unknown and unavailable in Poland. Farmers need better training in silage-making and conservation methods (also for grain). As in other areas of agricultural production, considerable silage research has been carried out by the universities in the past, but little application of the research has been introduced in the field.

As in the poultry sector, private pig farmers have been discriminated against by the state in the past in the allocation of feed or concentrates, as well as veterinary products and inputs in general.

Although the monopoly position of the state farms has been eliminated and a market economy has been introduced, private farmers are still at a significant disadvantage because they have less capital to compete for concentrates and inputs with the state farms. Also, donated feed grains from the West seldom reach the private farmer since he cannot afford to pay the rail transportation charges from the port of entry to his farm destination. This situation has been exacerbated by the present Government's 150-200% increase in rail transport costs, effective as of Jan. 1, 1990. It is predicted that these costs may continue to rise.

Small farms of less than 5 hectares could however become active in pig production. Currently farms of 5 hectares or less in size produce approximately 17% of all pigs in Poland, but these farms are very inefficient producers. Instead of attempting to play the same role as larger farms, they could function instead as contract feeders, producing piglets of up to 30 kg live weight for finishing on larger farms. Small farms have many small buildings which could be adapted to this type of production. But this would require a considerable amount of training, technology and input capital for these farmers to help them become contract producers.

The genetic make-up of the Polish swine herd is good and approaches European standards. The national herd has a good reproductive capacity with 9-10 pigs per litter on the average. The predominant breeds are Polish white and Landrace. Duroc and Hampshire breeds have been introduced to produce terminal crosses. Some imports of genetic material will continue to be needed. Poland is relatively free of major hog disease (e.g., Aujeszky's disease), and because of low pig densities in the housing units there is also a low incidence of Rhinitis.

Management and technology vary widely; they are best on large state farms, less on medium size farms, and very poor on small farms. About 55 % of all hogs are produced on farms of 10 hectares or larger. FOLSUS, the Polish Union of Swine producers, has 100,000 members with an average of 20-50 sows per member farm, but the technical help extended to members is negligible due to lack of organization funds. The extension service provided by the Voivodships is also strapped for funds, tending to concentrate on grain production advice rather than help with animal production. Large state farms producing pigs for the meat export industry tend to have better management and technology. Sow numbers on some of these farms reach 100-200 sows. But here too, equipment and pig housing are in many cases old and in need of replacement.

Pig meat and processed pig products will continue to have an eminent position in the Polish diet for the foreseeable future. In the short term, however, traditional production on small farms will have to continue unless these less efficient farms are eliminated. Changes are occurring, however. For example, while there is a lack of small slaughter and processing plants in rural and small town areas, private slaughter and meat plants are springing up, often financed by the farmers themselves. The equipment used by the farmers is often produced in Poland, although due to the general lack of stainless steel, most equipment is made from low grade steel. With the advent of the private economy, farmers who were weary of transporting pigs long distances have quickly seen the advantages of local slaughter and meat production. Since many services are lacking in small communities, butcher shops and restaurants are also planned by these investors. This type of rural enterprise could become a positive factor for pig (and beef) production if more investment capital becomes available.

Large state units will continue to concentrate on supplying the cities and the export market. But many slaughter and meat plants built in the 1960's and 1970's no longer conform to sanitary standards. Not being able to meet FDA or EC sanitary standards is a major constraint to maintaining the level of meat exports. Machinery in many plants is also worn out and the technology antiquated.

Pig producers are represented by the Polish Pig Producers Union. This organization was set up in 1958 and, as with other breeders organizations we investigated, is not yet functioning as a Western-styled producers association. Although it claims to represent 85,000 members, it retains the old government policies of focusing its assistance toward the state farms which cover 30% of production, but constitute only 5% of the Union membership. However, according to Z. Odolinski, the Union's President, member farms produce 60% of the boars and gilts for reproduction and 55% of the feeder piglets contracted to private farmers. With the rapid introduction of a market economy, the Union is now going to have to find operating funds. Current check-offs from producers are not sufficient. Moreover, many of the state farms, especially those which are not involved in rearing pigs for export, will go bankrupt. Because the privatization of state farms is a such a slow process, the industry faces a precarious future in the short term.

Producers are not accustomed to participating actively in their organizations. These organizations have continued to be run exclusively by former managers who were not elected democratically. In the meantime, Green Solidarity is making plans to help form professional producers associations which will undoubtedly have the cooperation of the independent and smaller producers.

The Union has been active on the technical side in trying to introduce modernization programs and give technical advice, but this has always been difficult in Poland, where farmers do not trust anyone who was connected with the former system and where research carried out by the universities and institutes does not percolate into field practice.

IV. DAIRY CATTLE

In Poland, there is a need to relate farm size to milk production efficiency. Farms need to produce a minimum of 50-60,000 liters (l) of milk per year. Due to the average small farm size, milk production on these farms averages only 3,000 l/cow per year. 1.2 million farms have only 1-2 head and their annual milk production seldom exceeds 7,000 l. Milk is produced on 1.8 million or 66% of all farms, but only 500,000 farmers have 3-5 head, 100,000 have between 6-10 and only 7,500 have more than 10 head. 15% of the milk comes from state farms and only 1% from co-operative farms. The rest is produced by small farms. It is estimated, however, that up to 25% of the milk from small farms is wasted because of the lack of cooling capacity, and because of transportation deficiencies. Due to the lack of milk processing capacity in rural areas the dairies often return whey or buttermilk to the farmer for pig feeding. The farmer is also given butter in payment for milk. These inefficiencies have resulted in lack of hard cheese, yoghurt and cream on the Polish market.

Total annual milk production is about 15 billion liters, or an average of 3,120 kg of milk per cow, but milk production is less than that on small farms. Per capita milk consumption has increased, however, and stood at 84.0 kg/year in 1988.

Current milk prices are too low, but there is hope that the Government will index minimum milk prices in order to keep pace with inflation. Milk prices also vary considerably in various parts of Poland due to inefficient milk collection practices (i.e., too many production points, lack of cooling capacity, tank trucks, and rural milk processing capacity).

The main constraints to efficient milk production are:

- **Insufficient acreage. Milk farms should be at least 15 hectares, but preferably 20-30 hectares in size.**
- **Lack of adequate forage, concentrates, and premixes to feed the lactating cow; lack of machinery to harvest and pack forage for silage production, silage pits and silage making techniques, as already mentioned.**
- **The prevalence of dual milk/meat breeds and the lack of specialization (i.e. on either milk or meat production), where impede the improvement of the milk herd. The recent tendency to seek carcass improvements by importing genetic Charolais or Limousin material has led to further deterioration of average milk yields. Only 50% of the cow herd is suitable for mechanical milking. But there is sufficient pure Holstein-Friesian bull and semen material available in Poland to raise milk production to at least 4-4,500 l/year in the short term.**
- **Capital for the construction of adequate barns on private farms and for the acquisition of milking machinery and implements is lacking.**

As in other countries, Poland will have to reduce the number of cows, while at the same time raising genetic and nutritional productivity per cow. Currently 56% of the milk is converted to butter. But since butter supports have been abolished, butter consumption will

decline, perhaps to 5 kg/head. At this writing butter consumption has declined 30% in the last 3 months. In the medium and long term it is apparent that Poland will follow the dietary and economic patterns of Western countries, requiring replacement of declining butter consumption through margarine production.

V. BEEF CATTLE

Beef cattle production has not been profitable and cattle numbers have been declining. Total beef cattle inventory stands at 4.0 million head. Beef and veal production for 1989 is estimated to decline to approximately 1.39 million metric tons. Beef cattle production suffers from the same constraints as dairy cattle production.

The first major constraint to beef cattle production is the lack of acreage. Beef production requires large scale methods and therefore will have to be concentrated on larger farms. There is a place for beef production, however, on smaller private farms of 15-30 hectares in size, providing that pasture improvements are made and feed concentrates are made available. Farms of that size, when switching from milk to beef production, would need less labor and inputs and would benefit from higher manure production for their own field use or for sale.

The other major constraint is the lack of specialization in cattle production. To produce beef cattle with adequate meat quality will require a changeover of part of the dual cow herd to beef production. This can be done in a relatively short time of 3-4 years if a good crossbreeding program is put in place. Slightly less than 20% of the dual purpose cow herd is now being inseminated with Limousin, Charolais and other breed semen. Inseminating another 20% of the cow herd would produce nearly 2 million calves. This would satisfy the present domestic demand for beef and provide some quantities for export.

Although Poland is now exporting live feeder calves, primarily to Italy, frozen carcasses and boxed veal instead should be exported to take advantage of the added value and to avoid losses from mortality and live weight shrinkage. It would also provide added employment in the slaughter industry. The problem here is that Poland has insufficient cooling capacity to export frozen meat. Much would also depend on future EC policy in allowing higher quotas for meat imports from Poland. The Soviet Union could become a substantial market for Polish beef once current Soviet economic difficulties are overcome and hard currency is more available.

Other constraints for beef and veal production are the same as for milk production: lack of inputs and capital, equipment to harvest grain and forage, silage pits and silage-making technology, as well as a lack on-farm feed mixing equipment. Capital will be needed to build barns and sheds, because due to the severe Polish winter climate, cattle need to be housed or sheltered.

Forage and feed concentrate quality is generally low and will need improvement. Pastures are neglected and without proper drainage. They are also in need of fertilizer. Haylage and silage making has to be improved. Up to 25% of the energy and protein value is lost be-

cause of poor preparation and lack of adequate storage, as well as lack of conservation know-how.

In feeding, much of the (dual cow/beef) herd is kept at maintenance rather than at production levels, requiring more time and labor to finish the animal. There is also an imbalance of feed inputs, too much reliance on pasture and hay feeds (approximately 60% of total), and not enough reliance on grains, silage, root crops and by-products. There is very little concentrate feeding. As far as could be ascertained, concentrates are used by only about 5% of producers for the combined cow/beef herd.

Beef and veal do not figure prominently in the Polish diet, which relies heavily on pork and to a lesser degree on chicken meat. Beef quality is also low in comparison to customary Western quality. Increasing beef production, as well as quality, would stimulate domestic demand and eventually would bring beef prices into proper relationship to pork prices. This would also result in better land and feed utilization.

Gradually, as a market economy develops in Poland and the population becomes more conscious of the need for a balanced diet, beef consumption will tend to increase at the expense of pork consumption.

The dairy and beef cattle producing industry is represented by the Cattle Producers Association. However, like other professional groups in the agricultural sector, this organization is not as yet functioning as a Western-style producer association.

Association officers whom we talked with insisted that the association provides a wide range of services, from export facilitation, marketing and promotion activities to technical support; after talking to producers, however, it became evident that such help was minimal. The help consisted mainly of maintaining the herd book, advising on breeding and insemination, and other technical matters. Membership dues and sales check-offs do not generate sufficient revenue to pay for more extensive member services. Neither does the association include all producers. Furthermore, even though the centralized planning system has been abolished, members are not accustomed to voicing their demands or taking an active role in the association. This holds true for all (9) producers associations in the agricultural sector, except perhaps for the Sheep Producers Federation.

VI. SHEEP PRODUCTION

Under the centralized system of previous governments sheep raising was not recognized as a legitimate activity subject to planning, but rather as a cottage industry. The semi-extensive nature of sheep production was not suitable for centralized state control, therefore producers did not have the advantage of subsidies or input allocations.

There are approximately 4.0 million sheep in Poland. 88,000 metric tons of lamb and mutton were produced for slaughter in 1988, equal to 2.3 kg per capita consumption. The Polish consumer does not eat much lamb. Traditionally only older animals are slaughtered, and mutton, instead of lamb, is shipped to market.

Producers raise sheep mainly for wool and skins, rather than for meat. In the first two decades after WW II, the great demand for wool by the Polish textile industry favored wool sheep production.

At that time domestic herds, comprised mainly of Merino, Polish Mountain and Blackhead breeds, grew rapidly. A number of other wool breeds were also imported. But in the last decade, decreasing demand for wool and climatic conditions reduced the domestic flock and also diluted the imported stock. Currently the herd consists of 41% Polish Merino, 38% Polish Lowland, 15% Polish Longhair, 4% Polish Mountain, and 2% imported breeds such as Berrichon, Texel, Leine, Ile de France and other breeds. But there are Suffolk and Polish synthetic Whitehead meat type sheep available for cross-breeding.

In the early 1980's sheep numbers grew again due to meat shortages. The Sheep Breeders Federation also began an export promotion program. However, similar to the calf export program, the lack of cooling capacity in the slaughter sector forced producers to ship live animals instead of frozen carcasses, with the significant disadvantage of resulting mortality, shrinkage and loss of added value. In 1987 approximately 10,000 metric tons of lamb and mutton, and 500,000 live animals, were exported, mainly to the Middle East and the EC. As with beef, the EC restricts lamb imports from Poland to 6,000 metric tons (meat equivalent). Exports to the Middle East were 6,000 metric tons that year.

Until now, sheep producers had to rely on the Animex state monopoly agency for its export sales and for most of the domestic distribution. Animex typically put more effort into helping export pork products at the expense of other meats.

It is interesting to note that despite the negative attitude of the former centralized bureaucracy, approximately 30% of sheep production takes place on state farms, while the balance is raised on private farms, mainly in the mountain regions. Sheep numbers are again on the decline (approximately 2% per year) since 1986 due to lagging demand.

Currently there is a stronger demand for wool, but as with other agricultural products, wool prices lag substantially behind prices for other goods due to the rapid inflationary pressure. The Sheep Producers Federation has recently created a wool auction market in the textile city of Lodz, hoping that it will serve the producer better than the previous centralized state agency distributing system.

Since the Federation was left to its own devices under the former government, the organization is more responsive to its members and is more marketing and promotion oriented. However, it also suffers from lack of check-off and other funds. What the sheep industry needs is to:

- **Develop an accelerated program of crossbreeding to create meat type breeds.**
- **Interest breeders in specializing in meat instead of wool sheep production.**
- **Create a promotion program for consumers to appreciate lamb and induce restaurants to serve lamb dishes.**
- **Work with the slaughter sector in finding capital to expand freezing capacity.**
- **Induce the EC to raise its quotas for lamb imports from Poland.**

VII. FEED PRODUCTION

A. Introduction

The Polish feed industry basically serves three animal production sectors: 1) the state farms and co-operatives; 2) medium size farmers with an acreage of five to thirty hectares, and 3) the very small farmer with an acreage of less than five acres. However, in accordance with the former centralized planning system policies, feed plants were built to serve state farms almost exclusively. Even today much of the feed production goes to the state farms. State farms can afford to buy feed, especially those farms which produce animals for export. Most state farms also have their own grain production, and can therefore add their grain to purchased concentrates or premixes, or else can trade grain to the feed mills in return for feed. Some state farms even have their own feed mills.

The feed industry produces a total of 5.5 million metric tons of complete feeds, concentrates and premixes. In addition farmers produce 3.0 million tons; this figure, however, may not represent complete feeds. The feed industry also supplies private farmers, but only when there is a surplus and after the needs of the state farms have been satisfied. So far, under the new democratic government and with the introduction of a free market economy this situation has not changed. The primary reason is the shortage of protein feed ingredients and additives, but another is the continuing lack of funds available to the medium and small private farmer to buy feeds.

Major constraints for efficient feed production in Poland are as follows:

- **Lack of protein ingredients, i.e., soybean meal, rapeseed meal, triticale, meat and fish meal, etc. As for amino-acids, about 5,000 metric tons each of lysine and methionine are needed, and, if produced in Poland, would result in hard currency savings of approximately \$5.0 million annually. The same goes for vitamins. Nevertheless, setting up amino-acid or vitamin production would require major capital investment in plants and acquisition of production technology. The supply of minerals is less critical, but some types of minerals are in short supply. The supply of feed additives such as drugs, anthelmintics, growth promoters, probiotics, etc., is either very limited or non-existent. The industry also lacks ingredients to produce milk replacers and specialty feeds, such as for**

fish feed and pet-food, conservation products, feed flavors, and feed processing aids.

- **Concentration of feed production in large plants. These plants were not planned for efficient feed distribution. As older plants become obsolete, new plants must be built with due attention to the parameters of production economics, grain supply and distance to animal production and slaughter. Social (rural employment) and ecological factors must also be considered.**
- **Domination of the industry by the Bacutil organization and other (former state) feed mills which held a monopoly of feed production. There still are not enough private feed manufacturing companies to compete effectively with Bacutil and the other former state mills.**
- **Lack of smaller feed plants in rural areas to serve medium-sized and small farmers.**
- **Plant obsolescence of many of the larger plants, and lack of maintenance and spare parts.**
- **Since the dismantling of the grain allocation system grain supplies are not always available to the mills. Small farmers tend to retain grain for their own usage or for sale into the food chain.**
- **Crop yields are low, and grain quality is often inadequate for the nutritional needs of animals, due to poor soil conditions, lack of irrigation, lack of fertilizer input, and the seed quality of some grains.**
- **Inadequate technical backup of the animal producer by the mills. However, the newly established Western and domestic private feed companies have begun to provide adequate technical service to feed users. There is also insufficient application of scientific research from institutes and universities to feed practice. Lack of extension services, or else lack of coordination between institutes, extension service and the feed industry, compounds the problem.**

B. Bacutil and Other State Feed Mills

The Bacutil organization is comprised of 15 regional units with 46 plants plus 5 associated manufacturing plants. Bacutil produces approximately 2.3 million metric tons of feed (26% of the national output). This constitutes only 50% of its former capacity, since they have divested some plants, and discontinued production in others. Under the former centralized system, Bacutil and the other state mills primarily served the large state farms, but now attempts are made to serve all end users. Bacutil has plans for 3 new plants, but one of them in Kochanowice near Czestochowa stands unfinished because of lack of funds to buy machinery. With the new plants Bacutil hopes to bring the ton/unit costs down. Currently they produce 250,000 metric tons annually of custom feeds.

Bacutil supplies complete feeds as well as concentrates and premixes. The management told us that their feed quality is excellent and that they also go to great lengths to provide a

very complete technical and educational service. Shortcomings in feed quality were blamed on farmers which "thin out the feed or concentrates" to make them go further. Bacutil undoubtedly has pioneered Polish feed manufacturing in the 1950's and 1960's, especially premix and concentrate production. But continued demands of the centralized economy planners for quantity, have proved detrimental to making quality feeds. Management skills have also deteriorated over time. State and co-operative farm managers in the field told us that feed quality from the (former) state mills was not only poor, but delivery guarantees are not being kept and that technical service was non-existent or minimal.

Bacutil and the former state mills list feed ingredients on the label but do not guarantee them. Very few state farms have laboratory facilities to test incoming feed and must take the feed manufacturer's word as to the quality and level of ingredients and additives. Smaller private farmers completely mistrust the former state mills, because in the past they usually received inferior feed, while better quality feed went to the state farms.

Bacutil has 70 rendering plants for meat and meat/bone meal production, and it claims that a 55% protein standard is being maintained. These plants are usually located near the feed plants. This means that meat/bone meal is not always available to other feed mills except those in Western Poland, where there are independent rendering firms and where collection of raw offal is more efficiently organized. Bacutil also has three blood meal plants.

Now that Bacutil and the other state mills have been de-monopolized and are attempting to streamline production and build new plants, it remains to be seen whether they can survive and compete with private plants in the new market economy.

C. Private Feed Manufacturers

Three Western feed manufacturers have established production facilities in Poland recently: Provimi (a Central Soya subsidiary), Raiffeisen and Club Kraftfutter. Raiffeisen is building another plant in Slupsk, while Provimi is also looking to expand. There are also two private Polish feed manufacturers and a third feed manufacturing facility built by a private rendering firm. Two other Western feed firms, one German and one French, are planning to enter the market. However, the principal need is for small plants to be built in rural areas, close to grain sources and animal production, and in accordance with efforts by the Polish Government to provide rural employment. These plants could be dual purpose feed/flour mills, as there is also a shortage of flour milling capacity in the countryside. It has been estimated that Poland would need about 100 flour mills of 15 metric tons/day capacity. About 50 of them could also be constructed with added feed capacity of 10-20 metric tons/day.

The foreign private feed manufacturing firms mentioned above have taken advantage of the state mill inertia by making better quality concentrates, providing ingredient guarantees, and also offering nutritional and technical advice. Some feeds are manufactured in their own plants and some are subcontracted to existing Polish plants. Tonnage figures for total private feed manufacturing capacity could not be established.

Private millers are producing mainly concentrates and base mixes. This means that the medium-sized and small farmer can buy them readily and make a complete feed by adding his own grain. Unfortunately many private farmers lack grinding and mixing equipment. Furthermore, they often lack funds to buy concentrates, because the price has gone up beyond the small farmer's reach. Cost of feed combined with the lack of feed quality have lowered feed conversion ratios in 1989 in comparison to 1988 levels in the swine and poultry sector, both in state and private farms.

Private farmers continue to produce and utilize feed cereals, principally rye, barley, oats, by-products and potatoes, as well as haylage, silage, and root crops. But the changeover to feeding complete rations, or else feeding concentrates plus farm produced protein and energy, will take some time before the private farmer can become a more efficient animal producer.

As mentioned earlier in the pig producing segment, protein from Polish sources besides meat/bone meal consists of rapeseed meal and legumes. Very little Polish produced fish meal is available because of lack of fish meal processing capacity. Importation of protein meals from abroad is restricted by lack of hard currency. In 1988/89 soybean meal imports amounted to 1.3 million metric tons, but another 600 - 800,000 metric tons would be needed to satisfy basic protein needs. Alternately, if more meat and fish meal was available, soybean imports could be reduced. The meat meal shortfall is approximately 180,000 metric tons (45-50% protein basis). There is a fish meal shortfall of 100-120,000 metric tons (75-80% protein basis). These figures are relative, however, depending on the exchangeability from animal protein to supplement plant protein in the feed formula. Meat meal production cannot be boosted in Poland until more modern rendering capacity is added and steps are taken to improve raw material collection.

Production of legumes, such as horse beans (*Vicia faba*), lupines, (sweet variety) and peas, all which grow well in Polish climatic conditions, could be greatly increased. But feeding these protein crops to animals has not yet caught on in Poland. This is due partly to the lack of toasting capacity to remove alkaloids, but also due to lack of research and technical capability. Although some research has been carried out on the suitability of legumes, more is needed. Again, as mentioned previously, there is a lack of transfer of research results from universities and institutes into practice and a lack of coordination between institutes, extension services and the feed industry. This is particularly true for the legume sector, with the exception of peas, which are now in use for feeding. Transmitting legume research results from other countries which are more advanced in this area (e.g., Austria) would be useful. Legumes have so far been found suitable for feeding Polish ducks, an important export source of hard currency.

Use of sunflowerseeds could also become practical, but so far there has been little success in growing suitable varieties in Poland. Experiments have been carried out with extracting protein from green leaf plants, but this type of protein recovery requires considerable investment in technology and extraction facilities. Attempts at growing soybeans have not been successful in Poland due to poor soil conditions and lack of varieties adapted to local conditions.

Another constraint to increasing protein availability for feeds is the lack of crushing capacity for rapeseed. This is discussed in more detail in Annex C: The Oilseed Sector. Only 450,000 metric tons of rapeseed meal is made available for animal feed, whereas some 750,000-800,000 metric tons should be available from current domestic crushing production. The planned increase in crushing capacity to 1.3-1.4 million tons by 1995 should go a long way toward satisfying the protein needs of the feed sector except for young pigs, since rapeseed meal is unsuitable for inclusion in pig starter feeds. Protein deficiency in swine feeds is estimated at 40-60% of total needs.

Poland is planning to build a Lysine plant, but does not have the capital to build it and has asked the EC for help. Plans are to build a 5,000 metric tons/year plant which would cost approximately \$13 million. Using lysine would save feed as well as provide amino-acids in feed rations. As a rule 1 kg of lysine results in a gain of 16 kg of pork or 25 kg of broiler meat. Whether a lysine plant would indeed help over the protein shortage in lieu of increasing sources of plant protein is a question that would have to be studied more thoroughly. Nevertheless, some lysine supplementation would always be needed.

ANNEX B:
**AGRICULTURAL SEED PRODUCTION AND
SUPPLY**

ANNEX B

AGRICULTURAL SEED PRODUCTION AND SUPPLY

I. ORGANIZATIONAL STATUS

Seed production and planting technology is supported by 74 state seed plant stations, of which 48 work on the development of new varieties. In addition, there are several research institutes for seed development and acclimatization of agricultural plants and potatoes. Approximately 30% of the registered varieties of seeds used originate with the institutes, the rest with the plant stations. As of 1988 Polish seed standards have been harmonized with those of the EC and with worldwide usage. This has made Poland eligible for membership in the UPOV.

Until recently allocation of funds has been made as follows:

- Seed plant stations received funds from the budget of the Ministry of Agriculture (as part of a seed fund) and from seed production fees (license fees based on turnover). The share for each fund source is approximately 50%.
- Institutes received funds from the science and research budget, plus some funds from fees.

Funds were often allocated late and in insufficient amounts causing program bottlenecks and frequently incomplete. How funds will be allocated under the new Government program is unclear, but the system will perhaps continue as before. On the other hand, reduction or elimination of subsidies may reduce the number of stations and institutes.

II. INDUSTRY STRUCTURE

Seed production is structured as follows:

- Institutes, stations and plants produce the original inbred lines.
- These seed lines are in turn sold to 150 seed conditionin plants belonging to the so-called "Seed Central" which reproduce seeds, even the commercial seed varieties.
- The production of grain seeds is carried out mostly by state farms, 50% of which produce legume seeds. The rest of grain seed production, approximately 50% of total, is produced by private farms.

Currently seed production facilities located in state plants, including large ones, have an indeterminate legal status. As part of the state plant setup, they are subject to being divided up or divested, and their future is uncertain.

III. SEED PRODUCTION

The quantities of seed produced cover the needs of Polish agriculture. Seed is also a traditional export item, particularly

the choice grain varieties triticale and rye, as well as potato seedlings and grass seed. The quantity of seed production for commercial use cover the following areas:

- **Grains 30%**
- **Potatoes 15%**
- **Legumes 55%.**

The remaining seed types, i.e., corn, sugar beets, industrial rapeseed and grass, are prepared exclusively by the seed stations.

Lack of basic seed varieties is often the result of financial constraints. State farms, for instance, can afford to buy large amounts of seed for their own use and carry out their own reproduction. The current economic situation in agriculture, with the ease in which inventories of any agricultural product can be reduced and the lack of any incentive towards production efficiency, have substantially reduced the need for good seed material. Furthermore, the obligatory mechanisms for seed exchanges have ceased to function.

Unfavorable price relationships which have been in place until now have caused a reduction of exports to the West, particularly grass seed production. Because of intense competition from other countries, this situation may be difficult to reverse. On the other hand, the weakness of the zloty may help the export effort.

For climatic reasons Poland imports 100% of its alfa-alfa seed needs (approximately 1,000 metric tons from France and Canada). Poland also imports approximately 60% of cornseed, approximately 10-12,000 metric tons, mainly from the United States, as well as W. European hybrids produced in Hungary.

IV. EFFICIENCY OF PRODUCTION

The production value of Polish seed varieties on the whole corresponds to world standards. Grain seed varieties which are adapted to Polish climatic conditions exhibit high germination qualities. These varieties are exported. The same goes for legume, grass and potato seeds. Sugar beet seed of medium quality (single cross varieties), rapeseed (French or West German) are imported as base seed material. There is considerable co-operation in seed technology with both Western and East bloc countries.

V. SEED QUALITY

Currently there still is only one seed supplier/distributor, the Centrala Nasienna (Seed Central). This lack of competition results in low quality production. Although this standard

corresponds to the open varieties world standard, in Western countries this standard is usually exceeded. For the same reason seed plants are unwilling to sufficiently protect the seeds chemically, apply protective coatings and carry out other seed improvements. The tendency to sell as much seed and as cheaply as possible has undermined the trust the farmer had in the seed quality. Unfortunately, this situation is typical of the entire agricultural supply sector. Another obstacle to achieving high quality seed is the lack of the modern selecting, sizing and seed cleaning machinery in common use in the West, especially machinery for sizing by infrared or air means, gravity tables, etc.

Seed plants produce a wide selection of seed varieties, in accordance with former government directives, which required that plants supply all types of seeds in the areas assigned to them. But this production has not been conducive to specialization in seed type, personnel and equipment, and undoubtedly has negatively influenced seed quality.

The quality and germinating ability of sugar beet seed depends largely on climatic and soil conditions. For instance, the majority of the world's supply of sugar beet seed is located in southern Europe and in the state of Oregon. Efforts to produce sugar beet seed in Poland have not been successful.

VI. PLANTS AND EQUIPMENT

Seed plants are equipped with basic seed cleaning machinery and have sufficient storage capacity. But the plants lack new generation seed processing and coating machinery and lack specialized systems for applying protective chemicals. There is also a shortage of field machinery (combines, seed collectors and potato diggers) which in the past had to be imported from abroad. Inflation and lack of hard currency has worsened the situation. Modern laboratory equipment, i.e., electrophoresis instruments, Elisa kits, etc. is also scarce.

VII. HORTICULTURAL SEED PRODUCTION

In the fruit and vegetable sector there are 20 seed production institutes and stations. Professional horticultural farmers prefer imported W. European seed varieties, while the non-professional segment relies on the domestic seed supply. As with the agricultural sector, participation in the industry by producers, especially the smaller ones, is needed. A professional producers association must guide the concerns of the fruit and vegetable seed producing industry.

VIII. SUMMARY

Poland has a sufficient base to supply seeds needed for its own agricultural production and to satisfy export demands for quality seeds. The realization of this potential will depend on general overall improvements in the agricultural sector, but also on improvements which are needed in the seed industry itself. It is assumed that the market economy now being created will eventually create price structures which will assure orderly seed production. At

the same time the seed industry will have to restructure itself to allow for specialization of production.

The revitalization of seed production and the seed trade, if carried out efficiently and quickly, would have the following benefits:

- **It will result in the equalization of seed production with the actual needs of agriculture. This means rapid elimination of low yield seed varieties and a corresponding increase in profits of properly operated seed farms.**
- **Enhancing a stable and defined system of seed production through a policy of credit and tax easements for the seed industry and on license fees with the clear intention of stimulating modern seed production.**
- **Seed producers who begin to specialize and install specialized equipment will have an assured market and should become profitable.**

Currently there is no professional association of seed producers. Modern seed production requires constant cooperation and interest of producers, institutes, the Government, end-users and the export trade. Seed producers must assume a leading role in all matters affecting the seed industry. In our discussions with producers it became evident that they would welcome advice how to set up such an association.

ANNEX C:
THE OILSEED SECTOR

ANNEX C

THE OILSEED SECTOR

Rapeseed production in Poland has been one of the rare success stories. It has become a viable crop for both edible oil production and for feed. Poland has been able to grow winter resistant low erucic acid (LE) and low glucosinolate (LG) "00" varieties. In 1989, acreage exceeded 600,000 acres with a production of 1.4 million metric tons. About 80% of the acreage is in "00" varieties and government plans call for 100% acreage by 1991.

But crushing capacity is limited to 50% of available rapeseed, and has been quoted as being between 700-750,000 metric tons while official statistics speak of 820,000 metric tons annually. The vegetable oil industry is comprised of 6 crushing plants and two refining and margarine plants. Due to the lack of capacity, because there is a high demand for cooking oil these plants often work sporadically in 2 and 3 shifts, or are idle because of lack of qualified personnel, machinery breakdowns and lack of spare parts. The crushing plants work at 70% capacity.

A new crushing plant at Brzeg was to be on stream in 1989 but is 2 years behind schedule. An oil refining plant in lower Silesia is to be ready in 1990 and another one of 150,000 metric tons capacity in Kiszka by 1993. Two additional crushing plants are to be built, one in Katowice in Upper Silesia and another one in Grajewo in the Lomza Voivodship. Another plant is planned for the port city of Szczecin which would crush imported soybeans as well as domestic rapeseed. This would bring the total crushing capacity to nearly 1.4 million tons and could take care of the existing rapeseed production, but not the production of 1.8 million metric tons expected by 1995. However, in the meantime some of the older crushing plants have suffered because of lack of recapitalization, are worn out and are in need of modernization. A plant in Szamotuly near Poznan was the first one to be modernized in a joint venture with a Yugoslavian manufacturing firm in co-operation with West German interests. Other plants due for overhaul include a plant in Warsaw and another one in Bodaczow.

The oil crushing industry suffers from bad planning by former regimes which placed plants in certain regions for political reasons, rather than in relation to rapeseed production. Thus, rapeseed, and later the oil and rapeseed meal, are transported for unnecessarily long distances. The crushing capacity expansion and the modernization plants apparently still follow the old pattern. Whether or not the transportation problem is going to improve could not be ascertained and would require a separate study. It seemed logical to the mission team that rather than completing the large plants provided for in the plan, smaller crushing plants should be built in rapeseed production areas, and in the vicinity of animal production and feed plants. The resulting unrefined oil would be more economical to transport to refining plants than the bulk rapeseed to distant (large) crushing plants.

The remaining uncrushed rapeseed is exported, mainly to West Germany, (approximately 500,000 metric tons in 1988) where it is crushed and re-imported as meal for feed use. Crushing is often paid for with the resulting unrefined oil, in itself a waste of resources. Poland imports between 1.1-1.3 million metric tons annually of additional soybean and other oil seed meals from Brazil, India, China, Romania and Bulgaria.

Because of the shortage of vegetable oil, Poland imports refined oil, which is in short supply on the Polish market because of lack of hard currency. On the other hand, in the past Poland exported a part of its refined rapeseed oil (49,000 metric tons in 1987) to earn foreign currency, further shortchanging the domestic market. Margarine production is also insufficient to cover domestic demand. In 1988 it amounted to 270,000 metric tons while refined oil edible oil production was only 7,000 metric tons of the 90,000 tons actually extracted. Expansion plans call for a margarine production of 350,000 tons by 1991 and an oil production of 140,000 tons by 1992.

Nevertheless, meal, oil and margarine production will not keep pace with the availability of rapeseed. Rapeseed yields are low by European standards, 2,379 kg/hectare, but are expected to increase providing that the pace of research and breeding improvements continues as in the past. Acreage under cultivation is also expected to increase. It is obvious that any uncrushed rapeseed will have to be exported.

Margarine and edible oil demand is expected to grow when the standard of living improves and the population becomes more weight conscious. Per capita consumption of vegetable oil and margarine in Poland is at 10 kg p.a., while in Western European countries it varies between 15-20 kg. If the industry can keep pace with demand, Polish per capita consumption is expected to rise to 12.5 kg by 1995. It must also be mentioned that vegetable oil or margarine are less expensive at the consumer level than butter or lard.

Perhaps as a result of poor soil conditions, growing soybeans has not been successful in Poland. Neither has sunflowerseed production based on Soviet and Bulgarian varieties, although there seems no reason why this type of culture should not succeed in Poland. Apparently more research is needed to adapt these varieties to Polish conditions.

The expansion plans for the Polish oilseed industry are ambitious, but their realization will depend on available capital. The driving force in the short term will not be the demand for vegetable oil or for margarine, but the demand by the feed industry for protein meals.

ANNEX D:
FOOD PROCESSING INDUSTRY

ANNEX D

FOOD PROCESSING INDUSTRY

I. GENERAL OBSERVATIONS

The Polish food processing sector suffers from a number of serious problems and constraints which are:

- **Wrong plant location.** Over the years the central planning system has built many large complexes and plants which were located in certain areas for political and not for economic reasons, and many of these plants were built to serve the export rather than the domestic markets. Consequently, there is a lack of processing capacity to serve the rural population and also to take advantage of locally available raw materials.
- **Obsolete plants.** As in others sectors, the processing industry was production-driven rather than quality-driven. The result was that many plants built in the 1950's and 1960's are either obsolete or in need of a thorough overhaul. In many cases plant floors and surfaces are badly worn, while machinery and handling equipment, originally made with stainless steel, has often been replaced with mild steel. Such deteriorating changes have caused unsanitary conditions in many plants. Poor housekeeping and lack of sanitary enforcement compound the problem.
- **These large plants are structured on industrial lines and the workers very often have no ties to the agricultural sector.** They constitute a workforce that has little interest and motivation to work efficiently and help maintain plant and equipment.
- **Because plants are often export oriented, finished products going to the domestic market tend to be inferior in quality and consumer preferences are disregarded.**
- **As with other industries, the processing industry lacks inputs.** The two major problems are the lack of spare parts to repair machinery and the lack of packaging materials. Lack of cooling capacity and refrigeration constitutes another serious obstacle to efficient production.

II. FRUIT AND VEGETABLE PROCESSING

A. The Export Market

Polish agriculture produces excellent quality fruits and vegetables. This is partly due to the nature of the light Polish soils and partly due to the fact that production is semi-intensive. At the same time producers do not use chemicals extensively, as chemicals are often in short supply. Therefore, Polish fruits and vegetables are sought after in Western Europe. On the other hand, the constraints mentioned above have hobbled the industry's ability to efficiently service the export market. Much of the initial quality of the produce tends to deteriorate due to the lack of cooling capacity and inefficient transportation, as well as the lack of proper storage, adequate packaging, and careful handling. Thus Polish fruit and vegetable exporters are frequently regarded as unreliable, because produce does not arrive on time and may be spoiled, is not shipped regularly or may be damaged because of poor packaging. These conditions invariably lead to producers selecting only the best produce for export while selling inferior fruits and vegetables in the domestic market.

B. Packaging

Among the constraints mentioned above, packaging is a most serious problem. Raw materials used to make packaging for the fruit and vegetable sector can be roughly divided into two categories: those originating from the wood and paper industry and those made from plastics.

Poland has a considerable wood industry and also produces sufficient pulp to be able to make sufficient wooden boxes for fruit transportation, as well as kraft, carton, and paper packaging. Unfortunately the drive to earn hard currency has created a shortage of wood pulp for the manufacture of packaging materials. Moreover, the quality of boxes, carton stock, and paper is inadequate to effectively protect produce. In many cases foreign buyers impose high packaging standards forcing the industry to import packaging materials.

There is also a shortage of specialized packaging such as closures for glass jars and aluminum foil lining for cartons holding liquids, waxed carton stock, etc. Even worse is the situation concerning plastic raw materials. Poland does not produce sufficient petroleum feed stock to satisfy the requirement for different types of plastics, both structural and foil. For instance, there is a shortage of plastic drums and containers. A typical case was noted by the team in a co-operative producing mushrooms and shipping them in 50 l drums to Italy. Although they were capable of producing mushrooms the entire year, they only had enough drums for two months of production. Also, the drum supply was sporadic, making it difficult to adjust mushroom production to the available drum supply. In another visit, a plant producing fruit juices for export, which were packaged in foil-lined cartons, not only had to import the cartons, but also spare parts for the packaging machinery. Although hard currency was earned, a part of those earnings had to be spent on importing both packaging and spare parts.

Many firms, mainly small co-operatives, would be able to export produce but cannot secure packaging materials. Typically German importers which buy Polish fruit syrups, juices and concentrates drive their tank trucks into Poland to bulk ship the material to Germany. In turn, they package it in Western Germany for export to other countries, depriving the Polish producer/exporter of the added value income. In some cases Polish producers have been able to obtain packaging from the foreign buyer, but this ties them to the single customer who supplies it.

The appearance of packaging and labels for fruit and vegetables to be exported requires considerable graphic and promotional improvement. Polish exporters are aware of these shortcomings, as they are frequently losing business to competitors from other countries in which export packaging is more attractive, such as Hungary and Yugoslavia. Printing and graphic equipment and technology is needed to improve the situation. Investments are needed in all sectors of the packaging industry, both in packaging machinery as well as in packaging materials, to not only maintain current export levels but to help expand export markets for the Polish fruit and vegetable industry. Investment needed in this area is often considerable, such as for plants to manufacture plastic raw materials. This problem cannot be solved by the fruit and vegetable industry itself. These investments must come from Western petroleum and chemical firms, perhaps in joint venture with Polish companies in that sector.

Some processing firms, largely medium and smaller co-operatives, are now trying to deal directly with foreign importers, rather than through former state export agencies which took high commissions and generally were not responsive to the needs of the producer or the processor. In particular, these processing firms would like to export to the United States. But management often does not know how to deal directly, or how to market and promote their products. This opens an opportunity for American investors, not only to provide capital, but also to help market the products and perhaps act as agents or distributors in this country.

At the moment, the former large state processing companies, such as Hortex, although demopolized, continue to function as before. The Polish Government does not want to disrupt valuable export income by dismantling or divesting parts of such large processing firms. Nor do employees and Polish investors at large have sufficient capital to buy a large number of shares. The Government apparently does not want controlling interest to go to foreign firms at this time. Valuation of the properties of these state agri-processing companies is also difficult, particularly since they own considerable land acreage.

If packaging is a bottleneck in the export drive, it is nonexistent, poor, or in short supply for produce sold on the domestic market. Due to the fact that many products are in short supply, the domestic consumer is accustomed to having them offered in unattractive or inferior packages. Housewives very often have to bring their own bags or packaging to take home the food they buy. However, as the market economy develops, those producers and processors who can package adequately and more attractively will gain a larger share of the market.

The team noted that a number of small co-operatives and private firms, either recently formed or breaking away from large state run enterprises, were setting up private processing firms directly linked with the producer. One large vegetable operation which the team visited was formed by some thirty-odd local farmers together with three processing engineers. The farmers ceded three hectares of land, on which the firm built a large modern storage, cooling, and processing facility for the processing of onions, cabbage, garlic, dried soup vegetables, mushrooms, and other produce sold for export and the domestic market. Most of the machinery and the cooling facility is of local manufacture; only the tractors, loaders and trailers were bought from manufacturers. The company is already showing a profit and looking to expand their facility.

Export markets for Polish fruit and vegetable products are mainly in East and West Germany and Scandinavia (principally Sweden). Some amounts of produce are exported to the Soviet Union and the Baltic States where they are paid for in soft currency. As mentioned above in the listing of constraints, the quality of Polish produce is generally good, but packaging problems and transportation delays cause Western importers to downgrade shipments from Poland, and Polish producers are often regarded as unreliable. The export market to Western Europe for Polish fruit and vegetable produce could be greatly expanded if those two constraints were removed. We were told while visiting an onion producing co-operative in Pomerania that their Swedish customer could increase imports of onions from the current truckload per month to 8-10 truckloads if the packaging and transportation problems were solved. We were told a similar story at another co-operative in the same region which was producing strawberries for Sweden. The poor quality of wooden boxes and kraft cartons prevents expansion by this producer.

III. THE SLAUGHTER AND MEAT INDUSTRY

Of the over 300 slaughter and meat plants in Poland built in the 1960's and early 1970's, 85 or so are very large, but are now rapidly becoming obsolete. Until recently, we were told, 35 plants were approved by FDA (and EC authorities) as conforming to sanitary standards, and thus permitted to export meat products to the United States. Currently, however, only 7 plants remain on the approved list. By 1992 these 7 will be taken off the list because of their age. Many plants have deteriorating floors and tile walls, stainless steel equipment that has been replaced with plain steel, and a general lack of provisions for worker safety. Modern technology to increase production efficiency was also lacking. For instance, smoking was being carried out in chambers in the traditional way of using wood smoke, and sausages were still manually made using gut casings. A great amount of manual labor was being employed, mainly by female workers.

These large plants are not only obsolete from a sanitary standpoint, but their equipment is also worn out due to lack of reinvestment in machinery and structures, and from the former government's pressure to produce set quotas. The plants themselves, like many other industrial plants, have been located in the vicinity of large towns in order to create a working class that could be controlled. State planners also anticipated supplying the plants with animals from large state farms, which would be built in the same vicinity. But these plans

never materialized, because it was impractical to bring feed to these animal facilities from distant sources of grain.

Since animal production facilities were not built close to plants, animals destined for slaughter frequently have to be shipped long distances. An example of this is the 7 large slaughter and meat plants ringing Warsaw; most of the animal material, especially pigs, must be hauled often as far as 250 km, resulting in weight losses and above average mortality rates. Together these 7 plants work only at 60% capacity.

In talking to management and accounting personnel we also noted that they had a poor grasp of costing and pricing now that subsidies have been withdrawn. In one plant we were told that a flat 15% was added to the cost of production in order to calculate the consumer price of meat, and that all possible costs have been considered in the calculation. But they completely failed to take into account the costs for reinvestment and modernization.

The meat industry also has rendering plants for both edible and inedible offal utilization. Lard and tallow is produced routinely, while meat and blood meal is used in sausages. Conditions in the rendering plants we visited were extremely poor. The plants were 30-40 years old and the quality of the meat meal was poor. The lard in one of the plants we visited was made with an FFA (free fatty acid) content of 10%, a content level unacceptable to consumers in the West. Lard packaging was also inadequate, and because of the lack of packaging machinery lard was being manually wrapped and packed.

IV. INVESTMENTS AND CONSTRUCTION

In order for the food processing industry to survive and to continue to serve the domestic and export markets, substantial investments will be needed. In a recent investment proposition to the EC, the Polish Government estimated the necessary outlays at

\$614 million. This figure does not include the cost of construction of 8 plants for the production of baby food which will cost an additional \$36 million.

The Government also realizes that smaller plants are needed. These plants should be built in agricultural production areas, making them not only more efficient, but would provide rural employment. The only exception to this rule, as far as the team could judge, are plans to erect rapeseed crushing plants. These plans were made earlier and may not have been updated to conform to the new economic realities.

The following is a list of plants which the Government estimates are needed and their projected costs. The team felt that in some instance the construction costs were underestimated. Not included in this list are the "big ticket" investments needed to help overcome the shortage of inputs such as plants to produce steel and stainless steel, agri-chemicals and fertilizer and chemical plants to produce basic plastic stock.

**LIST OF PROPOSED SMALL AGRI- AND FOOD PROCESSING PLANTS
NEEDED IN POLAND AND THEIR ESTIMATED COST**

Type of Plants	Production Capacity	Number of Plants	Outlay \$Mil.
Slaughter, meat & rendering	3,000 mt.	200	200
Dairy plants	10,000 l/day	80	32
Mills, flour	up to 15 mt/day	100	50
Mills, feed	10-20 mt/day	60	30
Bakeries	---	200	40
Fruit & vegetable processing	750,000 mt/pa	150	200
Cold stores, freezing & storage	10-100 mt/pa	40	3
Total		830	615

PLANTS PRODUCING FOOD FOR BABIES

Kalisz Food Concentrates	3,000 mt/pa	1	---
Rzeszow Processing Plant	5,000 mt/pa	1	5
Opole Food Concentrates	10,000 mt/pa	1	8
Bialystock	8,000 mt/pa	1	5
Total	26,000 mt/pa	4	18

Requirements for Machines and Equipment used for Food Processing Plants

Type of Equipment	Quantity
Slaughterhouses	
Parboiling equipment	200
Skinning equipment for pigs	200
System for skinning cattle	200
Meat dressing	
Circular dressing saws	400
Meat processing plants	
Meat grinders with 100-150 l. cap.	200
Cutters with 150 l. cap.	200
Stuffers with 150 l. cap.	400
Vacuum mixers with 200 l. cap.	200
Tipping boilers of 200 l. cap.	400
Mill cutters with 200 kg/h cap.	200
Cooking kettles with 1000 l. cap.	400
Parboiling and smoking chambers, complete*	400
Smoking carts*	6,000
Needle brine injection equipment	200
Container cooling equipment with 10 to 40 cubic cap.	400

* It is recommended that the industry switch from smoke to liquid spray equipment.

**Requirements for Machines and Equipment Used for Food Processing Plants
(Continued)**

Type of Equipment	Quantity
Milk processing plants	
Small milk processing plants	80
Packing lines - foil cartons w/ pasteurizing and homogenizing equipment	80
Fruit and vegetable processing plants	
OFM plate filters	90
Asbestos free filters	20
Bottling lines for soft drinks with capacity:	
- 20,000 to 30,000 bottles per hour	20
- 9,000 to 12,000 bottles per hour	10
Bottling lines for soda water drinks with capacity:	
- 20,000 to 30,000 bottles per hour	20
- 9,000 to 12,000 bottles per hour	10
- 3,000 to 9,000 bottles per hour	15
Bottling lines for other soft drinks with capacity	
- 10,000 to 25,000 bottles per hour	20

- It does not appear that the above Government list is complete. It does not include outlays that may be needed for the construction of rendering plants and also the list of equipment needed for fruit and vegetable processing plants seems incomplete. Nor does it mention packaging lines for fruit and vegetable processing.

ANNEX E:
OTHER OBSERVATIONS

ANNEX E

OTHER OBSERVATIONS

I. THE AGRICULTURAL SITUATION

The Mission Team did not have enough time to gather more extensive information on the crop and forage situation, soil and water conditions, farm inputs and other data. Nevertheless, from a number of visits to private and state farms, as well as from meetings with farmer groups, we were given enough details to form a fairly good picture of both the short and long term constraints which interfere with efficient agricultural production, and the remedies which must be taken to correct shortcomings in agriculture. Some of the information obtained is anecdotal, but it provides some understanding and elucidations for the current situation in Polish agriculture.

Polish agriculture characteristically produces cereals and energy forages rather than protein crops (except for rapeseed). It ranks high in production of wheat, rye, barley and oats, as well as potatoes and sugar beets. To feed a growing population Poland has steadily increased crop production, but yields have lagged behind yield figures of other East European (and also those of Western countries), necessitating grain imports. Although the last two harvests were good, there is great concern about the 1990 harvest because of the lack of inputs and, in some cases, the lack of seed (e.g., hard wheat).

Animal production suffers from lack of balanced feed due to limited supplies of protein ingredients. The protein shortage is the single largest constraint in animal feeding. Also, there is too much of a reliance on pork production, while broiler and beef production, as well as milk and egg production, seem to take a secondary role.

The lack of inputs is generally blamed on the poor state of agriculture in general, and bottlenecks in crop and animal production in particular. This concerns the small farmer more than the state farms, since the latter are generally better equipped and able to secure machinery, seeds, feed and other inputs. But the farm situation is rooted in inefficiencies created through years of centralized planning and farm policies which politicized the agricultural sector. Although inputs currently seem to be the paramount obstacle to normal functioning of the agricultural sector, a series of other measures must be taken to rectify the situation. We found that the private farmer understands the need for restructuring of the economy and what is needed to restore farms to a profitable operation. However, farmers do not understand the fiscal measures (i.e. Balcerowicz Plan) instituted by the new Government to deal with the concurrent rampant inflation; many know only that prices for farm products have lagged behind prices of other goods and services. The moment inflation begins to reverse, as is expected this spring, farm prices will be the first to slide. The private farmer also has some difficulty in understanding the macro-interdependence of all elements

which effect agriculture development and which must all be in place before the situation can improve.

II. FARM STRUCTURE

It is well known that the 2.68 million private farmers in Poland own approximately 76% of the farmland and that the average farm size is 5.2 hectares. Thus the improvement in agricultural production will depend greatly on restructuring farm ownership to create larger private farms from 10-25 hectares in size. To that end the Government has already passed laws permitting the purchase and leasing of land. However, there are several obstacles to increasing farm size.

First, the farmer is traditionally attached to the farm. He has held onto his piece of land for a long time against all efforts by the communist hierarchy to collectivize it. More than 60% of the small farmers are over 50 years of age, and a high percentage of these are 60 years and older. Despite a Government scheme to exchange land for increased old age pensions, only 2% of the farmers took advantage of the scheme so far. We were told of cases in which even very old or senile parents would not let their sons take over the land.

The farmer has seen the economy deteriorate rapidly and his money become worthless. Therefore he holds onto the farm as it feeds him and his family. Also many farmers and their family members are dually employed in factories. It is proverbial in Poland that a good factory worker cannot farm efficiently and vice versa, if the person pays attention to his farm he will not be a good factory worker. The system which up until now favored dual employment will change as factories begin to privatize and bloated employment rolls will be reduced.

Another obstacle to increasing farm size is the extreme scattering of small plots. It has been traditional in Poland for parents to give each of their sons a piece of land. In many villages small parcels of land of 0.5-2.0 hectares abound. It is difficult for a farmer who wants to enlarge his farm to buy or lease adjoining land. This situation is less acute in Western Poland where both state farms and private farms are larger, bringing the farm size average to 7.5 hectare. On the other hand, as you move east across the country and especially in South-Eastern Poland the number of very small farms increases. In Southern and South-Eastern Poland, the number of small farms, instead of diminishing, has not changed significantly.

The last, but equally important obstacle, is the socio-economic aspect of any attempts to move the very small farmer off the land. There is a considerable lack of small manufacturing and agri-processing facilities located in rural areas to support the agricultural economy. There is also nearly a total lack of services and tradesmen. It is quite common for villages and small communities to be without a baker, a tailor, or a mechanic; and they lack shops, restaurants, laundries, gas stations, etc. This is due to past communist policies which concentrated all services in factories and co-operative facilities in larger towns for political control and to simplify the allocation of inputs.

This circumstance, however, appears ideally suited for the shifting of redundant small farmers to the service trade and to employment in rural processing industries, providing that the farmer can be persuaded to leave his land and if an effective training program is put into place. Although the Polish Government is aware of this need, it has not yet had the time to develop a comprehensive program. Even with a good program in place, however, it will take considerable time for it to succeed. In discussions with Government and Green Solidarity leaders it was suggested that if the figure of farmers leaving the land could be raised from the current 2 percent to 6 percent, the impact on increasing the size of farms would be considerable over a time span of 5-6 years. At the same time, it would constitute an orderly transition commensurate with the growth of rural processing industries and service facilities.

The farmer does not yet understand the need to create rural industries and services, although he would be the initial beneficiary. For example, a farmer who needs to have his tractor repaired must often deliver it considerable distances and then wait for months to have it serviced. Any rural plan to develop industries and provide services must therefore take into consideration the traditional farmer distrust of the authorities. It must not only educate the farmer to understand the need for change, but must provide added incentives for those small farmers who might quit the land.

III. DE-MONOPOLIZATION AND PRIVATIZATION

De-monopolization was introduced rather rapidly by the Government not only by law, but by the simple expedient of withdrawing subsidies and ceasing central control over agriculture production. De facto de-monopolization is slower, because the middle level bureaucracy is still in charge. Many managers of state farms and enterprises at first attempted to carry on as before. They quickly realized that this is not possible. In those enterprises which have inputs, provide products for export, or are reasonably well organized, the directors see an opportunity to function as a private firm. The team visited a large state farm in Western Poland, where the management has joined with private farmers to exchange grain and services. They were able not only to keep the farm functioning, but are planning to expand it by building a feed plant and slaughter facilities.

On the other hand, the team found enterprises in which the management was unsure of what to do next. This was particularly true for state agencies and distribution firms. It is predicted that some of them will go bankrupt. There is also a significant amount of corruption taking place. We were told by Government officials that perhaps as many as 20% of the directors and managers of state enterprises have set up private firms, often in the name of their friends' wives, then channeling the state enterprise's business through these new firms. A law was being prepared to prevent such abuses, but this is a problem difficult to control.

Processing co-operatives and collective farms, especially smaller ones, seem in many cases to be ready to be privatized, but the laws providing for orderly privatization and a system of preferences in acquiring shares were not yet in effect at the time of the team's visit. There are two problems affecting the privatization of co-operatives.

First, members do not have enough funds to buy shares, although they would be given preference in acquiring them. Clearly the Government will have to find an instrument whereby members could acquire shares over a period of time, perhaps through automatic deductions from their wages or else through a bonus system.

Secondly, members seem to feel that they own a substantial share of their co-operatives because of initial membership payments. These, however, were token payments arranged by the former system for political purposes. And while inflation has increased the value of fixed assets of the co-operatives, no attempts have been made to proportionately adjust the amount of the original membership fee, i.e., if a member originally paid 500 zlotys, his share is theoretically worthless considering the value of the zloty today. This situation causes dissension and uncertainty among members who feel that they "own" the co-operative.

Farmers are generally distrustful of co-operatives, since they were originally set up and regulated by the communist government. This in turn prevents formation of co-operatives on local village levels in which farmers would share services and inputs. It is interesting to note that while many farmers own their own tractors and large pieces of farm equipment, such as combines, it would be easier to share them with others or have farm work contracted to a single individual. In discussions with farmers, the team found that even under today's conditions, when fuel and spare parts are in extremely short supply, the farmer wants to have his own tractor at any cost, and perhaps even a second one, and he will go to great lengths to obtain it. There is now a considerable excess of tractors in Poland per hectare of arable land.

The only tractors produced in Poland are large ones, which are generally unsuitable for smaller farms. It is not unusual to see a farmer drive his tractor through the village with only two sacks of grain on the trailer. This is a waste of both fuel and equipment. In another example, in one village the team was shown a silage pit which the farmer built himself at a great cost to make it big enough to accommodate his large tractor. Normally he would have needed only a small pit, plus a small loader to handle the packing chore, for the amount of silage he was customarily making.

Another obstacle to privatization is the difficulty of establishing the real value of the co-operatives, state farms, and agricultural processing enterprises. Although it may not be too difficult to establish the value of the fixed assets, the value of the land, the intrinsic value of the firm's revenues, its marketing strength, and goodwill may be difficult to establish. There are no precedents, and figures which were arrived at under the centralized system do not apply. We also noted that members of smaller co-operatives had an exaggerated notion of the value of their co-operatives based on what they thought the land and buildings were worth, rather than the amount of business the co-operative was generating. The Polish Government is considering an auction scheme which would establish the value of an enterprise based on the demand generated in acquiring shares. It is difficult to see, though, how such a scheme may apply to co-operatives.

Nevertheless, by their nature and size co-operatives will be easier to privatize than state farms, especially those co-operative farms engaged in fruit and vegetable production. That

sector suffered less from centralized government controls, and the team found members and managers in that sector eager to privatize. U.S. agencies and PVOs could be very instrumental in speeding the privatization process by helping to set up model programs to educate co-operative boards and members how to restructure and to point out ways of making their enterprises function profitably in a market economy.

IV. PRIVATE ENTERPRISES

The team noted with interest the great rush on the part of entrepreneurs, both large and small to set up their own businesses despite bureaucratic and legal obstacles and the lack of capital and inputs. Although this drive seems to be more pronounced in Western Poland which has a more stable and orderly economy, it was also noted in the central areas surrounding Warsaw. Many Poles were engaged in the grey (and black) markets where they learned to make money and prevail, despite the conditions imposed upon by the communist system. But some were also farmers who are seeking not to join co-operatives but to form private firms, although shareholding laws were not formulated at the time of the team's visit. In one processing facility we visited, the firm was newly established by local farmers, and in lieu of issuing shares the partners simply made a temporary contractual arrangement, and subsequently registered it in the local courthouse to make it legal.

We also visited a small rural slaughterhouse and meat plant, which were built recently by some 200 farmers using their own resources and labor and setting it up as a private firm. As a second step, they set up a butcher shop and two restaurants. All were fully functioning. To run their enterprise they hired a manager from a local state enterprise.

Some farmers have formed private (local) producers associations, another temporary expedient which permits the conduct of business until shareholding laws are clarified. The advantage of these associations, according to members, is that they have divorced themselves from the national producer groups which were part of the old structure and are not always trusted. Another advantage, we were told, is that the concept can be enlarged to include mixed and allied producers and service enterprises, giving the association a broader base and permitting members to obtain or trade scarce inputs. One such association that the team visited had farmers joining with local workers to set up the production, processing, and marketing of mushrooms as a separate enterprise.

V. SCIENTIFIC AND TECHNICAL BASE

Poland has perhaps the best agricultural, scientific, and technical manpower resources of any East European country. It is therefore paradoxical to find Polish agriculture in its current condition. Considering the devastation Poland suffered in WW II, however, considerable progress has been made. From the Institute of Agricultural and Food Economics and the Warsaw Agricultural University to regional universities and field institutes there exists a considerable scientific infrastructure to serve agriculture.

The core of the problem lies in the political and economic direction that central planners pushed agriculture, especially in the creation of large farms and industrial-style processing

facilities, now often referred to as "gigantomania". Most trained experts simply became bureaucrats serving the system rather than serving to improve the standard of living of the population. There was no significant incentive and motivation to excel, except perhaps to advance in their respective organizations.

As already mentioned, the universities are very much isolated from field practice and, despite excellent research, has had little impact on production efficiency. Similarly, there is little cooperation between the universities and the agri-community. The customary drive by agri-business to translate research results into production efficiencies as is commonly practiced in the West, does not exist in Poland. The team was asked several times how American farmers and producers manage to take advantage of research results and how Polish agriculture could benefit from our experience. Most Poles do not yet understand the role private companies play in converting and field testing research results to produce viable products and systems, and how they cooperate with the research community for the benefit of agriculture.

The situation is somewhat better on the field institute level, but it tends to vary greatly from one institute to the next, depending on the importance assigned to a given production sector by the centralized system. Also, in the past universities and institutes served mainly the state and collective sector, while neglecting the needs of private farmers. Moreover, there has been the tendency toward theoretical and abstract research with the simultaneous drive to publish findings in order to show off achievements of the respective institutions and departments.

In discussions with one university dean who expressed the need for Western funds, it became clear that the university was still dedicated to research for the sake of research. The projects which he wanted to initiate had little connection to the urgent problems of Polish agriculture, but were designed to keep his staff employed.

The Polish extension service, even though it has excellent and dedicated experts, is in a state of disarray because of the restructuring of the central system and the lack of funds. The system which serves only private farmers does not enjoy the farmers trust because, under the former system, the service administered the so called "production assistance programs", which helped secure inputs for farmers, but on a selective basis to those who were party members or who were otherwise useful to the regime.

The agriculture directors of two Voivodships mentioned to the team that they agreed that a good way to stretch scarce extension budgets was to set up model farms in each of the Voivodships with the help of the service. Farmers could then be brought to these farms to learn the advantages of working with extension experts. A similar proposal was also advanced in Green Solidarity circles.

There is no question that closer cooperation is needed between farmers, the academic community and the institutes, the extension service, as well as the emerging agri-business interests.

ANNEX F:
LIST OF INTERVIEWEES

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