JPRS 84323

14 September 1983

East Europe Report

ECONOMIC AND INDUSTRIAL AFFAIRS

No. 2448

FBIS FOREIGN BROADCAST INFORMATION SERVICE

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service, Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semi-monthly by the National Technical Information Service, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

JPRS 84323

14 September 1983

EAST EUROPE REPORT

ECONOMIC AND INDUSTRIAL AFFAIRS

No. 2448

CONTENTS

YUGOSLAVIA, CEMA COUNTRIES COOPERATE IN MACHINEBUILDING

Belgrade PRIVREDNI PREGLED in Serbo-Croatian 27, 29 Jul 83, 2, 3, 5, 9, 10, 12, 16 Aug 83

[Series of articles by A. Petrovic (A. P.): "Yugoslav Machinebuilding and Cooperation With the European CEMA Member Countries"]

[27 Jul 83 p 4]

[Text] The General Picture (I)

Trade in machinebuilding occupies an especially significant place in cooperation of our country's economy with the socialist countries which are members of CEMA. It is done on a multilateral basis--which our newspaper wrote about on 22 July--and to a greater extent on a bilateral basis with each country separately. In that cooperation the countries make mutual adjustment of their needs in various sectors and complement one another through industrial cooperation and specialization in production, striving thereby to optimalize utilization of capacity and to expand the assortment of projects on their own respective markets.

The volume and diversity of Yugoslav machinebuilding's cooperation with the respective industrial branches in this group of countries is mainly a reflection of needs and capabilities, although the maximum has not been done in this respect with any of the countries as yet. That is why the plans for the period up to 1985 call for expansion and intensification of this form of cooperation. The negotiations being conducted to cover the period up to 1990 and beyond are concerned with machinebuilding to a large extent.

Yugoslavia's economic cooperation with the CEMA countries is in general very extensive and important; in 1975 it represented 47 percent of exports and 25 percent of imports, and in 1980 46 and 30 percent, respectively. It is envisaged for the 1985 that mutual deliveries would be more in balance (which is related to corresponding developments in trade with other regions of the world), so that exports would represent 37 percent and imports 30 percent.

Trade in the field of machines and equipment in the past period has been rather stable: between 1976 and 1980 exports represented 34.35 percent of total exports to these countries, and imports 22.29 percent. During the current

5-year period a certain change, but not an essential one, is envisaged, so that stability remains one of the principal characteristics of this cooperation: exports are to be about 35.6 percent and imports about 21.4 percent of total deliveries to or purchases from these countries. Thus machines and equipment are holding second place in the breakdown of trade, a standing which has now become traditional, with raw materials and production supplies in first place.

Viewed by groups of countries with which trade is carried on with settlement made on the basis of bilateral agreement or in convertible currency, we note that there is more trade with the former group of countries, while with the latter more is done through industrial cooperation and specialization in production. Within the first group of countries the Soviet Union is convincingly in first place, taking more than 80 percent of total exports in machinebuilding, in second place is Czechoslovakia with over 12 percent, and in third place the GDR with over 7 percent. It is somewhat different with imports. The USSR is again in first place, but with 44 percent, Czechoslovakia is in second place with nearly 40, and the GDR is in third with 25 percent.

Within the group of countries with which trade is done on the basis of convertible settlement, cooperation in machinebuilding is largest in volume with Poland, which represents 44.3 percent of Yugoslav exports, followed by Hungary with 38 percent, Romania with nearly 9 percent, and Bulgaria with 6.8 percent. The order is similar for imports, but the percentages are different: Poland is in first place with 55.4 percent, then Hungary with 29.4 percent, Romania with slightly over 10 percent, and Bulgaria with over 5 percent. The strongest aspects of cooperation in trade with Poland and Hungary are industrial cooperation: in the motor vehicle industry with Poland in the production of cars and trucks and agricultural and construction machines. The principal feature in cooperation with Hungary is industrial cooperation in the production of heavy vehicles, and since 1981 in the production of cars as well.

It is envisaged for 1983 that machines and equipment would have a share of about 29 percent of our country's total exports to the market of the East European socialist countries and 19 percent of imports from them. We note, however, the aspiration of certain trading partners to change the agreed proportion in the course of fulfillment by making larger exports to our country. Unilateral changes in the program made by either side certainly would not contribute to constructive development of trade in the long run, and the negotiations for each year, as well as the meetings and discussions which in any case occur several times every year, are used to bring practice into line with the principles of trade and cooperation according to the capabilities and needs of each trading partner.

In trade on this scale, of course, room has been found for several sectors of machinebuilding. Nevertheless, the most significant cooperation has been in the field of machine tools, the motor industry and railroad car manufacturing. Each field also has its own characteristics: with the bilateral payment countries cooperation in the motor industry at present still comes down to purchases of automobiles from Czechoslovakia and the GDR (with the USSR there is significant industrial cooperation), and with the convertible payment countries

the latter form of cooperation is predominant. The balance of trade in machine tools has been favorable for the Yugoslav economy, while in railroad car manufacturing the trading partners have not shown sufficient desire to develop cooperation with our industry, which is possible even though they are mainly meeting their own needs with their production.

[29 Jul 83 p 3]

[Text] Romania: More Trade Expected (II)

Neighboring Romania is a trading partner with which cooperation has not gone as well as was desired and anticipated a few years ago or as it probably could have gone. Visible and other difficulties have blocked the way, much of what was envisaged was not achieved, and certain forms of cooperation which were supposed to have a better fate were discontinued. All of this has also been occurring with cooperation between the two economies in machinebuilding.

Over the period 1975-1980 trade in the products of machinebuilding represented about 20 percent of total business transactions and amounted to about $20 million for each side in value terms. The trade involved deliveries of 3,000 Ikarus buses from our country and imports of 4,000 Roman truck chassis; 14 marine engines from Yugoslavia and 4 complete sets of equipment for cement plants from Romania; specialization in the production of electric locomotives--with deliveries amounting to a total value of about $160 million. Industrial cooperation of Renault cars was prepared, but did not succeed, because altogether different models were made in these two countries.

Stagnation, and Even Decline

Even toward the end of the previous 5-year period cooperation had begun to fall off in the field, and this had an effect on total trade, so that at the least it did not grow nearly as much as had been envisaged. Trade and specialization in the production of locomotives, buses and trucks came to an end. One of the explanations lay in the Romanian side's insistence that trade in the products of machinebuilding be conducted without payment in foreign exchange, which the Yugoslav OUR's [organization of associated labor] were unable to accept, since components purchased for convertible currencies had been incorporated into that equipment.

Yet it cannot be said that the trading partners were indifferent in allowing cooperation to crumble, transaction by transaction. Back in 1980 an agreement on a long-range program for economic and scientific-technical cooperation between Yugoslavia and Romania was concluded in Belgrade. Both sides intended in that agreement to overcome major problems in cooperation and trade concerning the products of machinebuilding. The agreement was signed by the representatives of the governments, and it provided above all for development of industrial cooperation and specialization in production. The principal fields were equipment for fuel and energy plants, equipment for the processing industry (cement plants, chemical plants, etc.), transportation equipment, electronics and electrical equipment, equipment for construction, mining and the food processing industry, and agricultural machines.

Interest Even Beyond the Arrangements Concluded

Current economic difficulties prevented a sizable portion of the agreement from being carried out. This year only one case of industrial cooperation is being conducted in the field of the metal manufacturing and electrical equipment industry--production of low-voltage switches, with deliveries totaling about $200,000. But negotiations for several other arrangements have made considerable progress: most of them would begin to be carried out next year. They are industrial cooperation in the production of mining machines for both underground and surface mining ("14 Oktobar" of Krusevac) and delivery of motor-driven cultivators for assembly by Industrija Masina i Traktora (machine and tractor plant) of Knjazevac, while trailers and certain other parts for them would be delivered from Romania. In tractor production: first, Industrija Motora of Rakovica would be delivering engine blocks, and the trading partner in Romania the front axle and transmission; second, the Store Steel Mill would deliver complete transmissions, and its trading partner the motors. And then negotiations are going on concerning industrial cooperation in the production of dryers for agriculture and motor-driven atomizers for irrigation; cooperation in the assembly of the "Aro" truck in Yugoslavia at the "Tito" Metal Plants in Skoplje.

These industrial cooperation projects could increase trade by about $50 million even next year, and by $120 million a year up to the year 1990. This would bolster the basis for trade and machinebuilding, but interest goes beyond that. The Yugoslav economy is showing interest in cooperation in the production of power engineering equipment--small-power hydroplants; machine tools (the project of the iron foundry and heat treatment plant at Kikinda has been postponed because the investment was postponed); equipment for the food processing industry--refrigerators, production lines for soups, tomato puree and the like; mining equipment--power shovels for open pits; certain parts for installation in complete projects--cement plants, thermoelectric power plants, high-voltage devices....

Until these and other arrangements begin to be implemented, the cooperation between the two economies in machinebuilding will remain on a modest scale, which at this point means: deliveries from Yugoslavia of tugboats for transporting railroad cars and a passenger vessel, while a multipurpose vessel and two bulk carriers would be delivered from Romania--totaling $120 million for each side; exports of special tank cars for chemical products and importation from Romania of two drilling rigs for petroleum exploration; equipment for reconstruction of a cement plant and one blast furnace--altogether totaling $50 million in each direction; delivery of a special central telephone office (from "Iskra") for the Romanian railroads, purchase of equipment for a cement plant, but counterdeliveries have yet to be found for these two transactions. There is every indication, then, that larger and stable trade in machinebuilding between Yugoslavia and Romania can be anticipated only if long-term industrial cooperation projects are established which the trading partners can count on over a lengthy period and relate to their development plans.

[2 Aug 83 p 2]

[Text] Hungary: Firm Long-Term Arrangements (III)

The arrangements which "Dinara" of Belgrade have with Hungarian enterprises for industrial cooperation in the motor industry are often taken as an example of lasting and mutually favorable business collaboration between trading partners. These arrangements are the most important ones, and they cover the longest period, but they are not alone. That is, thanks to contracts on long-term industrial cooperation and specialization in production, the value of trade in the products of machinebuilding between Yugoslavia and Hungary has averaged about 23 percent of the total over the period 1975-1980. The highest value and largest growth were achieved in 1981, when Yugoslav exports reached $67.2 million and imports $54 million, and then everything has been stagnant in the subsequent 2 years.

Industrial cooperation is most highly developed in the field of transportation equipment and machine tools, in which the motor vehicle industry is dominant, and it is here that the organizational function of "Dinara" is involved. More than 20 plants making motors and vehicles and final assembly plants are involved through that organization in cooperation and trade on the Yugoslav side at present, among them: "Ikarus" of Belgrade, the "Zivko Maricic" Metal Combine of Kraljevo, Industrija Precizne Mehanike (precision machinery industry) of Belgrade, the iron foundry and heat treatment plant in Kikinda, "Pobeda" and "27 Mart" of Novi Sad, UNIS of Sarajevo, "Prva Petoletka" of Trstenik, "Soko" of Mostar, "Saturnus" of Ljubljana, "Vozila" of Gorica, ITAS of Kocevje, AGIS of Ptuj, ILK of Kotor, Lio of Osijek, MAG of Belgrade, "Gosa" of Smederevska Palanka, "Utva" of Pancevo, "Zrak" of Sarajevo, and "Dubrava" of Sremska Mitrovica.

On the Hungarian side the "Mogurt" export-import enterprise is bringing together almost the entire motor industry through the following enterprises: "Raba" of Gyor, "Cshepelauto" and "Ikarus" of Budapest. The volume of this cooperation and trade is supposed to reach about $1.36 billion over 10 years. The cooperation mainly involves trucks and truck chassis in the Hungarian deliveries and parts and components for installation on the Yugoslav side. Two years ago one of the most interesting undertakings was begun--the arrangement between "Crvena Zastava" of Kragujevac for the delivery of automobiles. This manufacturer was in fact involved earlier in a transaction in which delivery of its vehicles was tied to the importation of diesel switching locomotives, involving a total of $10 million a year on each side. The Yugoslav producers feel that there are opportunities for transactions of this kind to be broadened and strengthened with larger deliveries of automobiles and delivery vehicles up to 10,000 units, in exchange for purchases of spare parts and assemblies from manufacturers figuring as subcontractors in Hungary. The two sides are also interested in industrial cooperation to build buses for municipal and intercity transportation in exchange for bodies, motors, transmissions and other assemblies.

In the machine tool field there is trade based on industrial cooperation and specialization ("Potisje" of Ada, "Majevica" of Backa Palanka, and the Iron

Foundry and Heat Treatment Plant in Kikinda), but it is felt that the trade of about $6 million could be increased by adopting industrial cooperation in the production of various components and assemblies, especially for machines with a built-in electronic control system.

Now that electronics has been mentioned, it is worth saying that satisfactory results have not been achieved in cooperation in this field. Yugoslav manufacturers feel that there is room for joint production of household appliances, components for various devices, and indeed entire systems. Certainly the last word has not been said in this field, and initiative should be anticipated from both sides.

Agricultural machines are also not involved in cooperative arrangements, although the high level of development of this industrial branch in both countries offers opportunities for specialization. Our organizations are interested, for example, in combines for harvesting peas and beans, and they would export motor-driven cultivators, combines for wheat, corn and sugar beets, and tractors. The coming period, then, is available to the partners to establish this type of cooperation as well and thereby to utilize the virtues and advantages of each of the two national industries.

It might be said in conclusion that cooperation between Yugoslav and Hungarian industry in machinebuilding is the most stable and reliable part of all business relations, but it certainly has not reached its end point, since there is still room--this has not been refuted--even in the sectors in which cooperation is now taking place, not to mention those in which it has not even begun as yet.

[3 Aug 83 p 2]

[Text] Czechoslovakia: Trade Too Conventional (IV)

Machinebuilding is the sector of industry in which trade between Yugoslavia and Czechoslovakia is rather large, but it also has one shortcoming--it is almost entirely in the form of conventional trade. There is very little industrial cooperation, which is amazing, since one might conclude on the basis of the structure and level of development of the two machinebuilding industries that there are conditions for both industrial cooperation and specialization. This shortcoming remains to be corrected by agreement among the partners, but at present it is worth saying that trade is abundant, diverse and successful.

Czechoslovak machinebuilding is among the most highly developed in the world: it produces about 360 types of machine tools alone, with an output of about 47,000 units a year. It is understandable, then, that Yugoslav machinebuilding is interested in cooperating as much as possible with this country. The long-term agreement on trade in goods and services covering the period 1981-1985 provides exports of about $110 million worth of machines and equipment from Yugoslavia to Czechoslovakia and imports of about $140 million. The most important export items are ships, machine tools, agricultural machines, textile machines and construction machines, railroad cars, household appliances and the like. Imports consist primarily of capital goods, and the most

important are power plants, sugar mills, equipment for steel mills, machines for the textile industry, machine tools, mining equipment, and trucks and cars.

In the years of this 5-year period which have passed trade has been even more successful than was envisaged: in 1982 alone Yugoslav exports reached $173 million and Czechoslovak exports $180 million. A similar development is expected this year as well, and the semiannual results largely confirm this.

As for cooperation in the field of machine tools, there has been an interesting development of trade over the last 3 years, including this year. In 1981 Yugoslav exports amounted to $11.5 million and its imports $17.4 million; in 1982 exports were $12.3 million and imports $18.7 million, and contracts concluded for 1983 amount to $20 million of exports and $18 million of imports. A similar development of cooperation is envisaged for the years after 1985, but somewhat more is expected in industrial cooperation and specialization in production, which would eliminate that shortcoming at least partially.

The motor industry is also a very important field of cooperation, but only in the form of trade, since attempts to establish industrial cooperation and specialization in production have so far been unsuccessful. But talks are still being conducted between Yugoslav and Czechoslovak enterprises on cooperation in the production of heavy "Tatra" trucks. The long-term agreement for the period 1981-1985 provides in any case that 7,500 automobiles and trucks are to be imported annually into our country, which is about $20 million in value terms. Yugoslav exports on the other hand are to be deliveries of automobiles and railroad car trucks, amounting to a total of about $26 million over the 5 years. Imports have taken place according to the schedule set forth, but things are not going so successfully with exports from our country, since solutions have not been found which adequately suit the trade partners.

In the case of building railroad cars the judgment also applies that cooperation has not been given the form of production, nor have things been exactly desirable with exports. On the other hand there is expected to be an increase in the trade of equipment for power facilities, mines, more machine tools, agricultural machines, construction machines and household appliances.

By way of conclusion we might say that machinebuilding is a very important area for economic cooperation between Yugoslavia and Czechoslovakia--in both volume and value, that it holds second place among the CEMA member countries after the Soviet Union, but ahead of the GDR, that it has been a favorable sign that in recent years Yugoslav exports have been increasing and coming closer to imports (assuming it remains so in the future), and that the proportional distribution of the trade is favorable, since it conforms to the pattern of output and capabilities for export.

It remains, then, for us to hope for changes in the nature of cooperation, for more up-to-date methods to be involved to a greater extent--industrial cooperation, joint ventures and specialization in production, as has been done with other trading partners. The talks which are now being conducted, let us hope, will bring about results in this direction. Aside from that, with slightly more than $350 million last year, machinebuilding accounts for over 20 percent

of total trade between the economies of Czechoslovakia and Yugoslavia, which is not an extremely high percentage. That is, the reasons we have referred to as the basis for the present success in trade should be taken as a demand for it to be still larger and more diverse.

Annual Exports of 2,000 Railroad Cars

The rail vehicle section of CEMA recently held a meeting in the GDR at which it discussed specialization and cooperation in the production of diesel and electric locomotives and railroad passenger and freight cars. On that occasion representatives of the ILV Business Community emphasized that Yugoslav manufacturers could provide as many as 2,000 freight cars a year for export. This proposal was accepted and was entered in the protocol.

The participants in the meeting also ironed out differences in an agreement on specialization and industrial cooperation in the production of parts and assemblies for diesel locomotives and railroad passenger and freight cars, on which the final word will be said in September by the Standing Commission for Cooperation in Machinebuilding Between Yugoslavia and the CEMA Countries. The Yugoslav delegation made a declaration of all domestic capabilities in the production of complete equipment and parts for these assortments. Aside from that, there was also discussion of scientific-technical cooperation between Yugoslavia and the CEMA countries in carrying out the rail vehicle program.

[5 Aug 83 p 4]

[Text] GDR: Quantity Above Quality (V)

One might add to the assertion that the quality of trade is not keeping up with development, that trade has not been keeping pace with development of Yugoslavia's machinebuilding or its capability of exporting and of cooperating on a more equal footing with the GDR's machinebuilding, which, as is well known, is one of the most advanced industrial countries and among the largest exporters of machines and equipment.

Up to now the periodic agreements on economic cooperation and especially commodity trade have almost taken it for granted that our economy must import more machines and equipment than it exports to the GDR, but in practice this difference has been even greater than set forth in the agreements. This especially applies to the makeup of trade, since there are few finished products in Yugoslav exports--machines and complete plant, but rather more parts, assemblies and subassemblies, components for installation and the like. Imports on the other hand consist almost entirely of machines, complete installations and other products at the highest level of manufacture. The traditional makeup, then, has been retained longer than it should have been, judging by the development of Yugoslav machinebuilding.

The Volume of Trade Is Increasing and Yugoslavia's Share Is Improving

In the 1976-1980 planning period trade in machinebuilding totaled $850.1 million, or 27.8 percent of total commodity trade between the two countries. Within this Yugoslav exports amounted to $297.6 million, or 19.9 percent of total exports, and the GDR's exports $552.5 million, or 35.6 percent. The 1:1.85 trade balance was considerably more favorable for the Yugoslav side than envisaged by the long-term agreement, which planned a ratio of 1:2.3, with a reservation, of course, concerning the structure and quality of trade.

The most important products which have been imported are machine tools, machines for the textile and printing industries, for the manufacture of plastics, agricultural equipment, equipment to mechanize office work, ships, and automobiles. Exports have been electrical equipment, machine tools, fittings, castings, office machines, equipment for the food processing industry, and medical, laboratory and technical equipment.

The agreement covering the period 1981-1985 called for a very large increase in the trade of machinebuilding to a total of $1,967.3 million, or 36.35 percent of total commodity trade. Yugoslav exports would have a share of $775.9 million in this, which would be 27.6 percent of total exports, while German exports would amount to $1,191.4 million or 45.1 percent of exports to our country. It is still tilted toward the foreign trading partner, but at a higher level, that is, with a larger share of the products of machinebuilding in general in the commodity trade between the two countries.

There have also been certain changes in the makeup of deliveries, which occurred on the basis of altered needs and also the exporting capabilities of the two partners. Thus Yugoslavia has in this period been importing in the first place power shovels for open-pit mining, and then installations and machines for the textile, leather and footwear industries, printing presses and machine tools, equipment to mechanize office work, equipment for the electrical industry, vehicles and the like. The following are envisaged for export: equipment for the fuel and power and chemical industries, machine tools, parts and assemblies for motor vehicles, railroad cars, agricultural machines, and so on. The balance between deliveries is 1:1.54.

The first 2 years of carrying out the 5-year program show, however, that the agreement is not being implemented, that performance of programs and plans is being impeded to a considerable extent.

Three Main Groups of Products

Machine tools are an important sector of trade: over the 5-year period 1981-1985 Yugoslav exports are supposed to amount to $53 million, as follows by years: $8, $9, $12, $12 and $12 million; and imports by years: $15, $15, $17, $18 and $19 million, respectively, for a total of $83 million. The balance of trade is to be 1:1.56. Converted to 1981 prices, in coming years exports from Yugoslavia over this period are increasing in value to more than $73 million, and exports from the GDR to $97 million.

Actual results, however, do not look so good: exports of machines amounted to only $5.5 million in 1981 and $5.7 million in 1982, and quite recently contracts for deliveries in 1983 amounted to only $5 million. Imports are going much better: $16.7 million in 1981, $18 in 1982, and $32 million already contracted for this year.

The motor industry is a sector which offers large potential for trade, but it has not been making the appropriate progress. The agreement for the 1981-1985 period provides that the GDR is to deliver to Yugoslavia 5,000 automobiles and 2,000 motorcycles a year and to import 1,000 automobiles. Yugoslav imports, according to available figures, have been in accordance with the agreement, but almost nothing is going in the opposite direction, since the trading partner is not accepting a single lot of vehicles. After several years of negotiations, a document was initialed last year on long-term cooperation between the "Crvena Zastava" Plants in Kragujevac and the IFA Combine in the GDR concerning mutual deliveries of homokinetic joints to be installed in "Zastava" vehicles intended for the GDR market. An alternative, however, emerged whereby instead of cars Yugoslavia would furnish equipment for a factory of the IFA Combine.

The export of Yugoslav railroad cars is also an interesting topic in what is in any case a very successful commodity trade between the two countries. The agreement called for exporting railroad cars every year in the amount of $4 million, but since 1981 there have not been any such exports, since the partners have said that they were meeting their needs with their own production. Thus this item was not even included in commodity lists for 1982.

Yugoslav producers are also interested in industrial cooperation, on which the GDR furnished the initiative. Cooperation would begin even before 1985 with the exchange of components in the annual amount of about $2.5 million, the Yugoslav side delivering windows, doors, seats and certain other parts, and the German side generators, temperature-regulating devices, shock absorbers, kolski slogovi [?] with disks, and other components. Incidentally, this year deliveries from our country of braking equipment components will amount to about $2.2 million, and this is supposed to continue in future years as well.

If trade in the products of machinebuilding is to benefit both partners, the interest and needs of each of them have to be respected, and consideration must also be given to prices, quality and delivery dates. As for the Yugoslav side, regardless of other difficulties, it has something to think about in that regard.

[9 Aug 83 p 4]

[Text] Poland: Industrial Cooperation Foreseen (VI)

Cooperation between Yugoslav and Polish machinebuilding is often taken as exemplary, with good reason. About 40 percent of total commodity trade comes precisely from this branch of industry, which is very satisfactory. It is also favorable that a large portion of trade within machinebuilding itself takes place through deliveries of products resulting from industrial

cooperation and specialization in production, much more than with some countries with which economic cooperation is in general on a larger scale. During the last 5-year period cooperation furnished 30 percent of total deliveries, and in the present one it is supposed to provide about 25 percent.

The value of trade in products of machinebuilding in 1983 alone is supposed to be $240 million under the program. This is a rather difficult task, since both countries are at the moment carrying out measures to restrict investments.

The makeup of trade in Yugoslavia's and Poland's machinebuilding is rather broad and rich. Most important in our country's exports are deliveries of automobiles and components manufactured through industrial cooperation, amounting to $26 million; then come buses, trucks and trailers amounting to about $7.5 million, construction and road machines for $5 million, medical equipment for another $5 million, which is also the amount planned for machine tools. Deliveries of complete plants are to reach a value of $8 million, and tractors and agricultural machines $18 million. The rest is made up of the products of electronics, the electrical equipment industry, and certain other machines and equipment are also envisaged.

Imports traditionally include complete plants (equipment for thermoelectric power plants, cement plants and mines) which are purchased on credit, and then automobiles and parts manufactured through industrial cooperation. This arrangement called for trade last year to be $100 million, but only about $40 million took place because of the unsuitable composition and other reasons on the Polish side.

In Yugoslav exports deliveries of buses have also been traditional. Several thousand of them were exported during the last 5-year period, but because of the weak linkage among domestic manufacturers and disunity in representation on the Polish market, there has been an essential shrinking of the opportunity to continue this in this medium-term period as well. It is a question of irregular and undependable supply of spare parts, but also the fact that the Polish partner has begun industrial cooperation with Hungary.

The specialized exchange of machines and agricultural equipment is encountering difficulties concerning products in which Yugoslav and Polish industry are strong, and those of tractors. We recall difficulties lasting several years: how would cooperation be carried out, what would the respective sides export and manufacture. Viewed objectively, a way out can be found only in augmentation of this cooperation and in establishment of cooperative relations in which a long-range determination would be made as to what the respective parties would make and export and in what quantities.

Much the same also applies to construction and road machines, which at present are still exchanged on the basis of purchase and sale. This form of cooperation, however, has become uncertain under the more difficult conditions in which the Polish economy, and indeed our own, find themselves, and the solution should again be sought in specialization in the production of primarily light and heavy bulldozers.

Development of fuel and energy facilities in our country has priority, but the importation of equipment has encountered difficulties, even when it comes to Poland. It would all be easier if the appropriate exports were provided for or if Yugoslav machinebuilding were involved in production. The partners would then be closer to their goal and to meeting needs on both sides.

In general the projected trade can be achieved this year only with efforts on both sides in performance of the obligations assumed. This year is also important for the trading partners in that it should not end by maintaining a reduced volume of trade, but opportunities and resources should be found within the year to maintain a level from which later it would not be difficult to make further progress.

[10 Aug 83 p 2]

[Text] Soviet Union: Little Industrial Cooperation (VII)

In the very large commodity trade between Yugoslavia and the Soviet Union machinebuilding occupies an important place. Over the 5-year period 1981-1985 total trade amounting to about $7.7 billion is envisaged, including the use of credit for Yugoslav purchases of equipment in the USSR. The most important items are power engineering equipment, ships, machine tools, products of the motor industry, and recently equipment for the food processing industry and petroleum industry. Cooperation in machinebuilding was one of the topics in talks during the visit of Soviet premier Tikhonov to Yugoslavia. A mutual desire was expressed at that time to pay appropriate attention to industrial cooperation and specialization in production in the field of machinebuilding.

Traditional Exports, But With Innovations

Among the most important deliveries of Yugoslav machinebuilding are parts of equipment for nuclear power stations in the amount of about $400 million over the 5-year period. In the opinion of Yugoslav manufacturers, the deliveries ought to be larger, but it has been left at this level for now. Over the 5 years shipbuilding is to export ships and equipment valued at about $1.6 billion, and this is undoubtedly a large obligation for that industry. Machine tools, amounting to over $410 million in the 5 years, radioelectronics nearly $550, and power engineering equipment with $246 million round out the list of the most important branches of machinebuilding exporting to the Soviet Union. Metallurgical equipment is holding to the 1980 volume in this 5-year period--about 10,500 tons of products, but this is relatively modest if it is compared to the capabilities of the rather highly developed production capacities.

In this 5-year period there has been an essential increase in exports of equipment for light industry, which is in conformity with the Soviet policy of equipping agriculture and the food processing industry. During the exhibition "Agroindustrial Complex--Yugoslavia 83" in Moscow the visitors paid particular attention and shed particular interest in precisely that section which surveyed Yugoslav advances and export capabilities in this area. Trading partners from the USSR are interested in complete lines for processing fruit and vegetables, in bakeries, and so on. It is now up to the manufacturers (and up

to our side in general) to organize so as to satisfy as much as possible the requirements and demands of the customer, who over the 1981-1985 period alone has envisaged imports exceeding $810 million from our country.

Equipment for the petroleum and chemical industries should bring Yugoslavia an income of about $1 billion over the 5 years, which is a manifold increase over the previous 5-year period. Mostly steel fittings will be delivered, and that about 30,000 tons a year.

One can conclude that during this 5-year period the makeup of Yugoslav deliveries of the products of machinebuilding has changed--there are fewer products from heavy machinebuilding and more from the manufacturing industry, and then more electronics and communications equipment.

Trade in machine tools has been successful: in 1982 alone exports from Yugoslavia amounted to about $150 million, which is the amount contracted for in 1983 as well. Industrial cooperation and specialization in production of programming devices has been established; "Prva Iskra" of Belgrade (Baric) is delivering high-speed spindles to be used as components in Soviet machines. And then the "Tito" Metal Plants in Skoplje and "Ivo Lola Ribar" in Belgrade (Zeleznik) are also delivering certain important parts. Yugoslav manufacturers feel that industrial cooperation could be larger, especially in the production of heavy machine tools which Soviet factories produce but which are not exported to our country.

Railroad car manufacturers in our country are interested in exporting about 1,000 cars of various kinds--passenger, dining and freight--to the USSR. This is only in the stage of talks.

Imports Most Highly Developed in the Motor Industry

On the whole Yugoslav imports of the products of machinebuilding are smaller than exports to the Soviet Union, although judging by development of that branch of industry in this country, that ought not to be the case. The largest trade takes place in the sector of motor vehicles, in which industrial cooperation and specialization have also developed.

One of the most important arrangements is industrial cooperation between the "Crvena Zastava" Plants in Kragujevac and the VAZ Plant in the USSR in the production of automobiles: the Kragujevac manufacturer is delivering components for "Lada" automobiles in the amount of about $60 million a year, and is taking 17,000 finished vehicles. Industrial cooperation has also been successful in the manufacturing of commercial vehicles, in which the Yugoslav side is delivering 25,000 complete braking systems worth $344 million, and is importing 9,150 chassis and spare parts for Kamaz vehicles. Deliveries of parts for assembly of "Moskvich" vehicles is also continuing. Industrial cooperation in the production of walking excavators, in which the Yugoslav participant is delivering sets of assemblies worth $58 million, and is taking finished excavators. Last year and this year production was organized and trade amounted to $40 million on each side, but attainment of the full number of products is envisaged for 1984.

In general Yugoslav and Soviet machinebuilding have not yet developed enough industrial cooperation and specialization in production, which is out of line with total trade, which is very large and diverse; they represent only 4.5 percent of the trade. These so-called higher forms of cooperation would, however, create still broader and more lasting and long-term relations between the two industries. Since negotiations of planning authorities of the two countries are now under way concerning cooperation for the next 5-year period, it remains to be seen whether there will be any significant innovations in this area. The prospects for cooperation in the field of machinebuilding up to the end of the decade will be the topic of our next installment.

[12 Aug 83 p 3]

[Text] Soviet Union: Enriched Yugoslav Offering (VIII)

What will be happening in trade in the field of machinebuilding between Yugoslavia and the Soviet Union up to the year 1985 is well known. Negotiations are already being conducted--at present they are being conducted by the planning agencies of the two countries--concerning cooperation and trade up to the year 1990. In certain sectors further steps need to be made even now for progress up to the end of the century. This branch of industry has been a subject of particular interest on the part of the highest government officials, but we still do not have a sufficient idea of what will be contracted for. At present one can speak about what the Yugoslav economy is interested in, that is, what it can and wishes to export and in what areas it would like to broaden or establish cooperation with Soviet machinebuilding. Past years have shown that the field of activity is rather broad and that there is untapped potential.

Into Negotiations With New Products

Yugoslav manufacturers of machine tools have up to now achieved evident success, and they have something to say in cooperation with foreign trading partners: they are strong exporters, but these machines are also imported to a fairly great extent, and they are also important in international industrial cooperation. In collaboration with USSR machinebuilding well-established projects will be continued up to the end of this decade on the basis of development of the production of machine tools with numeric control, special multioperation machines and robotics. The following products are envisaged for the market of the Soviet Union: universal lathes, single-spindle and multiple-spindle automatic lathes, lathes with numeric control, console milling machines with and without numeric control, miller-drill presses with numeric control, multipurpose machine tools, special and combined grinders, presses, machines for bending sheet and other machines for working metal, tools, and woodworking machines.

This represents a good basis for an ever richer trade, but also for development of more up-to-date forms of cooperation through joint production--industrial cooperation, specialization and engineering.

Work organizations producing transportation equipment are preparing new articles for the foreign trading partner as the result of research and improvement, along with establishment of their own new technical features in the design and operation of all types of internal combustion piston engines. In the case of diesel engines, for example, research has been directed toward increasing the level of utilization of capacity and reducing fuel consumption, strengthening the power of the motor by increasing the displacement, using turbocharging and multistage electrohydraulic power transmission.

In the development of the motor vehicle industry they are counting on progress in solving the problems of fuel and lubricant consumption, power and weight, maintenance costs, adaptation to climatic conditions, reduction of environmental pollution, noise reduction, and so on. These are all technical innovations, but they can be a subject for industrial cooperation among trading partners who already have advanced stages of production and development.

Responding to the Soviet Food Program

The production of railroad cars and railroad transportation equipment in general is developing in Yugoslavia toward improvement of power units and cars for various purposes and equipment for electric and diesel trains, regulation and control, all the way to rails and other materials. The Yugoslav producers have achieved considerable success in designs and technical features such as the four-axle thyristor locomotive or the voltage of 25 kv, 50 Hz and a continuous force of 2,400 kw. The locomotive is a first-class technical achievement in our own country and outside. It can undoubtedly be of interest to foreign customers and manufacturers, among them the Soviets. In this area organization of the production of diesel switching locomotives under 44 kw and the more powerful ones--up to 1,400 kw--has particular importance.

Yugoslav railroad car manufacturers have put several types of these cars into production--tank cars for liquids and gases, various chemical substances and solid freight. Research is continuing in order to put special-purpose cars and containers for general and special freight into production. Efforts to innovate passenger cars and sleeping cars are pursuing the direction of providing greater comfort and speeds up to 170 km/hr.

One of the most important fields of machinebuilding in which the abilities of the Yugoslav industry should be manifested is equipment for light industry, especially the food manufacturing industry, for which the needs of the Soviet economy are increasing. It is well known that that country has extremely large programs for development of the agroindustrial complex, including the building of processing plants, and Yugoslav industry is manufacturing equipment for them. After the exhibition of Yugoslav firms just completed in Moscow the producers of this type of equipment, including equipment for the chemical industry, irrigation and the like, have a large opportunity and obligation to meet the requirements of customers to the greatest possible extent.

[16 Aug 83 p 4]

[Text] Bulgaria: Greater Impetus Needed (IX)

Yugoslav-Bulgarian economic cooperation is still quite a bit below what is expected of it and what the trading partners provide for and note down during negotiations and the conclusion of protocols. That has also been the case with cooperation in machinebuilding. Over the 5-year period 1981-1985 Yugoslavia was to export $372 million worth of products of machinebuilding and was to import $360 million worth from Bulgaria, representing 27 percent of total exports and 26 percent of imports from that country.

Even in 1981 these projections were far from being realized, since Yugoslav exports of the products of machinebuilding amounted to only $20.1 million, and imports $9.5 million. The next year trade was somewhat better--$25.8 million of exports and $14.8 million of imports, but it is still very modest compared to the plans and capabilities. This part of trade has even been weaker than commodity trade between the two countries in general, which in those 2 years declined. The protocol envisaged for 1983 that total commodity trade would amount to $185 million in each direction, in which products of machinebuilding were supposed to have a share of about 30 percent. The results of the first 6 months are once again such that they do not suggest that the annual program can be fulfilled, although it is assuming that the second half of the year could bring an improvement over the first. Total Yugoslav exports to Bulgaria have reached $45.1 million, and imports from that country $47.2 million (according to the figures of the Foreign Trade Institute), in which the share of products of machinebuilding have remained in roughly the same proportion as in the previous 2 years.

This year, to be sure, a new type of cooperation has begun in machinebuilding as the result of prior talks and agreements among the trading partners: in May the "Crvena Zastava" Plants in Kragujevac delivered 10,000 automobiles to a customer in Bulgaria. The arrangement was conceived and concluded in the form of industrial cooperation in which the Yugoslav organization is to deliver finished automobiles, and the Bulgarian organization sheet and certain parts. The transaction has not as a whole been going as conceived as yet, but presumably the trading partners will reach still more detailed agreement and continue the trade that was begun successfully. This arrangement would raise overall cooperation to a higher level, which is obviously necessary in view of the fact that industrial cooperation has a share of only about 5 percent. This is certainly very modest and objectively beneath the capabilities of the two economies, which they are undoubtedly quite aware of.

Although small in volume, it is worth mentioning specialization in production over the last several years by INEKS-LIFAM of Stara Pazova with a trading partner from Bulgaria: sugar beet digging lines are being delivered, and silage combines are being imported from Bulgaria. We have learned that this year there have been objections to the quality of the products from Stara Pazova, but this has been corrected. The value of deliveries is $2 million a year in each direction.

Industrial cooperation between "Milan Blagojevic" in Smederevo and "Elektroimpeks" in Sofia is rather small in volume, but it should be nurtured and expanded as opportunities allow. That is, the Smederevo producer is manufacturing electric hot plates and is taking wire and some other components from a trading partner in Bulgaria. The value of trade is $200,000 a year in each direction.

Though small in volume and value, industrial cooperation is also important between EI [Electronic Industry] in Nis with a related enterprise in Bulgaria in the field of radio equipment: EI Nis is delivering radios, hi-fi stereos, capacitors, ferrites, electroacoustic equipment, and is importing components and parts. This industrial cooperation could be quite interesting to both trading partners should it expand in volume and composition, which has been announced for several years by both partners.

This year the first two catamarans were delivered from our country to carry automobiles; they were built in Apatin and Macvanska Mitrovica, one of them the largest ever built in our country. This project could continue and expand judging by the interest the Bulgarian side is showing in navigation on the Danube. So far an initial agreement has been concluded for cooperation up to 1990, but the quantities and values have not been given. It remains to be seen how the trading partners will agree in the future.

In shipbuilding, incidentally, cooperation can develop through the repair of Bulgarian vessels, along with deliveries of certain steel fabrications which would represent intermediate products. "Viktor Lenac" of Rijeka has made an interesting offer to build a platform for offshore explorations for Bulgaria if the trading partner supplies the capital, which would greatly enliven and enrich this type of trade.

7045
CSO: 2800/451

EMBRYO TRANSPLANT EXPERIMENTS IN SHEEP, CATTLE

Tirana BASHKIMI in Albanian 31 Jul 83 p 3

[Article by Skender Prifti, Agim Muho, from the Institute for Livestock Research: "Embryo Transplants"]

[Excerpts] Recently there have been experiments on the transplanting of animal embryos in Albania. A joint study of the process was made by specialists from the Institute for Livestock Research, its subordinate units in Shkoder and Korce, the Faculty of Veterinary Medicine and the Kamze Agricultural Enterprise. The results obtained so far have been encouraging. The first embryo transplants were performed on sheep and as a result of persistent work it has been possible to produce the first lambs from the transplanted embryos, resolving all aspects of this technology for transplanting sheep embryos.

The aim is to use this method for the transplanting of cattle embryos where the interest is greater. At first, this process involved surgery. At present, along with the surgical method for transplanting cattle embryos, which has been fully mastered, work is being done with special equipment which eliminates surgery, both for removing the embryos and for transplanting them.

Specialists have a great interest in this process and the demands of the economy are great. In addition to the experiments which are being carried out this year, last year, synchronism was achieved in 90 percent of the 150 cows and heifers on the "Laramane" and "Sukth" breeds, through the use of hormonal treatments. After general insemination (72 and 96 hours from the last treatment) fertilization was achieved in 96 percent of the cattle treated. Hormonal treatments of cows by this methods, over a long period, have resulted in the fact that 93 percent of the cows remained pregnant.

Superovulation is being successfully utilized in small livestock to increase the number of lambs born to each sheep. As a result of this treatment with the serum of pregnant mares, it has been possible to get 130-150 lambs from 100 sheep. This year, steps have been taken to treat about 5,000 small livestock and during the coming year, a larger number of animals will be treated, especially in units specializing in livestock raising, and in the intensified livestock-raising program. Soon the transplanting of embryos will be put into practice in our intensified livestock-raising program and will be of assistance in accelerating the pace of the improvement of breeds and in increasing livestock production.

CSO: 2100/67

NATIONAL ECONOMIC PROBLEMS SUMMARIZED

Stuttgart OSTEUROPA in German Jul 83, pp 530-538

[Article by Jiri Kosta: "The Czechoslovak Economy on the Skids"]

[Text] "As far as the satisfaction of the population's material and cultural needs is concerned, we want--in line with the national economy's overall development--to secure the living standard we have attained and, to the extent that we have created the necessary prerequisites for that, to improve it qualitatively." With this euphemistic phrase, Czechoslovak Prime Minister Strougal in April 1981 (RUDE PRAVO, 8 April 1981) hinted at the crisis phenomena and growing supply problems in his country which became noticeable even then. In the meantime, however, the stagnation of the real income of the Czechs and Slovaks, which had already been going on since 1978, had not been overcome in any way whatsoever. And in the plan fulfillment report from the Statistical Office for the year 1982, it says: "In 1982, it was possible to preserve the living standard which had been attained." But: Every housewife in Prague and Bratislava [Pressburg] knows that, with roughly the same consumer goods supply, the quality and the assortment of the demand are less and less up to standard.

A comparison of the data for 1975 and 1980 of course does give us the impression that the lifestyle of the citizens developed rather favorably during the second half of the 1970's: A price rise of allegedly 10 percent supposedly was counterbalanced by an increase in the money income amounting to 15 percent. But, at the beginning of the 1980's, this rosy picture would hardly have seemed to be true since the index of retail prices underevaluates the actual inflation rate of the Czechoslovak national economy. A price rise on so-called new, qualitatively supposedly better commodities is never reflected in the price index.

In the most recent past, the supply situation has become more and more difficult. Further price rises over the past 3 years came not only in industrial consumer goods, but also in coal, electric power, and gas with a price hike of about 16 percent; among food, it was especially meat whose prices went up 46 percent (including beef which went up 70 percent). Other food items, such as potatoes, rice, coffee, chocolate, and alcoholic beverages, as well as rates for postage stamps, telephone, and other services were raised in succession. The annual money income increase, which was shown at about 3-4 percent, was by no means able to compensate for the partly open and partly

hidden price rises. If moreover we consider the chronic mistakes in producing items that are not in demand--something which is expressed in inventories that simply will not sell--then the situation boils down simply to this: The living standard of the Czechoslovak population has declined over the past 3 years.

Table 1. Growth Indicators of the Czechoslovak National Economy

	Average Annual Growth Rates			
	1971-1975	1976-1980	1981	1982
National Income, Produced	5.7	3.7	-0.4	-1.0*
Industry, Gross Output	6.7	4.5	2.1	1.0
Construction Output	8.4	6.8	-1.8	-3.7
Agricultural Output	2.6	1.8	-2.5	1.1

Source: Statistical Yearbooks of the CSSR [Czechoslovak Socialist Republic], Reports of the Federated Statistical Office for 1982.--*--Estimated by the Vienna Institute of International Economic Comparisons.

The rapid decline of this industrial country--once upon a time comparable to the economic development level of other Central and Western European countries--can be documented with the help of many different indicators which can be taken from official government statistics as well as from a series of articles in the Czechoslovak specialized press. First of all we can observe that the growth rates achieved in the national output and its most important components--that is, industrial, construction, and farm output--declined during the second half of the 1970's (see Table 1). In 1980 and 1981 we can even detect a growth stagnation along with a decline in the development of agriculture and in construction investments. The year 1982 likewise did not bring any positive turn for the better. It almost goes without saying that the plan targets were not reached during the last 3 years.

Table 2. Efficiency Indicators of the Czechoslovak National Economy

	Average Annual Growth Rates	
	1971-1975	1976-1980
Labor Productivity	+4.6	+2.5
Ratio of Investment to Production Volume	-0.1	+2.5
Ratio of Material to Production Volume	-0.02	0.0
Ratio of Energy to Production Volume	-2.6	-1.3

Source: POLITICKA EKONOMIE, 30, 1982

Labor Productivity = National Product Per Employee (in Sectors Produced)
Ratio of Investment to Production Volume = Investment Capital Per (Produced Unit of) National Product
(Capital Coefficient)
Ratio of Material Use to Production Volume = Material Per (Produced Unit of) National Product
Ratio of Energy to Production Volume = Energy Per (Produced Unit of) National Product

There is one thing that Czechoslovak economic writers complain about particularly and that is that, for every additionally produced unit of the national product, an above-proportional rising use of resources is necessary: Increasingly, more and more workers, more plants and equipment, and, last but not least, more raw materials and semi-finished products must be used (see Table 2). Only the specific energy consumption went down somewhat during the past decade but in this case this apparently favorable development of the CSSR national economy--as remains to be shown--must be viewed in relative terms inasmuch as far more energy is being consumed here for the production of comparable products than in Western industrial countries.

A slogan which already during the early 1960's characterized the reform discussions at that time can once again be found in many comments by Czechoslovak economists. The important thing now supposedly--according to the old but new slogan--is the transition "from extensive to intensive growth." As if extensive growth sources--such as labor force reserves, raw material deposits, and investment potentials--had not already been most extensively exhausted long before the 1970's!

Verbal protestations and appeals obviously do not help. There is a series of barriers in the way of an intensification of the economic development process in Czechoslovakia, that is to say, in the way of an effectment implementation of technological and organization innovations which alone would facilitate the more economical use of resources that are in short supply to begin with. These bottlenecks in particular include the following sectors: The raw material and energy sector; foreign trade; the labor force potential; the investment sector; agriculture; and, last but not least, in a more general sense, the entire system of planning and managing the Czechoslovak national economy.

Shortage of Raw Materials and Energy

Let us start with the first hurdle which so far has hindered any upswing, that is to say, the growing shortage of raw materials and energy. The Czechoslovak raw material base is relatively limited: The Soviet Union controls precious uranium and the once upon a time vast brown coal deposits have been mostly exhausted; other raw materials are either present only in very small amounts or they play only a secondary role in the existing industrial structure. Specifically, the following must be remarked regarding the raw material and energy obstacle.

For more than 2 decades, Czechoslovak planners have been guided more by imports of Soviet petroleum whose share out of the primary energy resources was to be raised gradually. Thus the volume of petroleum imports from the Soviet Union during the first half of the 1970's, compared to the prior 5-year term, went up by more than 60 percent and, during the next 5 years, it rose another 35 percent. In 1980, the high point of Soviet exports had been reached with 19.2 million tons of petroleum. Since then the Soviet Union has no longer been in a position to increase its oil exports to the other CEMA countries because the domestic petroleum extraction growth rates are declining heavily. At the same time there is, on the one hand, an increase in domestic requirements whereas on the other hand the Soviet Union needs considerable quantities to earn foreign exchange in the West. The rising costs of this raw material, which is decisive for the energy industry and for the chemical industry, likewise necessitate a slowdown on the Czechoslovak imports which rose until 1980. To be sure, Soviet oil prices rose somewhat more slowly than OPEC prices because, in trade within the CEMA, deliveries since 1975 are being calculated on the basis of the particular 5-year annual averages. At any rate, Soviet petroleum prices rose 400 percent between 1975 and 1980. In 1980 and 1981, the Czechoslovak import enterprise paid the Soviet exporter even more than would be in keeping with present world market prices because the earlier quasi losses were made up due to the agreement on 5-year averages in favor of the Soviet side.

The gigantic quantities of North Bohemian brown coal, which were extracted in strip mines already in the past, necessitated radical interference in the settlement structure and in nature as such; they made much trouble for the inhabitants of what used to be a rich border area in northern and partly also western Bohemia. Only now is a start being made toward becoming aware of damage resulting from coal mining and from the power plants as well as the large chemical plants which process this raw material--damage which cannot be made good again. The destroyed forests, the contaminated soil, and the destroyed settlement structure however could hardly ever be restored again. Moreover, there is one thing that is certain now: Coal mining is becoming more and more expensive and cannot be continued in the long run because the resources will gradually run out.

One contemplated solution consists in a crash program for the expansion of nuclear energy. So far, of course, the newly-erected capacities have been lagging behind the plan targets. Not perhaps because nuclear power opponents forced construction to be suspended. Such citizen initiatives are unthinkable under the prevailing power conditions in the Soviet sphere of control although there would be sufficient grounds in view of the backward and safety-threatening power plant technologies. The hesitant commissioning of atomic power plants is a consequence of inadequate technology production preparation. Nevertheless, as has been asserted in recent times, instead of a share of only 6 percent in 1980, one-third of the electric power is already supposed to be supplied by nuclear power plants 10 years later (I. Bobak, "Palivove a energeticke zakladne," HOSPODARSKE NOVINY, 45, 1982, p 7).

Another way which is suppposed to correct the energy bottleneck consists in the more economical use of primary resources. Waste of energy raw materials so far was not so much due to the very poor attitude on the part of the private households or the spreading use of motor vehicles but rather to structural shortcomings in industrial production. Comparative statistics, which are given in economics magazines, are indeed alarming. In this connection we might give two examples. The annual per-capita output of electric power in Czechoslovakia is 4,800 kwh and that is only a little bit less than that of Great Britain (which is about 5,000 kwh); but the consumption of fuels per unit of output (for example, 1 ton of raw material) in this production context was 20 percent higher in Czechoslovakia. Furthermore: The use of electric energy, related to the national output produced, is almost twice as high in Czechoslovakia as in the West's technologically advanced countries. In spite of all appeals to economize however one cannot so far detect a turn toward the better according to statements by Czechoslovak experts.

By the way, problems in other industrial raw materials are similar. The growing scarcity of domestic ore deposits, expensive imports of metals, the lack of economical handling in their processing--all of these are facts which again and again are emphasized in the specialized and daily press. Toward the end of the 1940's, Czechoslovak experts had already demanded in vain that it would be better to produce cars and other highly-processed products of the metal-working industry rather than carrying out the heavy machine-building production programs which the Soviet Union had pushed through; today, once again, it will hardly be possible to fulfill the justified demand by a famous Czechslovak economist for a priority development of electronics and instrument production so long as the CEMA obligations force the country into a massive buildup of "metal-consuming" equipment for atomic power plants and other large systems (V. Komarek, "Vsdyt' smylem vyroby je spotreba," HOSPODARSKE NOVINY, 23, 1982, p 8f.). As in the case of energy consumption, the use of metals, construction materials, and other raw materials will also continue to show the effects of waste which are inherent in the system itself--if the quantitatively oriented planning effort is further pursued.

Foreign Trade--Bottleneck

Extremely rising prices for raw material imports were counterbalanced during the 1970's in foreign trade by only very moderately rising prices on finished-goods exports--and foreign trade is of course the Czechoslovak national economy's second bottleneck area. As in the case of other industrial countries that are poor in raw materials, Czechoslovakia was faced with increasingly unfavorable exchange conditions. In the course of a decade, the ratio between import prices and export prices deteriorated by 20 percent. In other words: for the same import value, the country must now export one-fifth more than in the past.

Under existing conditions of growing raw material shortages, unfavorable price developments, and the technology gap compared to foreign countries (which requires a certain measure of modern technology imports from the West), a balance of trade deficit has developed both in dealing with the Eastern partners and with the Western industrial countries and that deficit has caused further

further problems. The cumulative negative balance for the period of 1970-1980 in dealing with the West came to more than $5 billion; the balance of trade with the Soviet Union was even until 1974; but between 1975 and 1979 a deficit also accumulated here in the amount of more than $800 million.

Having learned from the frightening example of Poland, the Czechoslovak leadership did not allow indebtedness to grow that badly. With a foreign debt of $3.2 billion in inconvertible currencies in 1981, the country to be sure did come out better than most of the other smaller CEMA countries. But this result was not achieved due to the desired increase in exports but rather by cutting back on imports; and this again contributed to the failure to reach the planned growth rate over the past 3 years. In 1982, the foreign trade volume with the Eastern partner countries grew by 14 percent while it declined with the West. Integration into the East Bloc thus is making "progress" in that respect. But it is doubtful whether that is good for the technological level and efficiency of the Czechoslovak economy.

Declining Manpower Potential

The third obstacle to a revival of the upswing consists in the declining Czechoslovak manpower potential. First of all, the share of the population of employable age is going down; besides, in view of the comparatively low production level, manpower employment is inefficient as such. The production facilities are in many cases overstaffed, administrative personnel constitute a "hydrocephalous structure" and are completely sterile. Various requirements for reducing the administrative machinery are in conflict with the demands of the central-administrative [illegible words in photostat].

Not only is the earning share of men of employable age extremely high but the same is also true of the degree of employment of women and retirees; there is therefore only one option left: To save manpower through a productivity increase which must be based on technical and organizational progress. But that again runs into the barriers of the centralized planning model.

Invement Problem Area

The problem area of investments is of a somewhat different nature than the raw material, foreign trade, and manpower obstacle. Investment activity is a prior requirement for current and above all future growth. Now, one cannot maintain that the investment share of the Czechoslovak national economy was too low in the past. To that extent, its current decline--which necessarily springs from the fact that private consumption is currently getting priority--should not represent a barrier to an appropriate growth rate in the most recent past. But the crux of the matter does not reside in the excessively low investment volume of yesterday but rather in the unsatisfactory efficiency of the investment funds used. What do the corresponding statistics look like? In 1966-1970 (and here the first 3 years were taken up by the economic reform at that time) the capital assets needed for one additional unit of the national product on the annual average dropped 2.5 percent and for 1971-1976 only 0.1 percent and, from 1977 until 1980, it even rose on an annual average of 2.5

percent. In other words: The profitability of investments declined continually.

Construction investments developed particularly unfavorably. The completion of structures and buildings--a long-known Achilles heel of centralized directive planning--continued to leave much to be desired and the plan targets in recent times were never met. Equipment investments, which likewise were not completed by the required deadlines, moreover did not in any way whatsoever attain the desired technological standards. Too much money flowed into the armament sector and--as we said before--into Czechoslovak heavy machine-building which was pushed by the Soviets.

The investment construction problems mentioned are of course given by name but the causes are described only in a vague and half-hearted manner. Thus it says in a technical journal that many of the difficulties supposedly are "objectively" determined: For example, the extraction of raw materials in remote regions and unfavorable locations, the growing ecological costs, the required structural change. Besides that, there are "subjective" shortcomings to be reported which are to be found supposedly on the organizational level (A. Belovic, "Tendencie vyoja ekomonickej efekitvnosti investicii krajin RVHP," POLITICKA EKONOMIE, 11, 1982, p 1165). The real reasons for the shortcomings in the investment sector however are to be found first of all in the Soviet investment demands which--transmitted via the CEMA--are being forced upon the Czechoslovak leadership for decades on end, and, furthermore, in the inability of the bureaucratic planning system to use investment funds efficiently.

Agricultural Sector--Problem Child

There is another, always recurring problem child of Eastern European party leaderships which in the most recent past once again has burdened the Czechoslovak economy, that is to say, the agricultural sector. Since the late 1960's and down to the present, agricultural growth rates have been declining (5-year averages: 1966-1970, 4.9 percent; 1970-1975, 2.7 percent; 1976-1980, 1.8 percent; 1981 compared to the prior year, down 2.5 percent). Just how unreliable the official data are already emerges in the light of the fact that the declining development of agricultural production for 1981 is listed in the "branch statistics" with down 2.5 percent (See Table 1) and in the "gross national product calculation" with down 2.0 percent and in the "national income calculation" with down 18.8 percent (!)("Statistisches Jahrbuch der CSSR," 1982, p 272, agriculture branch statistics, p 147, gross national product calculation, p 148, national income calculation).

These failures can also be illustrated by the following international comparison. During the period from 1976 until 1980, the average per-hectare yield for grain in the CSSR was 3.84 tons whereas during the same period of time the yields in three other countries producing under similar geographic conditions were considerably higher: In the FRG, 4.23 tons, in Austria, 4.21 tons, and in Switzerland, 4.37 tons. Where must we look for the main causes of this unfavorable trend in Czechoslovak agricultural production?

Bad weather which is as usual emphasized by official propaganda might have played a certain role some years but it was not the decisive cause for the failures and the results which fell far below the plan targets. Instead, recentralization and administrative concentration in agriculture promoted the motivations of the cooperative farmers and the workers on the state farms just as little as the restrictions on their private farms. A Slovak official commented critically on the administratively pushed "vertical integration" of agriculture, production of the means of production, and the essential foods industry which, by means of direct relations between agricultural and industrial enterprises, is to be replaced with the help of economic incentives (L. Posa, "Efekivnost' vertikalnej integracie v agrokomplexe," HOSPODARSKE NOVINY, 32, 1982, p 3). As far as concentration is concerned, the average agricultural utilization area of the state farms grew as a result of their combination from 4,265 ha in 1970 to 7,706 ha in 1978, while the surface area of agricultural producer cooperatives during the same span of time rose from 638 ha to 2,426 ha. Finally, the private farm plot of agricultural employees on the average shrank from 0.42 ha in 1970 down to 0.20 ha in 1978.

There are also complaints about supply shortages in the agricultural sector which is not getting enough production equipment although quite a few shipments--such as mineral fertilizer--in purely quantitative terms have already reached the level of Western agriculture. The mistakes instead have to do with inadequate quality and specialization, for example, in farm machinery and vehicles or missing spare parts.

The weaknesses in the government's management system for agriculture are to be counteracted since early 1982 by means of new measures. Less obligatory targets, prices which are supposed to be in keeping with the shortages of production equipment and finished products, wages which will constitute a more effective incentive--those are the main elements of these reform attempts. Nevertheless, the grain harvest again did not reach the target figures in 1982 either, as indicated by the latest statistics. According to the plan fulfillment report, agricultural gross output in 1982 compared to the output level of 1981 went up only 1.1 percent (HOSPODARSKE NOVINY, 7, 1983, special supplement, p 5). Once again, the weather was supposed to have been bad in some regions. But at the same time it was admitted that the new measures were communicated to the agricultural enterprises neither at the right time, nor in keeping with the regulations. In other words, it was impossible for a motivation surge to prevail as had been the case in the reform of 1965.

Centralized Planning Model--Overlapping Barrier

The Soviet-type centralized planning model--as pointed up by the problems in the areas of raw material supply, foreign trade, manpower utilization, investments, and, last but not least, agriculture--can be described as the underlying and overlapping barrier which works against a recovery process in the Czechoslovak national economy. A year earlier than in the agricultural sector, a so-called "Catalog of Measures of the System of Planned Management of the National Economy after 1980" was approved in industry and in the construction industry and it had been preceded by a 3-year "experiment" in about 150

enterprises. The only half-hearted reform element contained a reduction of the mandatory plan targets, increased utilization of money instruments, such as prices, taxes, loans, and finally earning incentives, such as greater wage differentiation, profit-sharing bonuses, etc. At the same time however some of the basic points in the mandatory quantity planning directive were preserved so that the decentralized management instruments are running into certain limitations. Another problem consists in the fact that even the modern beginnings toward an economic reform are not always equally supported by a segment of the economic bureaucracy on all levels (in the central planning apparatus, in the branch ministry, and in the regional authorities and, last but not least, on the enterprise level. Here we must realize the presence of partly consciously conservative attitudes on the part of the apparatuses and, partly also, their inability to act independently.

In view of the growing functional shortcomings, will now the economic wing of the party elite around Strougal and Ler be more in a position to push through the contemplated decentralization measures or will perhaps even the beginning learning process lead to the drafting of a more far-reaching reform concept, as has been hinted at here and there among Prague economists? During the first few months of 1983, there were hardly any indications as to any such change. "More rational price relations"--in plain language: A rise in raw material prices--and a somewhat simplified enterprise sales system--these swallows are too small to make a summer.

More than 5 years ago, I described the prospects of a renewal of the Czechoslovak reform movement as follows:

"Czechoslovak economic policy during the late 1970's is still characterized by the relationship of tension between the economic growth and efficiency requirements, on the one hand, and the political control interests of the rulers, on the other hand. While economic effectiveness and decentralization demand flexibility and openness in foreign trade, the maintenance of the power monopoly of the civil service bureaucracy still commands centralized-authoritarian decision-making structures and a certain isolation of the domestic economy from the outside world. Just exactly which tendency will gain the upper hand will depend on the interplay of domestic-trade and foreign-trade factors whose influence is very difficult to estimate in detail (J. Kosta, "Abriss der sozialoekonomischen Entwicklung der Tschechoslowakei [Outline of Social-Economic Development of Czechoslovakia] 1945-1977, Frankfurt a.M., 1978, p 1980).

In my opinion, this diagnosis is still correct today. We might perhaps only have to add one thing: The growing economic difficulties in all countries of the East Bloc, including the USSR itself, are probably the main cause of the fact that the relatively successful Hungarian Free-Enterprise-Oriented Reform Model has been tolerated by the Soviet leadership. It is more than uncertain as to whether Andropov's policy could encourage the reform-oriented segments of the political decision-makers in Czechoslovakia to push ahead toward the Hungarian concepts at least as a beginning. If such a line should prevail--something which for the time being is unlikely--then this would have to be interpreted as a first positive step which--inadequate as it might be--

could assure Czechoslovak citizens at least of better supplies and somewhat more in the way of decision-making leeway.

BIBLIOGRAPHY

Jiri Kosta, "Abriss der sozialoekonomischen Entwicklung der Tschechoslowakei 1945-1975," Frankfurt a.M 1978.

Jiri Kosta, Aims and methods of economic policy in Czechoslovakia," 1970-1978 "The East European Economies in the 1970's," edited by A. Nove, H.-H. Hoehmann, G. Seidenstecher, London, 1982.

Friedrich Levcik, Czechoslovakia: Economic Performance in the Post-Reform Period and Prospects for the 1980's in: East European Economic Assessment, Part 1, Washington, 1981.

Maria Lodahl: "Die Wirtschaft im RGW 1981 bis 1985" [The Economy in the CEMA, 1981-1985], Czechoslovakia, Hessian State Center for Political Education, May 1982.

HOSPODARSKE NOVINY (weekly magazine); PLANOVANE HOSPODARSTVI (monthly magazine), POLITICKA EKONOMIE (monthly magazine, volumes 1979-1982).

5058
CSO: 2300/379

BIOGAS SEEN AS POSSIBLE SUBSTITUTE FOR CONVENTIONAL FUELS

East Berlin WASSERWIRTSCHAFT-WASSERTECHNIK in German Vol 33 No 7, Jul 83 pp 223-225

[Article by Dr Dieter Bergmann and Rainer Noack, engineers: "Liquidation of Biogas--a Possibility for the Substitution of Conventional Fuels"]

[Text] A scarcity of raw materials and accessory materials together with the concomitant increase in cost inevitably results in an intensive search for alternative solutions. If price development in the capitalist oil market is viewed from this perspective, then every alternative that arises to relieve the primary energy balance must be seriously checked. In 1973, for example, in the capitalist oil market a barrel of oil cost $40, in 1974 it was more than $80, in 1978 $100 and in 1981 every barrel of oil cost $240.

The following figures will make clear what a precarious position fuels occupy in the energy balance: according to Frohn[1], in the period from 1970 to 1980 an average of 151,792 automobiles were licensed in the GDR each year. With an average mileage of 10,000 km/year and an average consumption of 9 liters/100 km, every vehicle requires 0.675 ton of gasoline. This means that annually approximately 102,460 tons of gasoline must be produced in addition. In the case of processing, which involves only distillation, approximately 683,000 ton/year of oil would be consumed in addition. This example shows the enormous economic importance of any alternative fuel which comes from a domestic fuel source and constantly regenerates itself.

Therefore, for the alternative fuel, ranges between 1 and 10 percent of the values cited above for additional fuel consumption represent very substantial quantites, especially with respect to reducing imports from the non-socialist monetary area. Thus, today processes for fuel production and fuel substitution which had lost their importance because of the more price-favorable availability of fuels from petroleum are again of interest. In the past compressed biogas was successfully used on a rather large scale to operate vehicles for territorially limited allocation recipients. On the basis of the realization that in the countries which produce natural gas liquification of methane had already been started in the 1960s and that today more than 20 percent of the world's natural gas trade involves the liquid form, liquification of the methane share of the biogas is quite attractive because of the

chemical relationship between biogas and natural gas as energy sources. The following contains a report on the technical-economic studies which were implemented in this connection.

Liquid Biogas As an Alternative Fuel

As everyone knows, biogas is a gas mixture and according to footnote 2 in general has the following composition:

Methane	63-68 percent
Carbon dioxide	32-37 percent
Nitrogen	0-0.2 percent
Hydrogen	0-0.2 percent
Hydrogen sulphide	0-0.1 percent

In the process of anaerobic sludge stabilization at sewage treating plants, this gas is produced as a by-product energy source.

In the case of biogas liquidation the key is to remove the methane share and then to change it from a gas to a liquid. This is done in a low-temperature process after the gas is cleaned in order to remove the remaining gaseous components. This cleaning of the gas is urgently necessary since impurities in the course of the low-temperature process would appear in solid form and thus hamper processing. At a pressure of 0.10 MPa [megapascal] and a temperature of -161.5°C methane occurs in liquid form. Worldwide the term LNG (liquefied natural gas) has become the accepted designation. On the other hand, if compressed methane is being used, the term CNG (compressed natural gas) is customary.

Fuels for vehicles must have as great an energy content and as small a volume as possible. Conventional liquid fuels under normal conditions meet these requirements. On the other hand, with biogas it is possible at present to meet the demand for as small a volume as possible with a large energy content only by compressing to a high pressure (CNG) or by altering the state of aggregation at a lower temperature (LNG). If methane is compressed to a pressure of 20 MPa, then in a geometric volume of 1 m^3 it is possible to store approximately 270 m^3 of methane with an initial pressure of 0.1 MPa. If, however, the methane alters the state of aggregation, then the liquid methane occupies only 1/600th of the volume of the volatile methane which is present in its normal state. Thus, in a geometric volume of 1 m^3 approximately 600 m^3 of volatile methane can be stored as a liquid at zero pressure with a temperature of -161.5°C. Consequently, the energy equivalent of 29,500 m^3 of biogas in the normal state can be stored using a liquid gas container of the type StV 32/0.5 (rated volume 32m^3) from the VEB chemical Plant Construction, Erfurt-Rudisleben. This storage capacity corresponds to an energy equivalent of 17,700 liters of diesel fuel. With several such tanks long-term storage of biogas would be conceivable. Furthermore, this high buffer capacity makes it possible to refuel vehicles for particular needs so that the vehicles need not be supplied continuously.

Peak requirements, even if they exceed the daily production level of liquid methane gas, can definitely be met. On the other hand, the liquification

plant can continue to operate at its normal load if the full amount of liquid methane gas cannot be provided for a short period of time. When biogas is used to operate vehicles, the influence of the energy density comes into play, especially with respect to the ballast mass of the vehicle tank and the possible distance to be covered. In Figure 1 these quantities are compared, assuming a constant distance, for diesel fuel, liquid methane and fuel methane (compressed).

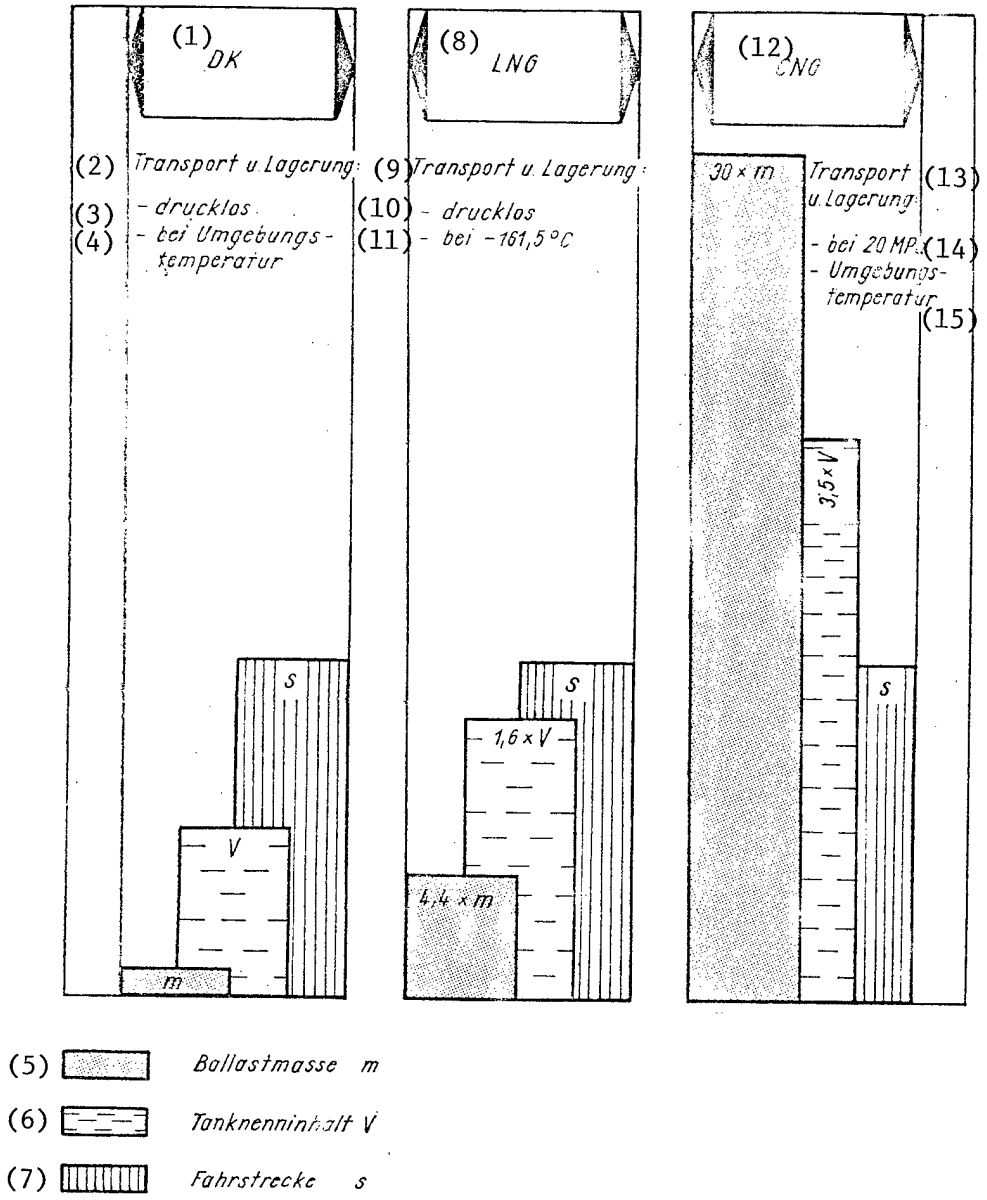

Figure 1. Representation of the Ballast Mass of the Vehicle Tank and the Requisite Tank Size for a Constant Distance As a Function of the Fuel

KEY:
(1) Diesel fuel
(2) Transport and storage
(3) At zero pressure
(4) At ambient temperature
(5) Ballast mass m
(6) Rated tank volume V
(7) Distance s
(8) Liquified natural gas
(9) Transport and storage
(10) At zero pressure
(11) At -161.5°C
(12) Compressed natural gas
(13) Transport and storage
(14) At 20 MPa
(15) At ambient temperature

This comparison shows that increasing the required volume of the tank and increasing the ballast mass with LNG operation is within justifiable limits with respect to operation with diesel fuel. The vehicle tank decreases the rated mass of the vehicle only insignificantly and can easily be incorporated in the vehicle. Thus, LNG operation would not be usable exclusively for trucks alone but would also be readily possible for automobile operation.

Technology of Biogas Liquidation

The process as currently designed relies on familiar process groups which have been tested in practice but which in their interaction represent something new. These process groups involve the biogas compressor station, coarse cleaning, fine cleaning and drying, the cold box and the storage tank with a tapping device.

The biogas enters the biogas compressor at the existing pressure in the low-pressure gas storage facility and is compressed to the processing pressure of 10 MPa. Then the compressed biogas moves along to coarse cleaning (pressure-cleaning facility). This unit consists of two packed towers, an expansion vessel and a cold-water assembly. The biogas enters the packed towers from the bottom. The wash water, which has been cooled in the cold-water assembly, is fed in a counterflow to this. The water, which is loaded with CO_2 and H_2S, then moves into the expansion vessel where water and gases are again extensively separated.

From coarse cleaning the biogas, which still contains 2 to 3 percent CO_2, flows into the fine cleaning ahd drying unit. This consists of a soda lye washing facility to remove the remaining CO_2 content, two dry batteries (molecular sieves) to dry the gas and a heating unit with a blower to regenerate the dry batteries. After emerging from the final cleaning stage the biogas, which consists almost exclusively of methane, is of the quality necessary to permit liquification in the cold box. This unit consists of two heat exchangers, a circulating compressor, an expansion machine, a throttling member and a separating vessel. The methane which enters the cold box is cooled in the counterflow of cold methane which comes in part from the separator and in part from the expansion machine. Following cooling, throttling release and separation of the liquid phase from the vaporous one take place in the separator. The liquid methane enters the storage tank with a tapping device unit, where it is stored and made available to supply vehicles.

The plant which has been drawn up was designed for a volume of 6,000 m^3 of biogas/day. This corresponds to 6,120 liters of liquid methane/day or an equivalent of 3,720 liters of diesel fuel/day. With a yearly operating time of 8,000 hours and an average fuel requirement of 16,000 liters of diesel fuel/year per vehicle, approximately 78 W-50 vehicles can be operated with such a plant.

Evaluation in Terms of Industrial Energy

An industrial energy process analysis was carried out via the primary energy utilization factor. Thus, at present, it is possible in the most unfavorable case to obtain a primary energy utilization factor of 50 percent, which, subsequent to several modifications, can range beyond 70 percent. In order to be able to evaluate this result, a comparison with energy conversion processes of like quality must be done. Specifically this can be solved with the help of the energy concept since energy characterizes the maximum work which can be obtained from a material flow.[3] In this respect liquid methane has an exacting quality. Thus, the conversion process which is required to make it available must be compared only with processes which make energy sources available as final products and which fulfill like or similar requirements for quality of available energy. Thus, the comparison can be made with the production of electrical energy from coal. In the case of condensation power plants a primary energy utilization factor of about 30 percent is present. In this respect the result which is achievable in the case of biogas liquification is very optimistic.

Economic Evaluation

The investment costs for the currently designed biogas liquification plant with a capacity of 6,000 m^3 of biogas/day come to M3.83 million. If this amount is related to the annual processing performance (8,000 hours/year), then the specific investment costs are M1.9/m^3 of biogas per year. In order to be able to carry out the comparison with diesel fuel the cost index was determined as an average annual value according to TGL 190-452. The result shows that the social costs for liquid methane are of the same magnitude as what must be provided now for the same energy equivalent of diesel fuel. In the case of the higher social costs for diesel fuel, which can be expected in the future, liquid methane operation would be to an increasing extent an economical alternative to diesel fuel. Here the advantage of a domestic energy source which constantly regenerates itself is clear.

Alterations to the Vehicle

Combustion engines can easily operate on methane gas. They are familiar as stationary gas engines in sewage treating platns. For mobile operation the liquid methane is stored in insulated special containers (Dewar vessels) on the vehicle in the low-pressure region. On the way to the engine it is vaporized. As the first practical driving tests showed, it is enough to feed the liquid methane in a pipe which runs in the vicinity of the exhaust. The gaseous methane is fed to the engine via a pressure regulator.

The Otto engine requires no changes. While driving, it is possible to switch from gas to gasoline and back, as desired.

Diesel engines must be equipped as ignition-ray engines (bi-fuel engines). In contrast to pure diesel operation a gas-air mixture is sucked in when operating on gas. For ignition a small amount of diesel fuel is sprayed into the compressed gas-air mixture. This amount of diesel fuel, which is called ignition oil, amounts to about 10 percent of the full-load quantity of pure diesel operation. Here, too, while driving it is possible to switch from gas to diesel operation. The amount of ignition oil is almost constant, independent of the engine load. With a partial load, therefore, the same amount of ignition oil is required as with a full load. Consequently the specific diesel fuel consumption increases with a decreasing load. When idling the engine operates in pure diesel operation without gas. As is generally known, vehicle engines are operated in the partial load region for large numbers of hours. In this respect, therefore, substantial quantities of diesel fuel are also required in gas operation in the case of the bi-fuel engine. This disadvantage could be avoided if the diesel engine is reoutfitted for Otto operation (spark ignition with spark plugs). Practical experiences in this, however, have shown that this reoutfitting cost is substantially greater than conversion to ignition-ray operation. Furthermore, it would then be necessary to carry gasoline along as an alternative fuel.

Summary

In all sectors of the economy there is an intensive search for alternatives as substitutes for petroleum products. One prospect in this area is the liquification of biogas, since biogas represents a primary energy source from a domestic energy source which constantly regenerates itself. The industrial energy and exergetic observations, in connection with the determination of costs, have shown that biogas liquification definitely represents an economical alternative to diesel fuel.

FOOTNOTES

1. W. Frohn, "More Fuels and Chemical Raw Materials from Petroleum and Coal," WISSENSCHAFT UND FORTSCHRITT, Vol 32 No 9, 1982, pp 337-340.

2. "Textbook and Handbook of Sewage Technology," Vol 3, 2nd ed., Berlin-Munich-Duesseldorf, Wilhelm Ernst and Son Publishing House, 1978.

3. W. Fratzscher, "The Industrial-Energy Quality of Material Flows," WISSENSCHAFT UND FORTSCHRITT, Vol 32 No 12, 1983, pp 470-473.

12124
CSO: 2300/358

HAVASI DISCUSSES ECONOMIC REFORM, FUTURE PLANNING

Budapest OTLET in Hungarian 11 Aug 83 pp 4-5

[Interview with Ferenc Havasi, secretary of the MSZMP Central Committee and member of the MSZMP Politburo, by Akos Erdoes and Pal Lederer; date and place of interview not given]

> [Text] Our results along the new path of development, society's assistance to young people starting out on their own, structural change in the economy, relations with our socialist partners, development of our system of macroeconomic management and economic theory. These were the main topics of the interview published below. It was with Ferenc Havasi, secretary of the MSZMP Central Committee and member of the MSZMP Politburo, by members of the OTLET editorial staff.

[Question] More than 4 years have elapsed since the December 1978 resolution of the MSZMP Central Committee. Along the new path of development, what are the results and favorable phenomena that provide the foundation for our long-term progress? Do circumstances in the present situation allow us to work also on the elaboration of our strategic concepts, parallel with out timely tasks?

[Answer] The MSZMP Central Committee recently reviewed the work done since the 12th congress and established that the Hungarian economy achieved significant results along its new development path and that our progress was in accord with our economic policy aspirations. Also from the viewpoint of substantiating our longer-term development, I regard as our most significant result that we have been able to improve our external economic equilibrium and to preserve our international solvency, even under conditions more difficult than expected. Improvement has been the most conspicuous in our nonruble-denominated foreign trade where a deficit of 1.2 billion dollars in 1978 has been replaced by a surplus of 500 million dollars in 1982. This year there is a surplus of nearly 300 million dollars already in the first six months, something unprecedented in recent decades.

We may regard as a favorable change in the economic processes the fact that whereas in 1979-1980 the improvement stemmed mostly from cutbacks in domestic spending (these accounted for nine-tenths of the improvement), in 1981-1982 production played a greater role. Growth of net domestic product increased

slightly during the past two years. Primarily the expansion of farm productions was rapid, even in the light of international comparisons. The sharp rise in the prices of energy and raw materials, and also the spreading of economization measures, reduced the specific energy intensity and material intensity of production, enhancing thereby the economy's ability to generate net domestic product. Adapting to the requirements of efficiency and competitiveness, the individual branches and enterprises expanded their production in a differentiated manner. This process is one of the characteristics of the present stage of development and is becoming increasingly more pronounced. The instrument industry, telecommunications equipment industry, plastics fabrication, the pharmaceutical industry, meat packing industry, the growing of wheat and certain industrial crops, and hog and poultry production developed at faster rates in recent years. Not only are we setting no limits on the output of products that can be exported economically, but we are also supporting such activity by every possible means. As a result of this dynamism, the volume of our nonruble-denominated foreign trade expanded by one-third during the past four years, at a time when world trade was essentially stagnating as a result of recession in the capitalist world economy. Curtailment of import from capitalist countries also influenced favorably the development of our external economic equilibrium.

Our results to date are the foundation on which we are building our future economic development that will be balanced and essentially of an intensive nature and will rely on qualitative factors.

Besides solving the day-to-day economic tasks that otherwise are very important, the political leadership and government are devoting systematic attention also to the elaboration of long-term strategic concepts. The long-range plan of the national economy's development has been drafted. The political and state leadership recently placed housing construction and the management of the housing stock on a new basis. The MSZMP Central Committee recently approved the principles of external economic strategy and industrial policy. The Central Committe has provided guidelines for our long-term development also in its resolution reviewing the work done since the 12th party congress. Within these guidelines I would like to single out the perfection and further development of our system of macroeconomic management. Retaining the proven basic principles and utilizing the experience gained to date, we wish to develop our economic mechanism in such a way that it will rely on enterprise independence and will simultaneously serve to solve more effectively the tasks stemming from intensive economic activity and from the changes in the world economy. All this proves that our leading organs are devoting due attention also to defining the long-range objectives and tasks that significantly influence the country's future.

[Question] More moderate growth and the curtailment of domestic spending are painfully affecting young people in particular. Starting their careers and households of their own places a greater burden on this stratum than previously. Even though their incomes cannot be raised at above-average rates, is the economy strong enough to enable us to "advance" the young people the costs of starting out on their own?

[Answer] We know very well that the problems of starting careers, families and households of their own confront young people all at the same time. It is

in the common interest of the individual, his workplace and society that he fit smoothly into the social division of labor. Therefore the party and the government have devoted close attention to this problem in the past and will continue to do so also in the future. Of the numerous manifestations of this attention I will mention only a few: for example, the questions of pay, of starting families, and of obtaining housing.

Everyone will certainly agree that decisive in remuneration for work performed is the quantity and quality of the work done, and not the age of the individual, whether he is beginning his career or is elder. Thus we are applying also to young people the requirement that wages must be commensurate with the work performed. We are seeing to it that there are manifold incentives for a person to earn more in the early years of his career. At the same time, starting earnings must be sufficient to live decently. Education and special skills must likewise be reflected in starting wages. We regularly review starting earnings and raise them from time to time. General increases are not possible at present, but we are raising the starting wages in a given trade or area of activity.

Starting a family, the decision to have a child, is one of the biggest problems facing young people. In this respect our society is assuming considerable burdens to ease the problems of young people. It provides a family allowance and child-care aid, and it also maintains institutions for child care. At the same time, young people willing to have children are given preference and benefits in solving their housing problems. Savings accounts for youths, and loans for starting a family likewise help young people to obtain the financial means for starting out on their own.

Because of its importance, special mention must be made of the problem of obtaining housing. The system for the management of the housing stock, which became effective at the beginning of this year, favors young people and further improves their chances of obtaining their first housing unit. The purpose is to combine the financial commitments of the parents, the state and the individuals so that young people may have homes of their own within the foreseeable future. Many different kinds of assistance, and also credits and loans are helping to achieve this objective. Because of their different family backgrounds, young people start their careers with significant differences. Only with the parents' assistance are we able to ensure at the average or above-average level the financial requirements of starting a career. This is a source of social tension, which we are trying to alleviate. But we do not have sufficient financial resources to guarantee for every young person already at the start of his career the same standard of living that his parents achieved through long years of hard work. I do not think that there even can be a justifiable and socially acceptable demand to guarantee this. What we can realistically strive for is to advance more resources than at present to young people starting out on their own, but without overburdening them with the repayment of the credits.

[Question] Some young economists are of the opinion that changeover to the path of intensive development would require radical structural changes that could not be imagined without the temporary occurrence of unemployment. They regard only as a half-solution the aid for retraining that has been introduced in Hungary, and they are referring to it as Hungarian unemployment aid. The

following question related also to this issue is frequently raised: What factors can be expected to significantly tighten labor discipline?

[Answer] I esteem the young economists' initiatives urging favorable changes in the economy, but one can hardly identify with the line of reasoning formulated in this question. If our young friends are following systematically the political and government decisions regarding changes in the structure of the economy, they can see that a series of long-term and substantiated measures is helping the process to unfold. Historical experience warns us to beware of adopting and forcing through radical decisions that cause great social tensions. One of the principal characteristics of our party's activity and a pillar of its good relations with the masses is specifically that the party is able to adapt to the changed conditions, to reality. All this the party wishes to achieve through deliberate reform and consensus, and not through radical decisions.

What do these principles mean in the process of structural change within the economy? First of all they mean that we regard structural changes as a long process, one that we want to realize while preserving at the same time one of the greatest achievements of our socialist system: full employment. Naturally, this process might require the regrouping of manpower between individual branches, enterprises or areas. This could affect unfavorably individuals and smaller collectives, and we cannot abandon them to solve their problems themselves.

Through aid for retraining, for example, we wish to provide an opportunity for retraining to those employees who are assigned to lower-paying jobs with other employers, so that the employees may again attain or even exceed their previous earnings. For the duration of retraining the worker receives as aid the difference between his previous and current earnings. This cannot be regarded as unemployment aid because it is payable only to a person who is working and has changed jobs within the framework of organized regrouping of manpower.

So far as the question of labor discipline is concerned, its improvement will require more forceful and more consistent action by management against those who are undisciplined and are not fulfilling their duties. Through stricter external and internal organization it is possible to create conditions such that will make violations of discipline more difficult or will exclude them entirely. Lax labor discipline is characteristic especially of workplaces where work is not organized properly, where management fails to ensure the conditions for working continuously.

An underlying question here appears to be whether labor discipline can be tightened without unemployment. The answer is very definitely that it can be tightened without unemployment. A series of international examples proves that even large-scale unemployment does not lead automatically to labor discipline, and that disciplined work is possible even without significant unemployment, provided management is decisive and the activity organized. There is no substitute for the duties of management in this respect.

[Question] Development and wide-scale application of high technologies appear to be a task unimaginable without extensive international cooperation. Under

the present international political and economic situation, significant intensification of cooperation with capitalist countries might encounter barriers. Consequently, relations with CEMA countries in this area must be made more efficient. Comrade Hevesi, what promising signs do you see in this area?

[Answer] Solution of our economic problems, restoration of economic equilibrium, maintenance of the standard of living, and the unfolding of intensive economic development all depend on production. The key questions of our economic progress are acceleration of research and development, improvement of quality, upgrading of work standards, and increase of productivity. Therefore it is necessary and advantageous to use the investment resources now in short supply primarily for reconstructions that offer the shortest payoff periods, for technological modernizations, and for raising the technological level. However, we cannot achieve our R & D objectives and keep pace with the international level without utilizing the advantages of the international division of labor and of international R & D cooperation.

As you very well know, our strategy on international economic, scientific and technological cooperation has remained unchanged for a long time. In this cooperation we attribute an outstanding role to cooperation with CEMA countries, and among them with the Soviet Union in particular. Such cooperation is free of the cyclic changes and barriers in relations with the capitalist countries.

The CEMA countries are changing over to the path of economic development more or less at the same time, and in the course of this R & D assumes greater importance. Therefore our socialist partners are relying more than in the past on mutual R & D cooperation, and they are concentrating more strongly on the strategically most important areas of technological development. Our country is also urging speeding up the mutual flow of information on technological development, and a prerequisite for this are economic incentives for research, licensing and the transfer of knowhow. Development of economic, scientific and technological cooperation among the CEMA countries, and the shaping and perfection of its mechanism to meet the requirements of our time are now in progress. We can be certain that mutual interest, new initiatives and new forms of cooperation will intensify the mutual exchange of R & D results and high technologies, and will speed up their spreading.

We wish to use our existing relations with the economically developed capitalist countries, and the further expansion of these relations on the principle of mutual advantages, to help our technological development and the growth of our productive resources. We must realize, however, that acquisition of the necessary R & D results depends not only on our intentions, but also on our ability to adopt them, respectively on the level of the R & D results we are able to offer in exchange.

[Question] Theory often lags behind practice. This applies to theory and practice in the social sciences as well. What are or might be the consequences of this? How would you characterize the relationship between economic theory and practice today?

[Answer] Our party is a Marxist-Leninist party. Marxism-Leninism is the scientific foundation of its policy and activity. The party applies the precepts

of Marxism-Leninism not as dogmas, but as a compass for orientation in the complicated system of society's life. Thus our party does not perceive the relationship between ideology and practice as forcing abstract precepts on practice at all cost, but as two sides that mutually interact.

Consequently a characteristic feature of our party's behavior is its receptiveness to theoretical-ideological as well as practical innovations, to new ideas, methods and aspirations. The only requirement regarding them is that they be provable or that they provenly work in practice.

This is why there are, have to be, theoretical and ideological debates, confrontations of views, in our social practice. We require and encourage them. The policies and activity of our party serve a single basic objective in the efficient construction of socialist society. A role in this is played by the realization that this process is influenced by domestic and external circumstances and conditions, and we must take them into consideration when devising the strategy and tactics of our actions. We realize that we cannot build socialism solely on the basis of abstract precepts. In this work we must rely on our national characteristics, historical traditions, and all international experience that can be utilized to advantage. The specific practice of building socialism is varied, and of course the ways and means of reaching the final objective can differ in some respects. We ourselves are seeking these differences and are allowing room for every viable and carefully thought out innovation, and even for experimentation within feasible limits. In answering either theoretical and ideological or practical questions, our party does not start out from abstract precepts and intangible values, rather it derives the answers from the actual needs and requirements of building socialism.

The reform and systematic further development of the system of macroeconomic management are, I believe, a highly illustrative example of what has been said above. The immediate scientific theoretical substantiation of the process of reform launched in 1968 started with a thorough reassessment of pre-1956 economic policy, with the elaboration of a new economic policy and the economic debates after the counterrevolution, culminating in the works on which the elaboration and introduction of the economic reform were eventually based. On the other hand, evaluation of the experience with the system of macroeconomic management has made possible not only the corrections and perfection of this system, but also the further development of economic science, the broadening of its horizon, and the exploration and cognition of new interrelations. When the immediate tasks of developing further the system of macroeconomic management are on the agenda, we invariably base further progress on a close link between science and practice.

I wish to emphasize that essentially this fruitful interaction is typical in Hungary today of the relationship between theory and practice, between science and policy.

1014
CSO: 2500/421

AUTHOR OF 'NOT' ECONOMIC REFORM PROGRAM REPLIES TO SUPPORTER, CRITICS

Warsaw ZYCIE GOSPODARCZE in Polish No 34, 24 Aug 83 p 6

[Letter from Wieslaw Jurewicz, chairman of NOT Scientific-Technical Committee for Economic Affairs and Economic Reform, to Kazimierz Ciosk of Opole as published in letters-to-the-editor column of ZYCIE GOSPODARCZE]

[Text] Dear Sir!

After I got back from my vacation, I started to sift through some of the newspapers that had been set aside for me. In reading issue No 29 of ZYCIE GOSPODARCZE dated 17 July 1983 I ran across your letter which was printed under the headline--this was the editors' idea no doubt--"What Is Professor Baka Mad About?"

Thank you for writing this letter. This is one more piece of testimony which proves that it is not just a "small group of officials from NOT national headquarters," as T.J. claims [Tomasz Jezioranski's reply to Kazimierz Ciosk's letter published in the above issue of ZYCIE GOSPODARCZE; see JPRS EAST EUROPE REPORT: ECONOMIC AND INDUSTRIAL AFFAIRS], that takes the position that there is a need for an objective debate on the thrust of needed amendments to laws governing the performance of the institutional machinery of economic reform.

The direction that these amendments should take was spelled out in the resolutions passed by the 20th Congress of Polish Engineers. The NOT Scientific-Technical Committee for Economic Affairs and Economic Reform was charged with the task of drawing up a detailed series of suggested amendments to these laws in compliance with the resolutions passed by the congress. This committee appointed a task force, consisting of a group of its members and representing several different scientific and engineering professional societies, that was directed to draw up a series of concrete proposals which ultimately--during the final phase of work on this project--would be consolidated as draft versions of amendments to the seven basic laws governing the economic reform program. These draft amendments are based on a very extensive array of source materials sent in by almost all scientific and engineering professional societies, a majority of the voivodship NOT councils, and individual industrial plants and private citizens.

The draft amendments submitted to Minister Baka by the chairman of NOT are an outcome of the resolutions passed by the congress and, hence, reflect the views of the professional groups affiliated with the NOT Federation.

If prior to the publication of his reply to your letter T.J. had cared to drop in at Czacki Street [NOT national headquarters] and if he had asked to be given a chance to go over all of the source materials and methods followed in working on this rather major project, he would have learned the whole story. In the first place, we would have shown him the "Position Paper of the Engineering Profession on the Performance of the Institutional Machinery of Economic Reform During 1982 and on the Basic Thrust of Vital Amendments to Basic Laws Governing the Economic Reform." This position paper was submitted to the Office of the Government Commissioner for Economic Reform by the chairman of NOT as far back as January 1983. The paper was also sent out to all scientific and engineering professional societies and NOT voivodship councils, in addition to being sent to many other people working in our profession.

However, both T.J. and Tomasz Jezioranski before him (see the article titled "First, Do No Harm" in issue No 27 of ZYCIE GOSPODARCZE dated 3 July 1983) [see JPRS EAST EUROPE REPORT: ECONOMIC AND INDUSTRIAL AFFAIRS], failed to inform the public in an objective manner. It goes without saying that everyone is entitled to the views and opinions which they care to express in their writings. But relaying information in the form of statements taken entirely out of context, hurled invectives, and insinuations is another matter altogether. For your information, this is not the first time that I have been called an enemy of the political system and the government.

The way in which Tomasz Jezioranski's articles were edited and, in particular, the poor manners reflected in his comments disinclines me to take part in any debate with him. For this reason also, I have never once replied to Tomasz Jezioranski.

I wanted to write you these few lines because I expect that you were not satisfied with the reply you received from T.J. In the meantime, life goes on.

Views on some of the flaws and shortcomings in the performance of the institutional machinery of the economic reform program were set forth in the speeches made by Sejm deputies during the deliberations of that body held on 28 and 29 July 1983. Mainly in the form of the speech given by reporting deputy professor A. Melich and the corresponding resolution passed by the Sejm (see DIARIUSZ SEJMOWY No 6/1983). The Sejm called attention to the same shortcomings in the performance of the economic reform program which had been pointed out by the engineering profession as soon as the relevant laws had been passed.

In the Law of 21 July 1983 on Special Legal Measures in Force During the Period of Overcoming the Social and Economic Crisis and on Amendments to Certain Laws you will find several provisions whose substantive language is similar to that contained in the NOT proposals. I derive a great deal

of satisfaction from this as a veteran employee in industry and as a long-time NOT official. But the fact remains that 1 month earlier--on 22 June--a number of these same NOT-inspired proposals were sharply criticized by several persons attending the meeting of the Economic Reform Commission.

I have always been of the opinion that something "better" can emerge solely as the result of the clash of differing points of view. I assure you that neither myself nor any of my colleagues are in the least discouraged or in the least reluctant to steadfastly carry on with our efforts dedicated to making refinements and adjustments in the institutional machinery of the economic reform program that are bound to put this machinery in proper working order so as to step up the pace of economic activity for the good of the Polish people.

With the help of the editors of ZYCIE GOSPODARCZE, if they decide that they want to do this, as they surely have your address, I am forwarding to you the following two documents: "Position Paper of the Engineering Profession on the Performance of the Institutional Machinery of Economic Reform During 1982 and on the Basic Thrust of Vital Amendments to Basic Laws Governing the Economic Reform" and the "Draft Program for Amendments to Basic Laws Governing the Performance of the Institutional Machinery of the Economic Reform." I kindly ask that you write back and share with us your views on these documents, as this information will be helpful to us in the course of our future work dedicated to modifying the institutional machinery of the economic reform process.

Thanking you once again for stating your position on this matter for the public record, I remain

Respectfully yours,

Docent Dr Engineering Wieslaw Jurewicz,
chairman of the NOT Scientific-Technical Committee
for Economic Affairs and Economic Reform

CSO: 2600/1226

POWER INDUSTRY PERFORMANCE, PROSPECTS RATED

Warsaw TRYBUNA LUDU in Polish 24 Aug 83 pp 1, 2

[Article by A. Kozminski: "Good Luck of Power Industry Holds"]

[Text] For more than a year and a half--to be precise, since January 1982--no restrictions have been imposed on the delivery of electric power services. This fact, which bodes so well for the economy and the public at large, was the first item of information cited at a press conference held in the Ministry of Mining and the Power Industry on the occasion of Power Industry Workers Day which falls on the first Sunday in September.

"During these difficult times for the country as a whole power industry workers continued to act as models of discipline and dedication," said the minister of mining and the power industry, General Czeslaw Piotrkowski. "Over the past year and a half their dedicated efforts have made it possible to meet all domestic demand for electricity, and last winter they also succeeded in meeting all demand for thermal energy."

This was made feasible, above all, owing to the successful continuation of in-progress capital projects in the power industry. During this period the country acquired an additional 1,700 MW of electric power generating capacity. Work proceeded on the construction of Europe's largest thermal power plant at Belchatow, where two power generating units delivering 360 MW each have come on line. Work was completed on the construction of a pumped-storage power plant at Zarnowiec with a power rating of 680 MW, and, well ahead of the fall-winter peak-load period, work will have been completed on the construction of a major power plant in Polaniec with a power output rating of 1,600 MW. Work is proceeding on the construction of the country's first nuclear power plant in Zarnowiec, a plant which will usher in a new era in the history of the Polish power industry.

The breakdown rate of power generating equipment has declined by as much as 60 percent in comparison with previous years. Credit for this accomplishment is due both to power industry workers employed in the operation of power plants and also to the employees of the repair and construction enterprises affiliated with the ENERGOBUDOWA association.

During the past 7 months of this year alone, thanks to all these efforts, the output of electric power in this country went up by more than 6 percent in comparison with the same period last year. The increased output and consumption of electric power--just like the readings on a barometer--attest to the revival of our economy.

The fuels supply situation in the power industry is also good. Power plants already have 6 million tons of hard coal stocks on hand. By the end of October these stocks will go up to 7 million tons, that is, they will be one and a half million tons larger than they were a year ago. At brown coal mines 19 million tons of this fuel have already been exposed from underneath the overburden layer, and brown coal deliveries are exceeding last year's levels by nearly 14 percent.

Fears are being raised, however, by the lack of certainty as to whether our domestic refineries--which are supposed to cut back on the production of liquid fuels such as fuel oil in order to produce more gasoline--will be able to supply the power industry with the 700,000 tons of fuel oil it needs. Fuel oil is used in the thermal engineering industry, e.g. to fire heating plants at Wola in Warsaw, in Poznan, and to some extent in the capital city's heat and power generating plant at Siekierka. Work is also proceeding well on the repair and overhaul campaign, which this year encompasses equipment and facilities make up 95 percent of the country's total generating capacity. It is not expected that there will be any restrictions on the delivery of power services during the coming winter. Nor should there by any problems with the delivery of heating services to homes except in the case of a few cities, including Warsaw, Lodz, Bialystok, Bydgoszcz, and Gdansk, but only in cases where the temperature falls below minus 18 degrees Centigrade. This is owing to the limited load capacity of heat delivery systems in these cities.

However, when it comes to the delivery of electric power service, the likelihood of isolated breakdowns occurring, mainly as a result of the underdeveloped and overloaded transmission line net, should be expected. The progress which has been made in this area still does not go far enough, in spite of the fact that work is continuing on, among other things, the completion of the high voltage circumferential power grid serving almost the entire country and making it possible to transmit power mainly along a north-south axis.

However, in view of the current constraints on capital construction, our power industry problems will still not be over after 1985. This is because during the period 1986-1990 slightly more than 3,700 MW of new generating capacity is supposed to come on line. True, this comes to 1,000 more megawatts of capacity than that which will have come on line during 1983-1985, but this is still not enough to cope with projected demand. So, it will be necessary to devise strict energy conservation measures in the power industry and come up with methods for the more evenly balanced utilization of power industry generating capacity over a given 24-hour period.

CSO: 2600/1266

LOSSES RESULTING FROM U.S. SANCTIONS NOTED

LD241247 Warsaw PAP in English 1135 GMT 24 Aug 83

[Text] Warsaw, 24 Aug--The Warsaw paper ZYCIE WARSZAWY reprints an article from the magazine ZAGADNIENIA I MATERIALY on the losses suffered by Poland in the result of Western economic restrictions. Excerpts:

"The economic sanctions can be put into several main groups, namely:

--restrictions in the financial sphere,

--tigher control of technology transfer and exports,

--the U.S. suspension of the most favoured nation clause (MFN) in export,

--suspension of Polish air traffic to the U.S.,

--suspension of Polish fishing rights within the 200-mile American zone.

"Overall estimates indicate that following the Western sanctions imposed on imports of industrial supplies and materials in 1982, Poland could not produce goods worth 1,125 billion zlotys, that is 17 per cent of the nation's total industrial output or 13.3 billion U.S. dollars."

"It is estimated that in 1983 the sanctions make it impossible for Poland to produce goods worth 636 billion zlotys or about 9 per cent of the planned production or about 6.5 billion U.S. dollars. The situation is considerably affected by difficulties in obtaining credits for the indispensable industrial supply purchases," continued ZYCIE WARSZAWY.

"In the result of decreased grain and component purchases poultry farm production fell by 340,000 tons or 74 per cent, the output of pig-raising industrial farms and specialist households dropped by 83,000 tons or 17 per cent--all in all, this is tantamount to about 9 kgs of meat per capita of the population. Also the farm egg production slumped down by 340 million eggs or 21 per cent.

"The share of NATO member countries in trade with Poland fell by 22.9 per cent to 13.8 per cent in imports and from 22.9 per cent to 19.3 per cent in exports from the start of 1981 to 1983.

"The shutdown of the Warsaw-New York flights made the LOT Polish airlines lose about 1.5 billion zlotys and 1.3 million dollars a year.

"It is estimated that Poland lost a total of 20 million dollars in the effect of suspended and curbed air traffic as part of the sanctions.

"The total losses suffered in the result of curbed fishing rights are estimated at 260 million dollars."

CSO: 2020/69

NEED FOR QUALITY, DIVERSIFICATION IN CHEMICAL INDUSTRY

Bucharest REVISTA ECONOMICA in Romanian No 26,1 Jul 83 pp 4, 31

[Article by Cornel Lupea]

[Text] The chemical industry plays an important role in providing the national economy with high quality products and raw materials. This role as supplier of raw and other materials designed to enhance the value of national resources, has rapidly increased production in this branch. The more than 1800 investment capabilities and objectives placed in operation since 1965 meet the constantly growing demands of the economy (table 1). During this year, the share of the Romanian chemical industry amounts to more than 17 percent of the total volume of industrial production.

Knowing the power of chemification to intensify, modernize, and increase agricultural production, special emphasis was placed during the development of the chemical industry, on increasing the production of fertilizers. From one single specialized plant in the country at Valea Calugareasca, with an annual capacity of 110 tons of simple superphosphate, in 1982 we had 11 combines and factories which produced 2.7 million tons of chemical fertilizer (100 percent active substance).

During the current five-year plan, efforts at developing the production of chemical fertilizers are directed toward a continued improvement in their structure--the ratio of N, P2O5, and K2O--while planning improvements in the varieties designed for all crops, and moving toward the production of microelement fertilizers. In general, priority is devoted to increasing the production of products with a high content of active substance (urea and triple superphosphate). The average concentration of chemical fertilizers has steadily grown from 18-20 percent in 1960, to 27 percent in 1965, 35 percent in 1975, and more than 40 percent after 1980.

Many research projects have been carried out in the area of chemical fertilizers by ICECHIM (Central Institute for Chemical Research), aimed at the creation of new varieties. For instance, organo-mineral fertilizers represent new products which in addition to nitrogen, phosphorus and potassium, contain natural and synthetic macromolecular organic substances. Tests have shown

Table 1. 1982 production of major basic groups (thousand tons).

Product	
Total chemical fertilizers	2,700
Synthetic and artificial fibers and filaments	222.4
Basic macromolecular products (100%)	591
Ethylene	288.5
Propylene	189.5
Styrene	42.3
Sulfuric acid	1,596.3
Soda products	1,600
Methanol	291.3
Synthetic rubber	137.5
ATA tires (thousand units)	5,391.7
Human pharmaceuticals (billion lei)	4.6
Detergents	85.7
Primary aluminum and aluminum alloys	208
Lacquers and paints	164.2

these substances to be superior to mineral fertilizers. Other types are leaf fertilizers which are offered in liquid form, and which in addition to nitrogen, phosphorus, and potassium, also contain a wide range of microelements (Ca, S, Zn, Fe, Cu, Mo, and B) in the form of complex salts.

In the plant protection program formulated by MAIA (Ministry of Agriculture and the Food Industry) and MICh (Ministry of the Chemical Industry), the largest development is assigned to herbicides, which are in demand not only to combat weeds, but also to increase labor productivity in cultivated crops. The aim is to produce selective herbicides in a wide range of substances specific for each crop. In pesticide production, Romania considers the selection of the most indicated chemical means to maintain a general biologic balance. In order to increase the delivery of chemical substances necessary for pest control, the chemical industry has the task during the current five-year plan, of increasing its production of pesticides by a factor of 1.4-1.6, and to adopt new varieties with higher efficiency and lower permanence.

Considering the economic importance of chemical fibers and filaments in the development of the textile industry, Romania is orienting this sector in two major directions: production of synthetic fibers and filaments starting with petrochemicals, and production of artificial fibers and filaments starting with raw materials based on cellulose.

The Romanian production development of phenol, ammonia, caprolactame, acrylonitrile, vinyl acetate, alphamethylstyrene, as well as other products used to synthesize polymers for fiber manufacturing, has also enabled the development of a synthetic fiber industry at three sites: Savinesti, which produces nearly all the varieties of polyamide and polyacrylic fibers and

Table 2. Production of textile fibers in Romania.

Tabelul nr. 2

EVOLUȚIA PRODUCȚIEI DE FIBRE TEXTILE ÎN ROMÂNIA

(D) Anul	(A) Fibre naturale			(B) Fibre chimice			Total fibre textile (mii tone)	(C) Producția/locuitor (kg)							
	bumbac (mii tone)	lînă (mii tone)	Total I (mii tone)	artificiale (mii tone)	sintetice (mii tone)	Total II (mii tone)		fibre naturale (L)		fibre chimice (O) artificiale		(P) sintetice		(Q) Total kg/loc.	
	(E)	(F)	(G)	(H)	(I)	(J)	(K)	România (M)	Mondial	România (N)	Mondial	România	Mondial	România	Mondial
1965	78	24,7	102.2	2.976	3,3	20,990	123,190	5,3	3,2	0,981	1,0	0,17	0,60	6,401	5,9
1970	109	35,7	144,7	47.103	29,5	76,603	221,303	7,1	3,6	2,330	0,95	1,45	1,33	10,880	5,9
1975	145	50,7	195,7	63.188	96,5	159,688	355,388	9,2	3,3	2,980	0,91	4,50	1,59	16,680	5,8
1980	183	74,2	257,2	64.776	140,97	205,746	563,0	11,5	3,2	2,900	0,82	6,4	2,68	20,800	6,7
1981	189	75,0	264,0	59.900	146,40	205,319	469,3	11,8	3,0	2,6	0,81	6,5	2,52	20,900	6,3

Key:
(A) Natural fibers
(B) Chemical fibers
(C) Production/inhabitant (kg)
(D) Year
(E) Cotton (thousand tons)
(F) Wool (thousand tons)
(G) Total I (thousand tons)
(H) Artificial (thousand tons)
(I) Synthetic (thousand tons)
(J) Total II (thousand tons)
(K) Total textile fibers (thousand tons)
(L) Natural fibers
(M) Romania
(N) Worldwide
(O) Artificial
(P) Synthetic
(Q) Total kg/inhabitant

filaments currently known in the world; and Iasi and Cimpulung Muscel, which produce polyester fibers and filaments. The present production of synthetic fibers and filaments is oriented toward the following types of products: acrylic fibers, polyamide fibers and filaments, polypropylene fibers, and artificial fibers and filaments. The 1981 production of 6.5 kg per inhabitant places our country among the development nations from that standpoint, the world average being 2.6 kg per inhabitant (table 2).

During preceding five-year plans, new production capabilities were built based on original processes that have resulted in raw materials (pure caprolactames) comparable to the best on foreign markets. The new Relon installations are characterized by an exceptionally high technical level. These installations produce continuous silk-type filaments, textured filaments (Relontex), technical filaments for the most diverse applications, cord netting with superior strength, carpet-type fibers, and polyamide granules for castings.

The production of Melana-type acrylic fibers is based on an original Romanian process which has been steadily improved with time, characterized primarily by the use of a non-toxic solvent--ethylene carbonate. The use of this solvent under specific conditions leads to fibers with exceptional properties (bulk, feel, and good processing) that are superior to other acrylic fibers well known throughout the world. The current production includes various types of acrylic fibers resembling wool, cotton, fur, carpet, pale, puff, cable, and fibers dyed with original processs.

Considered at first as substitutes for natural fibers, chemical fibers and filaments--artificial and synthetic--have demonstrated their own absolute qualities, surpassing natural fibers in many respects. Because of lower manpower consumption, mechanized and automated production, lower costs, higher utilization values (one ton of synthetic fibers can replace 2-4 tons of natural fibers), and lower specific investments, the growth rate of synthetic fiber production has exceeded that of natural fibers. According to the forecasts of some market research companies, the world production of synthetic fibers will continue to grow at a sustained rate, from 11 million tons in 1981, to 15.4 million tons in 1986, a growth attributed exclusively to developing nations. Under these conditions, the proportion of synthetic fibers in the total world production of chemical fibers will increase from 35 percent in 1981, to 41 percent in 1986. By groups of fibers, the most dynamic growth will be in polyester fibers, whose world production will grow from 5.5 million tons in 1981, to 8.9 million tons (57 percent of the total production of synthetic fibers) in 1986.

The rapid development of polyester fiber production (currently second largest in the world after cotton) is because these fibers have the lowest production cost of all synthetic fibers and because they lend themselves to many applications, alone or mixed with cotton. The production of acrylic fibers, whose cost is higer than that of polyester fibers, will grow from 2.2 million tons in 1981, to 2.8 million tons in 1986. Polyamide fibers, the first type of synthetic fibers on the market, will grow more slowly; the worldwide production volume will drop from 32 million tons in 1981, to 3.5 million tons in 1986.

As part of the general development of Romanian chemistry, the rubber synthesis and processing industries have undergone substantial growth, stimulated partly by a secure and diversified raw materials basis, and partly by the increasing and varied demand generated by the other branches of the national economy. In our country, the present production of synthetic rubber is nearly 140,000 tons per year, and is expected to increase to 185,000 tons in 1983. The development and modernization of existing production capabilities, and the construction and start-up of new capacities for the production of tires and technical rubber goods, have been part of a growth closely correlated with the needs of the national economy. At the same time, tire mileage increased by more than 50 percent between 1965 and 1980, the products of the Romanian enterprises being comparable in performance and reliability with the best products manufactured throughout the world. This has made it possible to equip cars, Roman heavy weight trucks, new types of buses, trolley buses, heavy weight tractors, combines, and other agricultural equipment.

The production of technical rubber goods has also undergone a significant qualitative and quantitative jump. Judicious correlation of the needs of the national economy with technical-economic aspects of manufacturing, has given priority to a standardization of models and sizes, which were exceeding tens of families. The standardization action, undertaken in close correlation with users, has contributed to the manufacturing of those items strictly needed for the national economy and export demands: products and items with metal inserts, moving belts, high pressure hoses, stamped items with complex functions required by the auto and tractor industry, products for mining, aeronautics, and so on. Romania's adoption of ethylene-propylenediene rubber and nitrilic rubbers provides a highly significant direct support for the rubber processing industry in manufacturing weather resistant technical products and products designed to come in contact with solvents, oils, and so on.

The chemical industry is not only one of the major producers of raw materials and intermediate materials for other branches in the economic activity, but it is also one of the largest consumers of primary energy. The well known situation in oil and gas supplies has imposed the discovery of new ways for deriving greater value from them, together with a more rational management of available resources. That is why production units and research and design institutes are devoting all their attention to the use of advanced technologies that will better exploit raw materials and reduce specific consumptions for each product. The redesign and redimensioning of various polyethylene items, tires, and processed plastics, reduce consumption per unit product without reducing physico-mechanical and functional characteristics.

Special attention is being devoted to problems in the recovery of reusable resources. Energy resources totaling over 5 million tons of conventional fuel per year are currently being identified throughout the chemical industry and efficient recovery processes have been found for most of them. Extremely important tasks are assigned to research units, whose activity is aimed at increasing the value derived from Romania's raw and other materials, adopting new products, reducing the consumption of raw materials, energy, and fuels, using new sources of energy, substantially reducing importations, and improving product quality. Microproduction activities will be expanded in research institutes and laboratories, increasing their contribution to broader product lines and reduced importations.

In the chemical and oil processing industry, emphasis is placed on a continued restructuring of production by devoting priority to the expansion of sectors that produce goods with a greater degree of processing. White products obtained through extensive crude oil processing in refineries must increase to 60 percent in 1985, while fuel oil must be reduced from 38 percent to about 18 percent.

The structure of petroleum products obtained through oil processing in Romania is determined on one hand by the country's energy needs, and on the other hand by the requirements for non-energy products created by the rapid development of the entire industry. Given the high cost of oil, it became necessary to

orient processing toward a structure that would derive the highest possible value from non-energy products. The development of oil processing in our country is marked by a substantial increase in the amount of raw materials for petrochemistry. During this five-year plan, the major products obtained from the chemification of petroleum products will grow significantly, particularly in the case of exceptionally valuable products such as benzene, styrene, ethylene, propylene, and so on.

The requirements for higher quality in petroleum products, the development of the raw materials basis for the petrochemical industry, and the greater proportion of sulfur crude oil processed in Romania, have created the need to introduce hydrogenation processes on a large scale, the processing capabilities of these installations being approximately one-third the total quantity of oil being processed. From this standpoint, Romania is at the level of Japan and the western European countries. The hydrogenation processes are used for benzenes, gasolines, diesel fuels, and lubricating oils.

The present energy situation and the limitations on oil resources must lead to studies for continued development of the oil processing and chemification industry, and to the formulation of fine organic synthesis processes based primarily on components derived from pyrolysis and reformation fractions which currently are still not used on a wide scale.

11,023
CSO: 2700/276

MEASURES TO INCREASE ELECTRIC POWER PRODUCTION DISCUSSED

Bucharest REVISTA ECONOMICA in Romanian No 27, 8 Jul 83 pp 9-10

[Interview with Trandafir Cocirla, minister of electric power, by Vasile Boescu]

[Text] The fulfillment of the energy development program is one basic requirement to assure the conditions necessary for the sustained and multilateral progress of the national economy, and for higher production and national revenues. That is why the energy industry continues to receive particular attention from our party and state. The implementation of the plans for the country's socioeconomic development has increased electric power production by a factor of 32 during the past 30 years, with corresponding growth in installations for its production, transportion, and distribution as part of a unified national electric power system.

The energy base development program for the 1981-1985 period and up to 1990, stipulates new actions and measures for fulfilling important objectives such as the expansion and improvement of the national electric power system, hastening the completion of coal-fired plants as compared to initial schedules, exploiting the hydroelectric power potential, introducing new energy resources in the energy balance, and gradually replacing hydrocarbons.

Starting with the need for an exemplary achievement of these tasks and with the fact that we are midway through the completion of the objectives stipulated in the current five-year plan, REVISTA ECONOMICA has asked Trandafir Cocirla, minister of electric power, to answer several questions about the state of completion of the program for developing the country's electric power base, and the actions taken to exploit various available resources and greatly increase the production of electric power, concurrent with the valuable utilization and savings of electricity.

[Question] The documents of the recent plenary session of the Central Committee of the RCP indicate that significant achievements were made during the first half of this year in fulfilling and exceeding the plan's provisions. What are the major achievements of the electric power industry, and what actions were taken to produce them?

[Answer] During this year we obtained remarkable results in increasing electric power production compared to 1982. At the beginning of last year's peak consumption period, during November and part of December, we were not able to meet the total demand for electric power, due both to delays in the repair of generators and to the drought and water shortage in hydroelectric plant reservoirs. In order to improve the coverage of electric power needs, the Ministry of Electric Power will place in operation during this year--as planned--26 new production capabilities, 14 of them as thermoelectric plants and 12 as hydroelectric facilities. The completion of these capabilities has required measures to intensify construction site activities, greater mechanization and industrialization at work sites, and timely delivery of materials, assemblies, and equipment. In order to hasten the work, manpower was assigned with priority at sites that were to be placed in operation, and was complemented with staffs from different professions. We have organized designer teams which systematically move from site to site on predetermined schedules, where they efficiently solve problems. Another special action has consisted of visits from delegations of industrial centrals and ministry users to equipment suppliers, to expedite equipment deliveries on schedule.

We are also seeking to obtain constant and appropriate technical assistance from equipment suppliers at work sites. As a result of these measures, during the first five months of this year we have completed 26 percent more investments than during the same period of last year, and have placed in operation five production capabilities in electric power plants.

We have also devoted special attention to preparations for the repair program, so that the duration of the work will be reduced and its quality improved. We have established delivery schedules for piping, spare parts, and subassemblies with the Ministry of the Metallurgical Industry, the Ministry of the Machine Construction Industry, and the Ministry for the Machine-Tool, Electrical, and Electronic Industry; if these schedules are respected, the major generator systems will be repaired by the end of September, ahead of the peak electric power consumption period. At the same time as the repairs, we are also modernizizing some systems to assure better operation.

The completion of these measures, together with actions for continuously improving the level of utilization of installations through appropriate supervision and maintenance, and through more effective intervention in repairs, will continue to improve production.

[Question] What effect will these measures have on meeting industrial and public consumption demands?

[Answer] Despite the fact that the contribution of hydroelectric plants was lower due to the extended drought, lack of water in lakes, and the small amount of snow that fell in water basins, industrial and agricultural consumers received a better electric power supply during the first six months of this year than during last year, meeting the needs of economic units in fulfilling their plan tasks. The same is true for sociocultural activities as well as household utilities. The improved electric power situation during this portion of the year was also determined by better operation on the part of power plants as a result of the many repairs performed during 1982.

The actions taken to improve the operation of generators, the upgrading of some systems, improved preparations so that repairs will be completed before winter when power demand is higher, the amassing of coal supplies in power plant stores, as well as the measures taken to build new production capabilities, will continue to assure an improved electric power supply for industrial and public consumers.

[Question] What changes are taking place in the use of solid fuels instead of hydrocarbons for electric power production?

[Answer] Compared to 1982, an additional 835 million kWh of electric power were produced with coal during the first five months of this year, while the hydrocarbon-fired production decreased by 504 million kWh, and total electric power production increased by 542 million kWh. It is notable that during this period, the consumption of oil in electric power plants was 604,000 tons lower than during the same period of last year, while the coal consumption increased by 2.142 million tons. In the future, the introduction of new coal-fired production capabilities and the improved operation of existing ones, will increase coal-fired electric power production at a rapid rate, while decreasing the hydrocarbon-fired production.

We are currently replacing hydrocarbons with coal at the Govora electric power plant, and the third 50 MW coal-fired generator is at an advanced stage of installation at the Borzesti II plant, thus further reducing the consumption of hydrocarbons. The coal-fired electric power plants being built in Iasi, Suceava, Giurgiu, Bucharest, Drobeta-Turnu Severin, Arad, Timisoara, Oradea, and so on, as well at the ones whose construction will start in 1983 and subsequent years, will make it possible to increase the production or electric power with coal from 26 percent in 1980, to 43 percent in 1985. During the same period, the electric power produced with hydrocarbons will drop from about 52 percent in 1980, to 30.3 percent in 1985.

[Question] How is the scheduled delivery of coal being assured, and how does that affect electric power production costs?

[Answer] It is heartening that the efforts of miners has resulted in increasingly large quantities of coal being delivered to power plants this year. Based on a program formulated jointly by our ministry and the Ministry of Mines, we were able to rebuild the coal stocks of electric power plants beginning in April of this year, so that the levels of stored coal will be as high as possible at the start of the maximum consumption period. During 1982, it was at times not possible to produce at full capacity at some coal-fired plants because of insufficient coal deliveries and low resources. Coal deliveries have improved substantially during 1983, resulting in more reliable and economical operations on the part of electric power plants. The production of more electric power with the same installations and the same personnel will reduce the cost per kWh. When we consider that the cost per ton of conventional fuel is 34 percent lower for coal than for oil, and that the electricity produced with coal replaces primarily the one produced with oil, we see that production costs per substituted kWh are reduced by nearly 20 percent.

Of course, greater efficiency in the production of electric power with coal depends on continued improvements in the quality of extracted coal, which must not include foreign bodies and must have a heating power close to that of the original coal vein.

[Question] What are the means that will hasten the time when the country will be energy independent?

[Answer] Energy independence is obtained both through a more extensive exploitation of energy resources available in the country, and through their efficient utilization, seeking reduced consumptions per unit product. Efforts are being made throughout the economy to fulfill this major objective through better and more efficient utilization of available energy resources, and through savings of these resources.

The current development plans of the energy branch thus include a number of objectives which we are fully committed to fulfill. One of these is to more rapidly increase the production of electric power with lower grade coal from the country's own resources, therefore reducing the production of electric power with hydrocarbons. To achievee this growth, we will build new coal-fired capabilities of more than 4880 MW during the present five-year plan.

At the same time, we are intensifying the exploitation of our country's available hydroelectric potential. The energy development plan stipulates that as compared to the nearly 3600 MW installed in electric power plants since the war, we will install 2500 MW during this five-year plan, and an additional 3350 MW by 1990, in large and intermediate plants, as well as in microplants with an installed power of 160 MW. With these installations, the proportion of hydroelectric power will amount to 65 percent of the country's total usable hydroelectric potential. We are also intensively pursuing work on the first nuclear power plant equipped with five 660 MW generators.

Particular attention is being devoted to reusable energy resources which arise in technical processes and are capable of producing heat (fuels resulting from chemical processes, coking and pyrolysis furnace gases, combustible wastes from raw and other materials, physical heat from processes, heat from cooling agents, condensation water, and hot steam, and so on). After being identified, an inventory of these resources carried out early in 1982 throughout the economy has estimated them at 25 million tons of conventional fuel. The design and construction of specific equipment, and the implementation of pilot projects, has so far exploited a large portion of these recoverable resources, with positive effects on the country's economy.

The Ministry of Electric Power, for instance, has generalized a very advantageous process for recovering the heat exhausted at cold sources in thermoelectric power plants, by intesively using them for urban and industrial heat distribution. At present, the energy recovered in the form of heat used to produce hot water and technical steam, represents nearly 4.8 million tons of conventional fuel per year. Efforts to introduce reusable energy resources

in the economic circuit must be continued by hastening the use of recovery installations in all industrial objectives that still have unexploited resources. At the same time, sustained attention must be given to the exploitation of unconventional energy sources (sun, wind, geothermal sources, and biochemical gases), as a new direction for development, intended to diversify energy sources and supplies and make it possible to save conventional fuels.

One significant resource is the saving of energy on the part of all consumers. Extensive action must be taken to modernize the technologies that are currently being used, and replace outdated ones, so as to reduce energy consumption, this action going as far as replacing installations and machines with low electric efficiency.

Finally, I want point out that all workers in the energy sector are determined to act with devotion and selflessness, using all their capabilities and skills to completely fulfill the tasks assigned to them by party documents and by the orientations established by Nicolae Ceausescu regarding the earliest accomplishment of energy independence for our country.

11,023
CSO: 2700/287

ACTIVITY OF AGROINDUSTRIAL COUNCILS MUST BE IMPROVED

Bucharest REVISTA ECONOMICA in Romanian No 26,1 Jul 83 pp 7, 8

[Article by Prof O. Parpala]

[Text] More than four years have elapsed since the establishment of unified state and cooperative agroindustrial councils (CUASC), territorial agencies for the unified management and guidance of agriculture and all economic activities upstream and downstream from agriculture (technical-material supply, industrialization and construction, processing and sale of agricultural products). The transition from the former intercooperative councils to the new territorially integrating agencies (from an economic and social standpoint), has responded to concrete development demands from Romania's agricultural economy, at a stage when the superior exploitation of production resources in this priority branch of the national economy is determined by unity of action and the mobilization of all forces--independently of socioeconomic sector--to transform agriculture into a dynamic force in the progress of the entire economy.

During their short period of activity, structure and organization of CUASC have been steadily improved, as their functions have been regulated into the scientific organization and management of agriculture in our country. Operationally, the body of agricultural specialists and economists with higher education has been strengthened to assure the proper organization of the councils. Organizationally, the councils have been redistributed throughout the territory: compared to the 710 councils that existed at first, 558 councils were created to include along with other units, 325 state agricultural enterprises (IAS).

Since their inception, CUASC have obtained valuable results, but they have not succeeded in fully exploiting the conditions created for them. The councils must become powerful leadership centers for the entire agricultural activity, as well as for the socioeconomic development of communes in their territory, solving the biggest political, economic and sociocultural problems of these communes. In emphasizing the need for a greater role on the part of agroindustrial councils, Nicolae Ceausescu has said: "We must act so that

these state and cooperative agroindustrial agencies will assure a good coordination and guidance for the entire activity, an appropriate mutual assistance in deriving the maximum results from the means available to these agroindustrial councils."

Relations Among Component Economic Units

In the management and guidance of agricultural units under their jurisdiction, the councils were faced from the beginning (and continue to be faced) with the problem of optimizing relations among the units that composed them, for which the councils appear as plan assignees. The difficulty in finding an optimum solution is due to the following reasons:

Each unit retains its form of ownership within the council. The maintenance of autonomy (social and economic) on the part of each agricultural enterprise under the council's jurisdiction imposes the use of economic management leverages based on material vested interest for each one of them, while respecting the principle of mutual advantage;

Agricultural production cooperatives (CAP) and IAS remain the basic units of our agriculture, playing a decisive role in the achievement of agricultural production. The investment of CUASC with coordination and organization functions does not mean that they replace the activity of CAP and IAS. The existence of the councils must not weaken responsibility and discipline in basic units;

The active role of CUASC is manifested in its function as plan assignee--under the present conditions of the plan which cumulates the plans of its component units. Each unit continues to remain an assignee of its own plan, and the council is the assignee of the sum of the plans, responsible for the manner in which forecasts are met in each unit, including in comprehensive units and in the industrial units forming the comprehensive units.

This situation requires that the agroindustrial council carry out its scientific management at a high level of performance by taking into account the interests of each unit, and combining these interests and resources to achieve a new quality in the agricultural activity as a whole.

The major problem in this respect involves the relations between stations for the mechanization of agriculture (SMA) and agricultural units within the council's jurisdiction. The priority assigned to this category of relations is obvious if we consider that at present, SMA concentrate all the technical resources that serve both IAS and CAP (including lots for the personal use of cooperative members). At the same time, as part of the advanced mechanization of agriculture, the decisive role in assuring superior yields is played by mechanical operators, who are also the key factors in the execution of high quality work. It is because of these considerations that SMA have become the organizational nuclei of CUASC.

Improved Mechanization Activities

The new type of relations between SMA and agricultural units are aimed at full integration of mechanization in IAS and CAP. They start from the premise that SMA remain the owners of technical resources, and that mechanization sections and formations organized at state agricultural units operate under a dual subordination. Production units--state and cooperative--establish the manner in which means of mechanization will be used, what work is to be performed, and when. In the case of IAS, mechanical operators are integrated into the units' activities as permanent workers paid by these units. Similarly, mechanical operators in cooperative work formations are integrated into CAP activities as cooperative members, and paid by the SMA, continuing to retain their position as working personnel, with all ensuing rights. They are obligated to execute the decisions of the cooperative management council, with chief-engineers and leaders of mechanization sections being directly responsible for the fulfillment of all projects. The management of state or cooperative agricultural units establishes the order of operations, their priority, all that has to be done, and bears the responsibility for the manner in which the operations are executed. SMA managements continue to be responsible for the availability of tractors and machinery--in accordance with established regulations--to all sections, and to control the rational utilization of mechanization resources, and their repair, maintenance, fuel supplies, spare parts, and all that is necessary for their proper operation.

New elements were introduced into these relationships together with the uniform territorial payment schedules for work performed by SMA, it being well known that both efforts and the results obtained in production are influenced by the productive capability of the soil. That is why allowance must be made for the fact that mechanized work per unit area is more costly in areas with difficult production conditions (especially on sloped terrain in mountain zones) where the lesser developed agricultural cooperatives are usually found; these higher costs are due to higher fuel consumption, more rapid tractor wear, lower labor productivity, and so on. A greater zone differential in prices and production bonuses would allow these units to support the greater efforts required by the new payment schedules for SMA work.

Application of Uniform Crop Rotation

The second large problem in improving the management mechanism of CUASC is the relation between CAP and IAS with respect to uniform crop rotations, as an important means for practicing rational agriculture and increasing agricultural production. There is no justification for delaying its solution, with its many implications for current and future agricultural production.

In the initial system for technical assistance from SMA, through the organization of large work formations whose activity included an equal measure of land belonging to IAS and CAP, the problem appeared insoluble at one time. But the system of mutual participation from CAP and IAS at the end of the year, with the assumption of equal yields per hectare, did affect the interest of each type of enterprise and each farm in increasing the yield per hectare.

The transition to a dual form of subordination for mechanization sections (and therefore for resources), greatly simplifies the solution of the problem. The new organizational form encourages the application of uniform crop rotations within agroindustrial councils, each unit being responsible for the fields on their own land. This crop rotation system must assure an annual crop structure appropriate for the production capabilities and interests of each agricultural unit.

If we start with the premise that uniform crop rotation does not mean a single kind of crop, but rather many kinds (pasture, fodder, vegetables, special, and so on), as well as with the understanding of a need to organize--within the current size of CUASC (an average of about 15,000 hectares of arable land)--even several crops of the same kind (even pasture), the magnitude of the problem is reduced, allowing the possibility of a realistic solution. The "uniform" aspect must not become a hindrance to the practice of rational agriculture, especially under the present circumstances of the world energy crisis. In fact, the model projects carried out by our specialized institutes indicate a practical possibility for improving relations between IAS and CAP within the framework of uniform crop rotations.

One of the great problems--which has led to the creation of the councils and to their agroindustrial label--is the integration of agriculture and industry (especially the processors of agricultural products) within the jurisdiction of a given council. This approach to a solution to the problem--as one component of the policy for territorial self-management and self-supply--offers significant and obvious economic and social advantages. The first is the avoidance of transporting large quantities of agricultural raw materials over long distances, by processing these materials at their production site (primarily sugar beets, vegetables, fruits, but also the primary processing of non-food products such as flax, hemp, and so on). The second is a reduction in quantitative losses and qualitative deterioration, especially for perishable products, thus increasing their economic efficiency at a social level. The third is a more concrete and uniform utilization of manpower in villages, including the stemming of youth migration. The fourth is the utilization of secondary products and wastes from the industrial processing of agricultural products at production sites, which will strengthen the fodder base and develop livestock farming on economic grounds. The fifth is a more accelerated urbanization of agroindustrial council centers, where this industry would be introduced at first. And last--but very significant element in the development of agriculture and villages--is the income growth of agricultural producers, not only due to higher labor productivity, but also through the sale of finished (processed) products at higher prices, which would increase the income share of agricultural producers. Without violating the state policy for collecting into the central fund part of the created net income through the tax on income derived from industrial activities or from the circulation of goods, this (agroindustrial) integration will open new perspectives for the economic development of agriculture. That is why the development of the industry for processing agricultural raw materials (particularly food products) should be oriented toward the creation of small and intermediate size enterprises in each council, suitably equipped for its agricultural production specialty.

This idea does not exclude the small industry and crafts (of a non-agricultural nature) which could derive higher economic returns from the various production resources under the jurisdiction of each council, improve the standard of living of village populations, employ more highly qualified personnel, and contribute to greater monetary resources in villages.

Plan Assignee Function

In this complex question, we cannot overlook the relations between CUASC and its component units, which are primarily characterized by the council's function--established by law--of plan assignee. But this function appears only as a formality when the entire role of the council consists in summing up the production and financial plans of its component units, which formulate their own plans in direct collaboration with the county agency for agricultural management. The actual nature of such a high priority function is not correlated with the other functions of the council. For instance, how can the agroindustrial council organize uniform allocations (which assumes coordinating the activities of several production units) if it is not empowered to establish plan tasks? We therefore believe it necessary for plan tasks to be reflected in the production and financial plans of production units, through the intermediary of the council. This practice would in no way trespass the economic autonomy, the role of basic unit of CAP and IAS, but would give meaning to the concept of the CUASC as a territorial agency for agricultural management and guidance, and would at least justify the presence of economic specialists at that level. This is because the most qualified economic personnel, with production experience,.has been concentrated in councils, that is, at the very spot where the plan is not formulated, but rather where plans are summed up and statistical reports are written about the plan's fulfillment.

A condition that must be achieved in order to improve relations between the council and its component units, as well as among the units themselves, is greater responsibility on the part of their general assemblies. The general assembly represents the highest management forum of producers-owners, both in CAP and IAS. IAS workers are fully entitled and have the duty to manifest a necessary concern for the proper pursuit of affairs within the council, and to bring sanctions against those who do not fulfill their obligations. In this way, workers in agricultural units will be effectively involved in solving problems associated with improved economic activities, and for applying consistently and with best results the new economic mechanism in agriculture.

In conclusion, given the extremely difficult and decisively important problem that faces Romanian agriculture, the activity of CUASC must rise to the level of the constantly growing demands of the new agrarian revolution. Their activization--or better yet, revitalization--so that they may fulfill the goal for which they were created, implies first of all, experimentation followed by a generalization of the most efficient means for implementing (eliminating those that are outdated or less efficient) their major lines of action, within the framework of the economic and organizational dynamism which characterize

modern social life. They can and must become an essential link in the new system of territorial self-management and self-supply, while achieving effective self-financing for each component production unit. The measures taken so far have concerned either organizational aspects (such as the size of councils), or technical-organizational ones (forms of cooperation between SMA and component units). There remains to practically solve the basic problem, that of economic leverage, through which CUASC can act as a true agency for territorial management and guidance for agriculture.

11,023
CSO: 2700/276

COAL MINING INDUSTRY PLAGUED BY SHORTAGE OF WORKERS, EQUIPMENT

Bucharest ROMANIA LIBERA in Romanian 1, 4 Aug 83

[Article by I. Cojocaru: "Coal Production Can Be Increased Substantially; First of All, in the Jiu Valley"]

[1 Aug 83 pp 1, 3]

[Excerpts] The collectives in the Jiu Valley mining combine have pledged this year to mine a large quantity of coal above the plan and to perfect their entire economic-financial activity. More precisely, the general assembly of representatives of workers in the combine decided to give the country an additional 60,000 tons of net coal, a net production of 11 million lei. In connection with the problems which must be resolved to meet these objectives, we had a conversation with Dan Otto Surulescu, director general of the Jiu Valley mining combine.

Surulescu: What were the results for the first 6 months of 1983? Compared to 1982, the average daily production of coal is more than 3,200 tons greater. Compared to the tasks of the plan, for this 6-month period, labor productivity norms were exceeded by more than 176 kg of coal per work station in the coal faces and by almost 60 kg in the work stations in the quarries. Work collectives in the Cimpului-Neag quarry, the Petrila mining enterprise, the Lupeni mining enterprise and the Anina mining enterprise fulfilled the 6-month plans ahead of schedule.

Cojocaru: I have been in many mining enterprises in the Jiu Valley and I found out that some comrades try to justify the failure to fulfill their plans by the appearance of tectonic conditions or unexpected circumstances. Do you, as a specialist, believe that these are the only reasons for the deficiencies?

Surulescu: Tectonic conditions and, especially, some unexpected troubles, have been and continue to be factors which have a negative influence on the fulfillment of the plan. Contrary to expectations, coal reserves which we counted upon in Lonea, Petrila-Sud, and Barbateni have not been confirmed. Some mining enterprises are experiencing difficulties caused by the failure to obtain the required level of technical equipment. In order to give a realistic response to your question, I must also point out

the subjective causes with which we are specially concerned. We have not been able to get all the manpower needed for the planned coal mining stations, especially in the mining enterprises in Lonea, Dilja, Livezeni, Aninoasa, Vulcan and Barbateni. This has created difficulties in carrying out mining operations on which the increase of coal production depends directly. I must also mention the improper functioning of equipment and installations, the poor quality of the work for checking and maintenance of the machines, installations and equipment, the disharmony of the capacities for transport flows, the poor quality of some spare parts and the persistence of deficiencies in supplying work groups. All these aspects were analyzed, with great responsibility by the party committees, the workers councils, the trade union organizations and the Union of Working Youth Committees which established measures which give us the assurance that in the second half of the year we will obtain better results in fulfilling the plan and our pledges. In fact, in each one of our enterprises, precise measures, of a technical and organizational nature, have been established for the radical improvement of the entire activity.

Cojocaru: Why are there brigades and sectors within the same enterprise which do not fulfill the tasks of the plan?

Surulescu: In most cases, the brigades and sectors which are not fulfilling their plan--and there are enough of them in this situation--have incomplete staffing and workers with a hetereogenous composition in regard to professional training and views about work. They have unstable men with less experience in their work. In their ranks there is the phenomenon of unjustified absences and excessive leave. Some 1,000 tons of coal a day are lost because of these absences.

The shortfalls of the sectors and brigades are also due to other causes, such as varying conditions, insufficient concern on the part of management personnel and of technical-engineering cadres with setting up a system of severe discipline and order in work. Recently we have had some progress in improving discipline and we are continuing to give this close attention.

[4 Aug 83 p 3]

[Excerpts] Cojocaru: Although important measures have been taken to mechanize and modernize the mining process, more miners are needed in the Jiu Valley. What measures have been taken to develop the work force?

Surulescu: As a result of the adoption of the new work program and application of appropriate measures the situation of the labor force in our enterprises has improved. As of the beginning of June, there were more than 4,400 new workers and an additional 600 persons joined the ranks of miners from other occupations, as a result of the reduction of the training period. Some 620 men, especially young people, have been trained in specialized schools and courses in the combine and we will be receiving about 2,600 graduates from the specialized secondary schools in the country.

The problem of the necessary manpower to cover the entire work front is being resolved, in the sense that we must enlist new miners, especially in the mining enterprises in Lonea, Livezeni, Dilja, Aninoasa, and Barbateni.

In addition to our program of enlisting new workers, we have a program for improving the professional training of the existing cadres. By the end of the current 5-year plan they will all be retrained, in 3-6-9-month courses, organized in the enterprises and terminated with final examinations.

This year we have experienced difficulties caused by failure to obtain technical equipment. Of the eight mechanized complexes which we were supposed to receive, only one, the SMA-2, was delivered in the first 5 months and the Timisoara I. M. [metallurgical enterprise] has delivered only two of the six CI-2 combined cutter-loaders. Also, the number of transporters contracted for have not been delivered. The same holds true for mine trolleys, ventilators, electropneumatic drills, etc.

The machine-building, metallurgical, and chemical industry units with which we have contracts did not deliver to us, in the first 6 months of the year, several hundreds of tons of mining type rubber covering, large quantities of electric cables, piping for hydraulic posts, traction cables, electric motors, etc. The "Unio" enterprise in Satu Mare is behind schedule in the delivery of conveyor belts and spare parts; the Nadrag "Ciocanul" enterprise is not providing the proper quantity of mining cable and as a result, there are frequent interruptions in the transport flow; the Resita iron and steel combine has not supplied the necessary quantity of narrow gauge railroad rails and the supplying enterprises of the chemical industry have not delivered the necessary quantity of rubber belts.

Cojocaru: We have learned that the iron and steel workers are not completely satisfied with the level of the parameters of coking coal delivered by the enterprises of this combine. What are the causes of this situation and what is being done to raise these parameters to the level required?

Surulescu: We, too, are not always satisfied with the quality of the coal mined, prepared and delivered. Please allow me to inform our customers that we are in the process of implementing a program intended to ensure the good quality of the coal in all the mining enterprises. Here are some of the most important measures: the extension of sorting, especially in the mines in Uricani, Barbateni, Lupeni, and Paroseni, taking out and depositing waste on the ramp in all nonmechanized coal faces; separation of the transport flows of coal from those of waste in all the opening and preparatory operations which will be executed in the future. Specialized personnel will monitor coal mining in the quarries on a daily basis. Technological flows for all coal preparatory operations in the Jiu Valley are undergoing modernization.

We will give special attention to increasing labor productivity underground, by extending small mechanization processes, especially the wider utilization of monorail installations and improvements in the supplying of worksites with materials and spare parts. The cadres of miners earmarked

for coal mining activity will be concentrated on a smaller number of worksites, with priority given to those with the greatest productivity and profit. The six chapters of the program drawn up for this purpose includes measures for all phases of the production and delivery process, including the supplementation and modernization of technological flows in all the preparatory operations in the Jiu Valley. Recently, a new preparation unit went into operation in Petrila and we are preparing new production capacities in Uricani, Lupeni, Paroseni, Aninoasa, and Livezeni, equipped with apparatus of high technical quality, manufactured in the country and in our combine.

CSO: 2700/288

END