Nyrop, Richard F (ed) Jordan, a country study. The American University, Wash, DC, 1980 pp. 118 -144

Development Planning

Development planning dates back to the establishment of the Jordan Development Board in 1952 when conditions were disorganized, and planning was new. In 1955 guidance was provided by a World Bank group that surveyed the economy and drafted proposals for a ten-year development program. Various restraints held up draft plans until 1961 when a five-year plan for the 1963–67 period was published. After implementation had begun the plan was revised to become a seven-year plan for the years 1964 through 1970. The six-day war forced abandonment of the new plan, and subsequent events made ad hoc, short-term considerations the focus of economic policy. The initial efforts at planning exposed several shortcomings.

By the early 1970s interest in development issues and planning revived, and the planning agency was revamped under the name of National Planning Council (NPC). The board of directors of the NPC included the prime minister, economic ministers, heads of the Central Bank and the University of Jordan, and other leaders from the private sector. Legislation gave the NPC a wide range of responsibilities, in collaboration with the Ministry of Finance and the Central Bank, for all aspects of social and economic planning, including the right to contract loans in its own name at home and abroad. In 1975 the High Planning Committee, consisting of a membership similar to NPC, was established to oversee planning. Ministries involved in plan implementation were more closely associated with preparation of the plan to correct a deficiency that had emerged between 1972 and 1975.

In 1972 the NPC prepared the Three-Year Plan (1973–75). Physical targets included an increase of GDP at 8 percent a year, but real growth of GDP amounted to about 6 percent a year. Exports were to grow at 16 percent a year, a goal that was exceeded by a few percentage points. Domestic revenues were planned to increase at 12 percent a year, but they increased at perhaps 17 percent a year in constant prices. Planned investments were about US$500 million. A high rate of investment was achieved, about 25 percent of GNP, but private investment was about 10-percent short of its target, and public sector investment was about 25-percent short. Public investment was slowed by the need for additional preparation work and by administrative constraints, as well as by the uncertainties created by the October 1973 War. Physical progress on public projects was substantially less than investments, reflecting deficient implementation.

The 1973–75 plan was the first to be implemented without revision or interruption. It revealed weaknesses in project preparation, economic statistics for planning and monitoring development, coordination between ministries, and implementation and follow-up. Modifications in the planning and ministerial organizations were undertaken to correct the deficiencies. Meanwhile the Five-Year Plan (1976–80) was prepared.

The 1976–80 plan was built around a comprehensive investment program, the larger projects of which had been under study for a decade or more. The major qualitative goal was greater economic self-sufficiency to be achieved by reducing the adverse foreign trade balance and the size of budget deficits. In the process per capita incomes would rise, and social measures, including a better balance in regional growth, would reduce the disparities in income distribution. The investment program concentrated on the productive sectors, industry and agriculture, and on the necessary transport facilities to raise exports and reduce imports substantially. A few large projects—phosphate, potash, compound fertilizers, oil refining, cement, and the Maqarin Dam (for greater irrigation)—comprised the bulk of investments. The private sector was to supply about 35 percent of investments, but when government contributions to businesses in which it held shares were added, private and mixed enterprises would account for about half of all planned investments.

The plan anticipated a rise of GDP in constant prices by 12 percent a year, based largely on a growth by industry of 26 percent a year and by agriculture of 7 percent a year. The trade balance would improve because of a planned increase in commodity exports of 24 percent a year compared with a planned increase in imports of only 8 percent a year. Domestic budget revenues were expected to increase by more than 16 percent a year while public consumption would grow by only 7 percent a year, thereby diminishing the amount of external support required for current expenditures.

Planned investments totaled over JD765 million (over US$2.3 billion or an average of US$460 million a year). Sectoral allocations shifted considerably toward industry and agriculture compared with earlier plans. Planned investments in industry amounted to JD272 million (36 percent), of which JD169 million were in manufacturing alone. Investments in agriculture were planned at 18 percent of the total, primarily for development of water and irrigation. Planned investments for other sectors were 16 percent for transportation, 11 percent for housing and other building, and 19 percent for all others. About 65 percent of investments, including government loans and equity capital to mixed businesses, was to be by the public sector. Most purely private investment was in housing, manufacturing, agriculture, and various services.

Mining, particularly expansion of phosphates, was to be the leading sector, generating the bulk of export earnings and accounting for much of the growth of domestic revenues in the budget. If mining and other sectors approximated the plan, gross foreign borrowing would amount to about JD333 million (about US$1 billion), and budget support would need to be about JD300 million (over US$900 million) for the five years.

Observers generally regarded the plan as ambitious but properly focused. Concentration on the country's two major natural resources, phosphates and potash, and extension of irrigation for production of high-yield, high-value fruits and vegetables provided a sound basis for quick expansion of the economy and individual incomes and the best prospects for a rapid increase in export earnings (see The Goal for 1980—The Five-Year Plan, this ch.).

Agriculture

Scarcity of water was the most serious of several constraints that limited development of farming. By 1977 agriculture, including a little forestry and fishing, contributed only 9 percent to GDP, and the country depended on imports for much of its food supply. Farm incomes had been low and amenities few, causing a substantial migration to urban areas, particularly of the young. Estimates of East Bank labor engaged in agriculture fell from 105,000 in 1972 to 73,000 in 1975, although about 40,000 additional workers were seasonally employed. Government policy aimed to realize the maximum from the sector's modest potential in order to raise farm incomes and to avoid future strains on the balance of payments from expanding imports of food.

The quality of agricultural statistics is particularly suspect compared with other sectors of the economy. One aspect concerns the predominantly agricultural nature of the West Bank economy. In the early 1970s the West Bank was still regularly included in Jordan's agricultural statistics, and even in 1977 it was occasionally included but not necessarily noted. Thus such basic factors as the area cultivated and the land irrigated could not be viewed over a number of years. Moreover there was the suspicion that statistical reliability deteriorated sharply outside of key regions, raising questions about wheat production, livestock numbers, and employment in agriculture, for example, because they were important throughout much of the country. The suggestion is that agricultural statistics be viewed as indicative rather than precise.

Land Use

In 1979 only about 5 percent of the country's nearly 9.1 million hectares (excluding the West Bank) were cultivable. Estimates varied, but the government stated that about 500,000 hectares were arable, of which perhaps 66,000 hectares might be irrigated. Tree cutting for fuel and cropland had reduced the extensive forested area of biblical times to about 100,000 hectares or less in the late 1970s, confined to the northwest corner where rainfall was greatest. The bulk of the land was desert and would remain so, providing limited grazing at best. In 1977 official data indicated that 263,000 hectares were cultivated (excluding fallow), perhaps 36,000 hectares of which were irrigated. The possibility of adding

to the cultivated area was limited, and in fact some marginal land, converted from pasture to growing grains, was to be withdrawn from cultivation by the early 1980s.

Cultivation was restricted almost exclusively to two areas. One consisted of the Jordan Valley and its side wadis where most of the irrigated and potentially irrigable land was located. In 1977 over 27,000 hectares were cultivated in the valley. The larger area of cultivation consisted of the western edge of the high plateau just to the east of the Jordan Valley. This area depended primarily on rainfall, the amount and timing of which was highly erratic from year to year. The region of sufficient rainfall for cropping in a normal year formed a long, narrow triangle from a base in the northwest corner at the Syrian border and extended down to a point between Petra and Maan (see fig. 9). This triangle also contained most of the towns and the bulk of the population. Official data showed about 236,000 hectares (excluding fallow) under cultivation outside of the Jordan Valley in 1977.

The limited areas of cultivation were sufficient to support the small population of Transjordan before World War II even using traditional techniques. Agriculture, including nomads raising livestock, was the main economic activity and the primary source of employment. Subsistence farming predominated. Productivity was low, however, and the population was poor. The large population increase after the 1948 war vastly altered the economy and required much larger quantities of food. The pressure on the land pushed cropping onto former grazing areas and marginal plots having inadequate rainfall and excessive slopes. The extension of cropping and overgrazing of available pastures added to already serious erosion problems.

Irrigation

Irrigation was used for thousands of years in the area that became Jordan. The Jordan River and its tributaries provided water that could be diverted to adjacent fields. Springs and wells also permitted cultivation in other areas, such as Azraq ash Shishan (Azraq Oasis). The total irrigated acreage remained small, however, and cultivation primarily depended on rainfall.

In the Palestine Mandate Jewish settlers developed irrigation far more extensively and intensively than their Arab neighbors, partly because of their experience with European farming methods and the availability of capital. By the 1940s some regional irrigation systems that had been built in the area that became Israel demonstrated the considerable increase in land productivity that could be achieved through irrigation. Before the end of the British mandates over Palestine and Transjordan experts had studied the irrigation potential of the Jordan River basin. In the early 1950s an American proposal (the Eric Johnston plan) for allocation of the waters in the Jordan River basin was rejected by

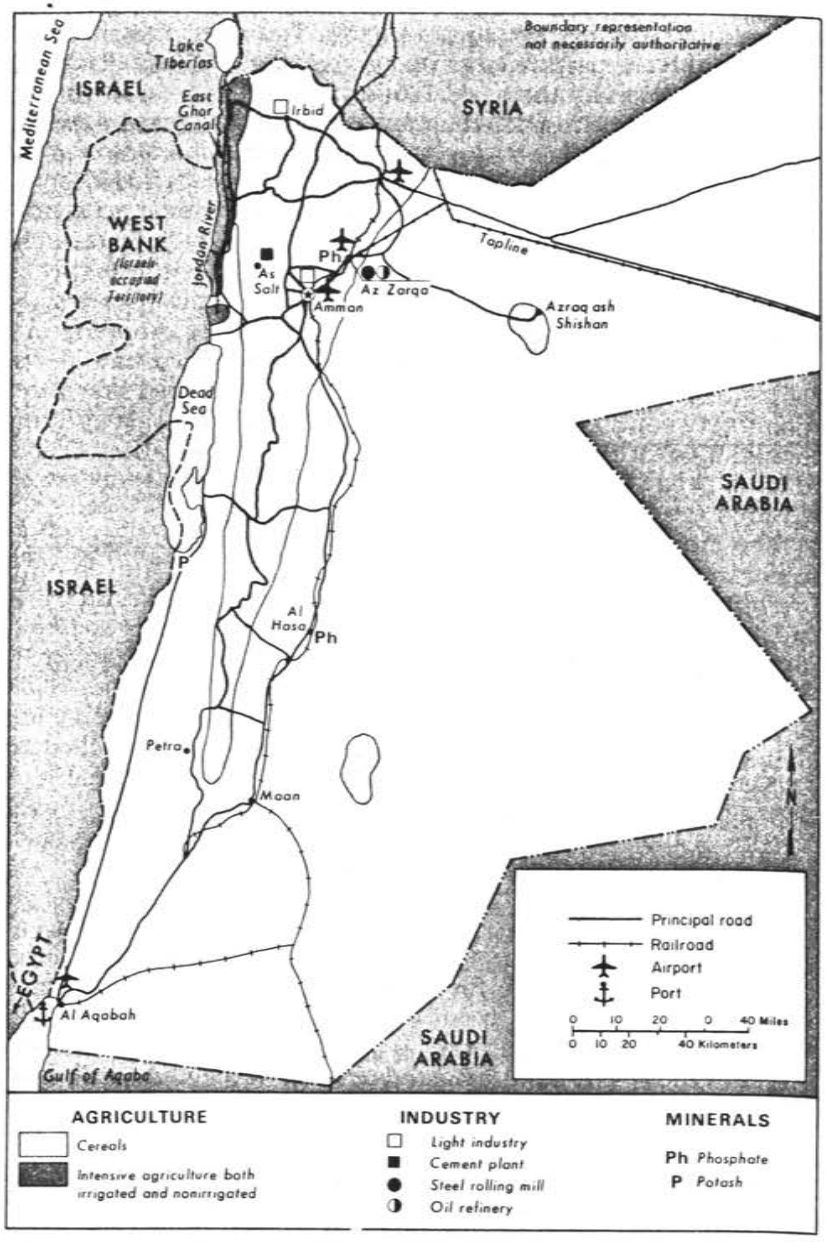


Figure 9. Land Use and Other Economic Activities

the four riparian nations—Israel, Jordan, Lebanon, and Syria—because of Arab-Israeli conflicts (see Hussein's Early Reign, ch. 1). In 1953, however, Jordan and Syria reached agreement on the diversion of the Yarmuk River, which formed part of their common border.

In the mid-1950s Israel began constructing a canal to lead water from the upper Jordan River and Lake Tiberias (Sea of Galilee) to the coastal plain and the northern Negev Desert. It appeared likely that Israeli withdrawals would slow the flow of the Jordan River between Lake Tiberias and the Dead Sea to a point where salinity would become a problem. Jordanian officials had little choice but to rely on the waters from the Yarmuk River and those Jordan River tributaries lying within Jordan for development of irrigation.

The portion of the Jordan Valley belonging to Jordan lies below sea level, the elevation declining gradually from north to south. The surface of the Dea Sea is more than 400 meters below sea level. The eastern side of the Jordan Valley also rises toward the east culminating in the escarpment that towers above the valley. Rainfall is sufficient for cropping in the northern end of the valley, but it diminishes toward the south where irrigation is required. The valley is nearly frost free, permitting cultivation of a wide range of field crops, fruits, and vegetables. Seasons are advanced relative to other areas in the region. With irrigation, double and triple cropping is possible. The favorable conditions in the valley resulted in cultivation long before biblical times.

After independence officials gave priority to extending irrigation, primarily in the valley. The first major project was the construction of the East Ghor Canal, begun in 1958 and completed in 1964. The canal extended some seventy kilometers south, carrying water from the Yarmuk River. The canal roughly parallels the Jordan River but lies eastward against the rising sides of the edge of the valley. Irrigation initially was by gravity from offtakes leading from the canal to the fields below. In 1978 sprinkler irrigation began, and use of sprinkler and drip irrigation were to be expanded in the future in order to conserve water. Drainage was into the Jordan River. Subsequently the canal was extended, and its capacity was increased. By 1979 the canal was approximately 100 kilometers long (reaching nearly to the Wadi Shuayb), and a contract had been let for an additional sixteen kilometers that would bring the canal near the Dead Sea.

Eastward of the canal dams and waterways collected runoff in the wadis and channeled it into the canal as additional sources of water. By 1979 four main dams had been constructed, the most recent in 1977—the King Talal Dam on the Az Zarqa River with a reservoir capacity of 58 million cubic meters and hydrogenerators of five megawatts of capacity. The dam reservoirs made water available throughout one year and to a degree over a period of years. In 1979 start of construction of the Maqarin Dam on the Yarmuk River appeared imminent although the dam had been seriously contemplated since the 1950s. Studies had been completed, a site chosen, and some financing arranged. The dam reportedly would be 125 meters high, store about 150 million cubic meters of water, and irrigate an additional 15,000 hectares. Com-

pletion would be in 1983 or later. Only a few other minor sites were available for development of irrigation.

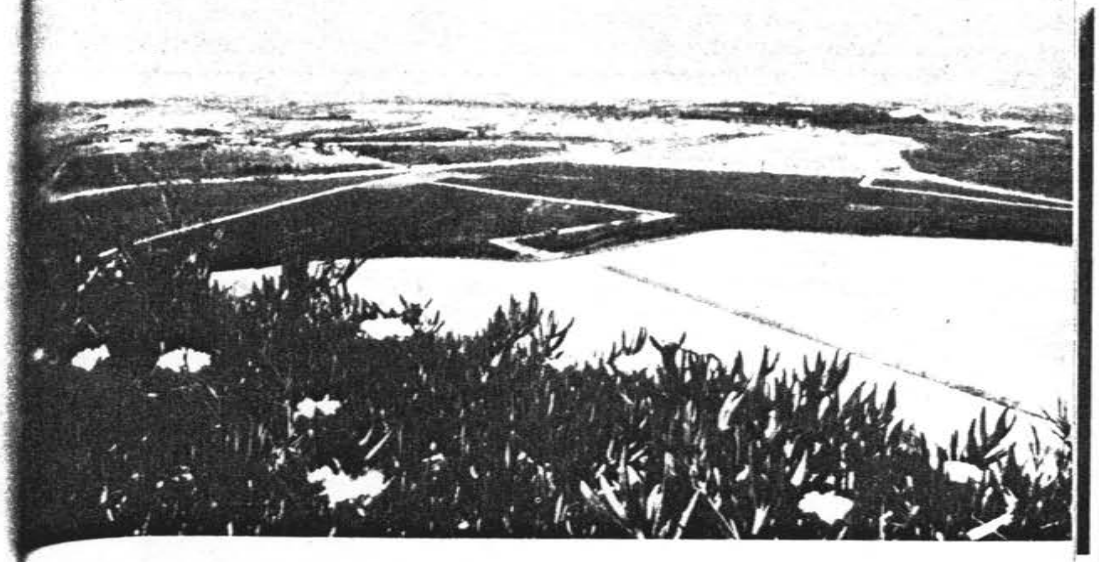
The King Talal and Maqarin dams were originally intended only to supply water for agricultural use. The rapid urbanization of the population, particularly the growth of Amman, exceeded the groundwater sources, however. Beginning in 1979 some 17 million cubic meters of water a year of the King Talal reservoir were to be allocated for urban water systems. Approximately half of the Maqarin reservoir also would be diverted for use in cities and towns when the dam was completed. The limited water supply made it imperative to implement conservation measures in agriculture to postpone the country's eventual water crisis.

An integrated and comprehensive approach was taken in the development, including irrigation, of the Jordan Valley. The responsible organization was modified over the years, and the development plans were enlarged. In 1979 the Jordan Valley Development Authority (JVDA) was charged with the overall economic and social development of the valley, although other government agencies were also involved in such aspects as construction of dams and farm extension services. The objective was to establish a highly productive agricultural community in the valley to benefit farmers through increased incomes and such services as schools, health centers, roads, and other facilities, and to benefit the country through optimum development of that part of the agricultural sector that had a comparative advantage.

In 1979 the development plan for the valley included a road network to facilitate travel and marketing; facilities for storage of produce; supply, marketing, and credit organizations; electricity, drinking water, and telephones for villages; and buildings and housing for schools, clinics, and government agencies and their staffs. Some aspects of the plans were already functioning, and land reform had been implemented on the irrigated lands in the valley. Extension and marketing services along with irrigation resulted in remarkable increases in productivity. In the mid-1970s simple, plastic greenhouses were introduced for vegetables, greatly altering farmers' concepts of productivity and profitability. The yield of cucumbers, for example, increased sevenfold through use of plastic greenhouses. Between 1977 and 1978 vegetable production doubled although it was another drought year, and other agricultural production largely stagnated.

Before the 1967 war some 100,000 people lived in the Jordan Valley. By the early 1970s the population had declined to about 5,000 or fewer as a result of damage to the irrigation system and the insecurity in the valley. Subsequently the damage was repaired, and a major development effort concentrated in the valley. By 1978 the valley's population exceeded 78,000, and the goal was 150,000 by 1983. In 1977 over 27,000 hectares were cultivated in the valley, most of which was irrigated. This area, about 10 percent of that cultivated, produced probably more than three-

Agriculture in Jordan Valley
Courtesy Agency for International Development



Agriculture in Jordan Valley
Courtesy Jordan Information Bureau, Washington, D.C. (Kay Chernush)

quarters of the value of all crop production because of the exceptional yields and the concentration on such high-value crops as fruits and vegetables.

Irrigation outside of the Jordan Valley and its side wadis has been limited. In 1977 government data showed 9,000 hectares irrigated by wells. Some minor irrigation works based on wells were built in a few places, and wells were drilled and storage tanks established for livestock in desert areas, but large aquifers that would support extensive pumping had not been found. There were soils in arid regions that would be fertile if sufficient moisture were available. The search for large aquifers continued in 1979, but official planning had to approach water as one of the country's most scarce resources unless a major discovery changed the grim situation.

Land Tenure

Comprehensive and reliable data on land tenure were difficult to obtain even though land registration was essentially completed in the 1960s. A 1975 farm census showed that almost 75 percent of the nearly 51,000 holdings, accounting for 73 percent of the farmland, were owner operated. The other 25 percent was leased, sharecropped, or operated with partners. Nearly half of the holdings were less than three hectares, but they accounted for only 6 percent of the farmland. The numerous very small holdings were either rented by the owner to others, or the owner rented additional acreage in order to form a sufficient-sized farm. At the other extreme, less than 1 percent of the farmholdings exceeded 100 hectares although they commanded 18 percent of the farmland. Nearly 28 percent of the holdings were between five and twenty hectares, accounting for 33 percent of the farmland. Another 34 percent of the land was in holdings between twenty and 100 hectares, although this group constituted only 8 percent of the holdings.

In 1968 a land reform law was established for land under government irrigation. No restrictions were set for unirrigated land. In areas where government irrigation was available, government agencies, essentially the JVDA or its predecessors, purchased individual holdings of more than twenty hectares and sold the land to other individuals, preferably former tenants. Individual holdings of irrigated land could not be less than three hectares of fertile land or five hectares of less fertile land. The experience of land redistribution by the mid-1970s had been generally toward consolidation of fragmented plots, resulting in fewer owners than before redistribution.

The available information by the late 1970s suggested that Jordan no longer had a large pool of landless farmers or extensive underemployment in the farm population, partly because of the departure of rural workers to better paying jobs elsewhere. There

were labor shortages in agricultural areas even though farm wages increased severalfold after 1973. Women and children were frequently used for such tasks as the olive harvest. Some foreign workers, mainly Egyptians and Pakistanis, were employed as agricultural laborers in the Jordan Valley.

On the eve of the 1980s land tenure continued to constrain farm productivity in the rain-fed highland region. The fragmented, small plots needed to be consolidated into economically-sized units. Experts considered ten hectares the minimum acreage to provide a sufficient return for a family. Moreover holdings frequently ran vertically up slopes in long, narrow plots, making it virtually impossible to implement soil and water conservation measures. Contour plowing and terraces were needed to reduce the serious soil erosion and to make the maximum use of the limited rainfall.

Cropping Patterns and Production

In 1977 government statistics showed 263,278 hectares under cultivation in the East Bank. Field crops accounted for 195,957 hectares (74 percent), vegetables 26,398 hectares (10 percent), and fruit and nut trees 40,923 hectares (16 percent).

Wheat and barley were by far the most important crops in terms of acreage. Wheat, the basic food in rural areas, was planted on 126,000 hectares in 1977, accounting for 48 percent of the total area cultivated. Barley acreage was much smaller, amounting to 46,000 hectares. Grains were grown primarily in the uplands under rain-fed conditions. Use of high-yield seeds, fertilizers, or adequate weed controls had been rare. The usual practice was to plant cereal crops every other year except on fields where rainfall was high. The fields were left fallow to accumulate moisture. The amount of fallow land varied somewhat according to rainfall but was large in most years. Little had been done to institute modern practices in which crop rotation and cultivation techniques avoided fallowing while improving the accumulation of moisture in fields and stabilizing yields. During the 1960s wheat yields averaged 541 kilograms per hectare, low by international standards and less than in surrounding countries.

Grain production varied sharply with rainfall. Rainfall in the years between 1975 and 1979 was very low, resulting in small grain harvests. Wheat production ranged from 244,000 tons in 1974 to 67,000 tons in 1976 and only averaged about 58,000 tons between 1975 and 1978 (see table 7, Appendix A). Barley output amounted to 12,000 tons in 1975 and 16,000 tons in 1978. The year 1979 was an even worse drought year, and preliminary estimates of wheat production ranged between 15,000 and 30,000 tons.

Government programs gave only slight attention to stabilizing yields and to realizing the small potential of rain-fed agriculture, favoring instead development of irrigation and productivity in the

Jordan Valley. In the late 1970s a demonstration project near Irbid under the auspices of United Nations (UN) organizations impressed local wheat farmers with the higher yields that could be obtained from improved farming practices, but it would take considerable time for such techniques to be adopted on a broad scale. The government also had some programs to improve rain-fed farming, but the combination of numerous small plots and increased tractor use made adoption of soil and moisture conservation measures difficult for many of the wheat farmers. The government, however, did subsidize wheat production and consumption, partly to raise farm incomes. In the late 1970s wheat prices paid to farmers were above international levels. In 1978 the government paid farmers about JD55 for a ton of wheat, which the government in turn sold to mills at about JD29 per ton; the mills produced flour at about JD44 per ton.

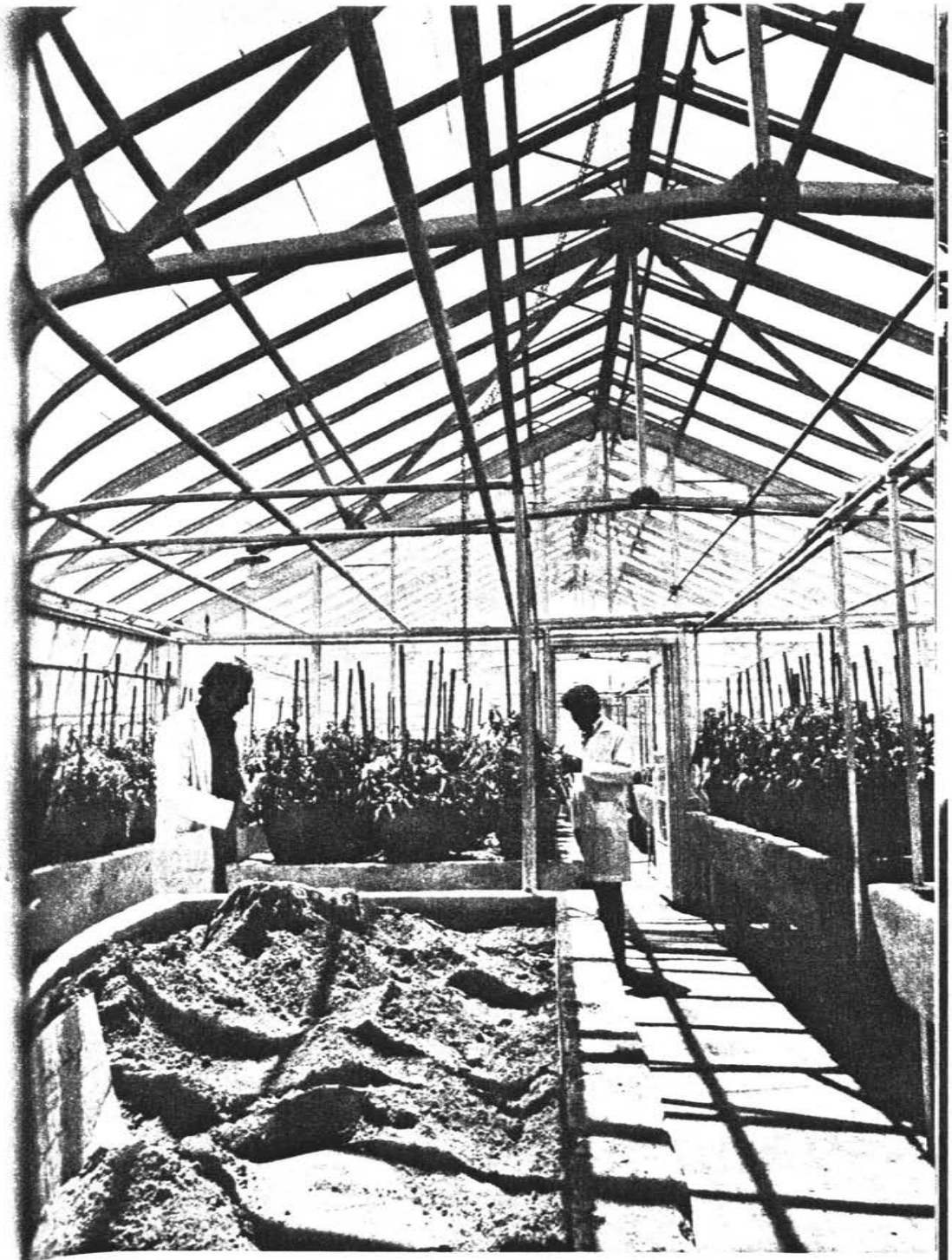
Other field crops included tobacco, lentils, vetch, and chickpeas. In 1977 tobacco was grown on about 3,000 hectares, and production amounted to about 400 tons. Lentils were grown on 13,450 hectares, and production was 6,000 tons. The area of other field crops was even smaller and production correspondingly minor.

Vegetables were grown primarily using modern techniques, irrigation, and chemical fertilizers. Tomatoes were by far the most important crop, occupying nearly 10,000 hectares, and production amounted to nearly 86,000 tons in 1977. Eggplant (planted on over 2,000 hectares) and cucumbers (1,600 hectares) were the remaining main vegetable crops although many others were cultivated including onions, garlic, cabbage, beans, and potatoes. Vegetable production more than doubled in 1978 as a result of the introduction of drip and sprinkler irrigation along with the use of plastic greenhouses. Tomatoes, for example, yielded 209,000 tons in 1978.

Farmers needed government licenses to plant fruit and nut trees because of their need for water during the low water period in the summer. In the 1970s the government promoted a modest expansion of vine and tree crops attempting to take into consideration environmental and market conditions in order to make maximum use of the limited agricultural land and moisture. By the late 1970s some areas formerly in field crops, particularly marginal wheat fields, were being planted in trees where conditions were advantageous. In 1977 fruit and nut trees (including grapevines) were planted on 40,800 hectares, although some trees had not yet reached the bearing stage.

Olive trees were the most important tree crop, occupying nearly 34,000 hectares in 1977. They were grown primarily on unirrigated land, and every other year many trees failed to fruit, causing output to vary sharply. Production was nearly 22,000 tons in 1976, 8,300 tons in 1977, and 37,000 tons in 1978.

In 1977 a wide range of other fruits and nuts were grown although their acreage was relatively small. Melons were planted on



Greenhouse in Jordan Valley
Courtesy Agency for International Development

4,000 hectares, and production amounted to 28,000 tons. Citrus fruits, largely a variety of oranges but including lemons and grapefruit, were grown on nearly 2,900 hectares, and output was 36,500 tons. Grapes were planted on 2,576 hectares, and output was 22,300 tons. Other fruits and nuts included bananas, pears, peaches, apples, pomegranates, dates, figs, almonds, walnuts, and pistachios.

Livestock

Raising livestock has long been an important part of the agricultural life of the people of Jordan. It remained so in the late 1970s, perhaps accounting for nearly 45 percent of the gross value of agriculture production although the data were ambiguous. Animals provided milk, meat, wool, leather, transport, and dung that was used for fertilizer and fuel. Annual estimates of the animal population showed marked fluctuations, which may have reflected actual conditions or statistical aberrations. It seemed likely that estimates of livestock were rough approximations at best. The first animal census was scheduled for late 1979. In 1977 official estimates showed 857,000 sheep, 379,000 goats, 25,000 cattle, and 18,000 camels. In addition there were substantial numbers of donkeys, frequently used for transport, and many chickens. Except for chickens, the country was dependent on large imports of meat to satisfy consumption needs in the late 1970s.

The techniques of raising livestock evolved in very ancient times to take advantage of what was an unused resource—the meager vegetation in the desert. Although individual farmers maintained a few animals, most of the sheep, goats, and camels were raised by nomadic tribes who also usually cared for the animals of farmers during the winter-spring grazing. The beduin developed an intricate, socioeconomic pattern of nomadic existence to feed their animals. Those raising camels had a much larger range, because of the camel's ability to travel many days without water, than nomads with sheep and goats, which required water nearly every day. With the start of fall rains, the animals were moved into the desert to feed on the coarse vegetation available. When the rains ceased in the spring and plants withered, the livestock were moved back to summer base camps that had year-round water. In the dry season animals foraged in the natural pastures, fallow land, and stubble remaining on the cultivated fields. The system was modified somewhat when trucks became available to haul water to flocks.

The nomads were little more than self-sufficient. Droughts had serious and prolonged effects on the number and health of animals. The system deteriorated after 1948 when the influx of refugees increased the pressure on the land, particularly the plowing of some of the best grasslands to grow grains. Overgrazing resulted. Data were unavailable on the impact on the number of

animals, but the size, health, and number of offspring declined. The beduin became quite poor and lacked education facilities, health care, and other benefits that became available to most of the population.

The problems of increasing livestock production are many and as much social as economic. The basic difficulty is the lack of feed. Another aspect is the social prestige among the nomads based on numbers of animals with little regard for the health or productivity of the herds and flocks. Government programs have helped some in increasing fodder crops and returning marginal grain fields to use as grazing land. Veterinary services have been expanded and some improved breeds of sheep and goats imported. Yet progress has been slow, and meat production has been stagnating for many years. Some experts think that a prerequisite for substantial improvement will require settling the beduin on the land in combination with a long-term program of range management. The number of nomads has decreased over the years, some settling in the agricultural communities promoted with limited success by the government. These communities facilitated the provision of services to the tribes and their animals but appeared to have had only a minor impact on meat production. Economists anticipated that the increasing population and rising incomes would require growing imports of meat.

In contrast to the production of red meat, poultry raising has grown rapidly. Commercial chicken farms were introduced in the 1960s, relying partly on imported feed. They proved profitable, and egg and chicken production steadily increased. By the late 1970s the country was probably self-sufficient in both eggs and chickens and exported some chicken meat and baby chicks.

Development Policy

Lacking large areas of fertile land and abundant rainfall or irrigation water, agriculture was able to meet only part of the population's needs. Although farm output increased at respectable rates during the 1970s, production lagged behind consumption. Rising incomes were accompanied by improving diets, reflected largely in the demand for milk products, meats, fruits, and vegetables. The rising domestic consumption of fruits and vegetables has and probably will continue to limit the surplus available for export. In 1978 imports of fruits and vegetables exceeded exports of these products. Imports of meat and milk products have been growing steadily, and experts anticipated little improvement in domestic production for a number of years at best. In the 1970s wheat and flour imports amounted to over 100,000 tons in good years and nearly 250,000 tons in bad years. Imports of wheat and flour were expected to approach 400,000 tons in 1979 because of the worsening drought. In 1978 imports of agricultural commodities exceeded exports by US$278 million.

Government planners recognized the problems and limitations of the agricultural sector. Self-sufficiency in food was out of the question. Even concentration on production of high-valued fruits and vegetables was considered unlikely to provide sufficient export earnings to pay for the necessary imports of food given the size of the population. Even continued expansion of fruit and vegetable production depended heavily on early construction of the Maqarin Dam and ancillary irrigation facilities.

Before the mid-1970s government agricultural programs had focused primarily on irrigation. By the late 1970s a more balanced approach was instituted. A council of high officials was established to determine the strategy and policies for agricultural development and to provide the coordination in what had been overlapping and often competing programs. The government lowered prices and at times temporarily prohibited exports of agricultural commodities, for example, to protect consumers at the expense of farmers.

In the late 1970s more attention was focused on improving farming and livestock in the rain-fed regions. Agricultural credit appeared adequate to foreign economists, and the supply of inputs at reasonable prices was promoted through cooperatives and government agencies. Grading, packing, and marketing, particularly of fruits and vegetables for markets abroad, were deficient, however. Private merchants, reputedly with high profit margins, had been able to maintain tight control of the marketing of fruits and vegetables at least through the mid-1970s, reportedly retaining most of the rise in prices and minimizing incentives to farmers to increase production. In the late 1970s government programs and cooperatives were attempting to reduce the influence of the merchants in the interests of both consumers and farmers.

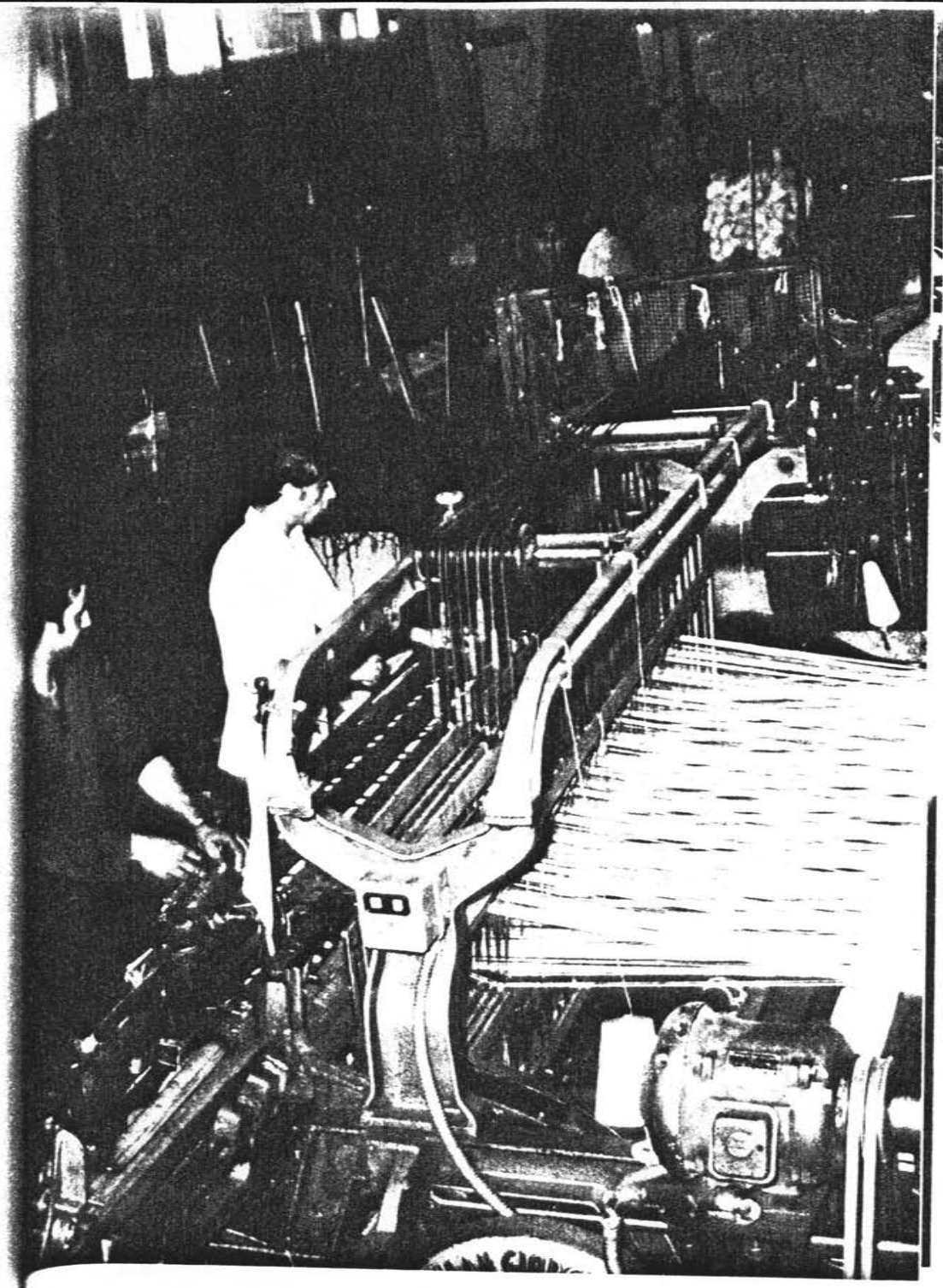
In 1979 foreign experts and funds assisted the government in formulating and implementing programs to raise the low level of agricultural productivity. Only occasionally were spectacular results achieved—as in the case of plastic greenhouses in the Jordan Valley. Most observers expected only slow improvement in productivity and farm incomes in the near future because of the many constraints imposed by nature and tradition.

Fishing

Fishing was barely developed and essentially confined to the waters off the port of Al Aqabah. The catch had been declining steadily from 153 tons in 1971 to 31 tons in 1977. There were plans to cultivate fish in the reservoirs behind various dams, but it was unclear in 1979 how far implementation had proceeded.

Forestry

Because of the problems of soil erosion from earlier tree cutting the main focus of forestry programs was afforestation. In the 1970s



Textile factory
Courtesy Jordan Information Bureau, Washington, D.C.

millions of tree seedlings were planted each year, averaging close to 2,000 hectares annually. It would take many years, however, for the seedlings to mature and contribute to wood production. In 1977 wood production amounted to about 3,900 cubic meters, down from 6,900 cubic meters in 1976. Estimated cutting of firewood was 3,000 tons in 1977, a part of which was converted to charcoal (800 tons).

Industry

At independence in 1946 industry was almost nonexistent. Handicrafts and cottage industries comprised nearly all of manufacturing. Large plants had not been established, and even electric power was from a few small generators and available almost exclusively in Amman. Since then industrialization has been steady. By 1978 industry, including mining and electric power, was second only to government services as the largest sector of the economy in terms of value added. In the 1970s industry was the most dynamic sector, its contribution to GDP rising from 10 percent in 1972 to 19 percent in 1978. Because of substantial investments in plant and equipment, it should continue to expand rapidly well into the 1980s. The long-term prospects for industrialization were not promising, however, because of the small size of the domestic market and the paucity of natural resources.

Structure of Industry

Although industry had expanded substantially since independence, by the late 1970s it still was at an early stage of development. A 1976 government survey of industry showed a total of nearly 5,000 industrial establishments employing 29,300 people. The bulk of these establishments (nearly 4,300) had fewer than five workers for a total employment of about 11,000. These small shops averaged 2.5 workers (few of whom were paid employees) and contributed 11 percent of the value added by industry. There were an additional 620 medium-sized enterprises employing between five and ninety-nine workers. Fifteen large plants employed 100 or more workers. The 635 enterprises that had more than four workers accounted for 95 percent of industry's fixed assets, 89 percent of the value added by industry, and 63 percent of the employment in industry.

The overwhelming proportion of enterprises that had fewer than five workers reflected the continuing artisan character of much of industry. Some of these small establishments were those of traditional craftsmen, such as stone masons, embroiderers and tailors, woodcarvers, and brass artisans, while others reflected more recent additions to the economy, such as automotive and appliance repair shops and plumbers and electricians. The importance of small enterprises has been declining in terms of their

contribution to the value added by industry, and their numbers have also diminished as larger units were formed. A few small tailoring shops, for example, expanded into small factories to produce ready-made clothing for large stores.

At the other extreme, about fifteen relatively large-scale plants accounted for a substantial part of industrial employment, fixed assets, and value added. The largest installations were the phosphate mines, the oil refinery, the electric power stations, the cigarette factories, a steel rolling mill, a cement mill, a pharmaceuticals plant, a factory producing liquid batteries, and a tannery. In 1976 phosphate mining, electric power, and the oil refinery alone accounted for 36 percent of the value added by industry and 23 percent of industrial employment.

Medium-scale industry expanded rapidly in the 1970s. In the 1950s much of industry was confined to food processing (flour mills, bakeries, and presses for olive oil), some textile and clothing manufactures, leather goods, wood furnishings, and printing. Although food processing, textiles, and leather goods remained important, many medium-sized industries were added, considerably broadening the range of domestic manufactures (see table 8, Appendix A). The new additions included metal fabrication (hand tools, furniture, door and window frames, and other structural products); a variety of plastic, rubber, and ceramic goods; paints; and marble forms. Import substitution was usually the motivation for earlier industries, but in the 1970s many of the new plants were partially aimed at foreign markets, significantly increasing exports. The tight labor market in the mid-1970s resulted in a comparatively sophisticated and capital-intensive technology in many of the new medium-sized industries that provided Jordanian products an advantage over neighboring countries in the booming import markets of the oil-rich Arab states.

Energy

The development of industry has been accomplished with very few natural resources. The country is particularly deficient in energy sources. No known coal deposits exist. A search for oil and natural gas was continuing, but no commercial deposits had been found by 1979. The country's hydroelectric potential amounted to perhaps twenty-five megawatts, which was essentially incorporated in the generators at the completed King Talal Dam and the proposed Maqarin Dam (see Irrigation, this ch.). Potentially exploitable when technology became available were oil shale and geothermal and solar energy, the latter of which the country had an abundance. In 1979 the feasibility of an electric power plant using Soviet oil-shale technology was under consideration. There was a possibility of uranium reserves, particularly associated with the phosphate deposits, which was being investigated in the late 1970s with foreign help.

The country's primary source of energy was imported oil, supplemented by insignificant quantities of firewood and animal dung. The oil was imported from Saudi Arabia apparently at international prices. In the early 1950s the Arabian American Oil Company (Aramco), the main developer and producer of Saudi oil reserves, built a pipeline (Tapline) from the Saudi fields across northeast Jordan to the Mediterranean coast in Lebanon. Permission for the pipeline required payment of transit fees for crude oil pumped across Jordan as well as a supply of crude oil for domestic requirements. Although Aramco ceased pumping via Tapline many times during the 1970s for a variety of reasons, oil continued to flow to Jordan.

A spur led from Tapline to a refinery established in the 1950s at Az Zarqa. The refinery was owned by a private company in which the government owned shares and was subject to government control over policy and planning. Maximum capacity was 1.3 million tons at the beginning of 1979, but expansion was underway that would raise capacity to 3.8 million tons by the end of the year. Consumption of petroleum products rose from 659,000 tons in 1973 to 1.4 million tons in 1978. Domestic consumption of commercial energy in 1976 was 527 kilograms per capita (in terms of coal equivalents) compared with 744 kilograms in Syria, 533 kilograms in Lebanon, and an average of 426 kilograms in all developing countries. Completion of the refinery expansion was expected to meet domestic requirements to the mid-1980s. Because domestic consumption was weighted toward such heavy products as fuel oil, the country could become a small exporter of such light products as gasoline and kerosine in the early 1980s. The oil refinery was one of the largest industrial establishments and a major contributor to GDP. Refinery products were distributed by tank trucks.

Acknowledging the importance of energy to economic development, the government formed a national energy committee in 1977. It was headed by the minister of trade and industry and included members representing government and private organizations concerned with energy matters. The committee was charged with developing a national energy policy and monitoring implementation to verify its appropriateness. One aspect, for example, was to review the impact on consumption of domestic petroleum prices, which were lower than international levels for basic fuels (essentially fuel oils and kerosine) and above international prices for others, such as gasoline. Another aspect of the committee's responsibilities was to review the electric power organization's plans and development. Generators of electric power were a major consumer of primary energy; the transportation system was the other.

Electric power generation was another major component of industry's contribution to GDP and a large employer. Initially generation was by private companies and municipal entities. In

1967 the Jordan Electric Authority (JEA) was created to move toward a coordinated and eventually integrated system and was given the authority to regulate private and municipal networks. Legislation in 1976 enhanced JEA's authority and responsibilities. There were two major private electric power companies, one for the general area of Amman and the other covering the Irbid district. In 1976 JEA took over power generation for Amman, and in 1979 it appeared likely that JEA would take over generation in Irbid and some municipal units as the national system approached completion because the individual organizations could not adequately perform in the context of a broader system. In 1979 the separate power companies continued to distribute electricity in their areas although JEA's distribution network also increased as electrification spread.

At the beginning of 1979 the rated capacity of installed generating units in the main plants amounted to over 210 megawatts, not counting several units associated with industries and small municipalities. Many generators were small diesel units. Power generation was concentrated near Amman, ninety-seven megawatts at Az Zarqa and sixty-eight megawatts at Marka; the other main power plants were at Al Aqabah (twelve megawatts), Al Hasa phosphate mines (twenty-two megawatts), and Irbid (nine megawatts). Total power generation (by electric companies, industry, and municipalities) increased from 187 million kilowatt-hours (kwh) in 1970 to 601 million kwh in 1977, and total power consumption rose from 164 million kwh in 1970 to 485 million kwh in 1977, an increase of about 17 percent a year. In 1977 industry consumed 34 percent of the electricity, households 34 percent, commerce 12 percent, water pumps 9 percent, and other users including street lighting 11 percent.

In 1977 the first stage of a national transmission system was completed, linking the Az Zarqa power station with the Amman area. Transmission lines from Damascus to Irbid permitted the import of electricity from Syria. In 1979 a second stage of the national network was nearing completion that would link most of the generators and main load centers in the northern part of the country. A third stage, to be built between 1979 and 1982, will link the northern and central parts of the country, including the major new industrial facilities under construction near the Dead Sea, the Al Hasa mines, and possibly a cement plant at Ar Rashadiyah. A final link to the port of Al Aqabah was scheduled for 1983. In 1977 JEA also embarked on an extensive rural electrification program with financial help from a number of foreign governments. The program would cover all villages that have more than 500 people; completion was scheduled for 1982 and would raise access to electricity to about 70 percent of the population.

Although the capabilities of the electric power system had grown substantially in the 1970s, it had not kept pace with demand. In 1978 and 1979 service was poor because of shortages of

skilled workers and materials, and voltage had to be lowered occasionally to meet peak demand. A considerable number of customers, including industrial consumers around Amman, were waiting for electricity. About half of the population, primarily in rural areas, had no electricity available. Pressures on the power system would increase significantly in the 1980s because of the large industrial plants scheduled for completion and the extension of rural electrification. The planners expected the demand for power to grow about 24 percent a year through 1985. Generation capacity was to be raised to nearly 600 megawatts by 1985. Slippage in construction schedules for the expanding system could have a detrimental effect on industrial growth.

Natural Resources

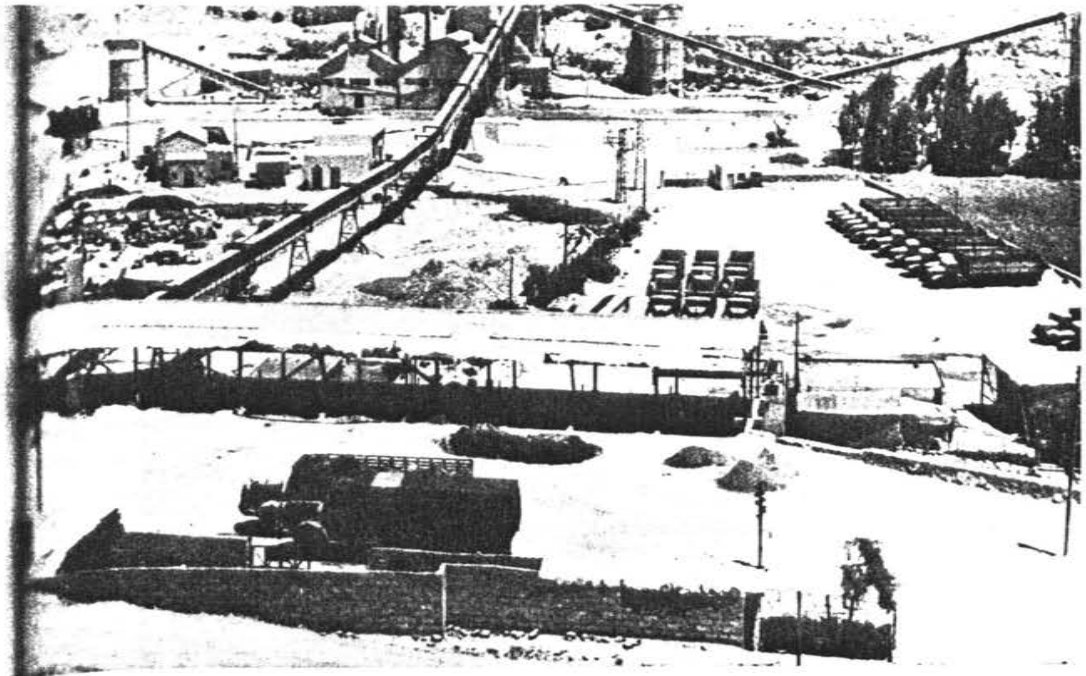
The country had few natural resources. By 1979 no metallic minerals existed in exploitable reserves. Copper and manganese ores had been discovered but not in commercial deposits. Only nonmetallic minerals provided the country with an extractive industry, the two most valuable being phosphates and potash. Other nonmetallic minerals included limestone (for cement and bricks), clays (for various purposes including ceramics), gypsum (for building materials), sand (for glass and silicate bricks), and marble (for construction). By 1979 cement was the only relatively large industry using the minor nonmetallic minerals.

In 1979 a single plant, which was located a short distance west of Amman, produced cement and imported most of the additional cement needed to match construction requirements. In 1975, when a serious cement shortage began to emerge, expansion of production facilities began. In 1978 cement production amounted to 553,000 tons while cement imports were above 600,000 tons; there were shortages at various times during the year. By the end of 1979 the first of the new kilns was scheduled to be in operation raising capacity to about 1.1 million tons a year. A second kiln was to be completed in 1982 that would raise capacity to about 1.7 million tons a year. Another cement plant of about 1 million tons a year was contemplated a little north of Petra to produce for export at first.

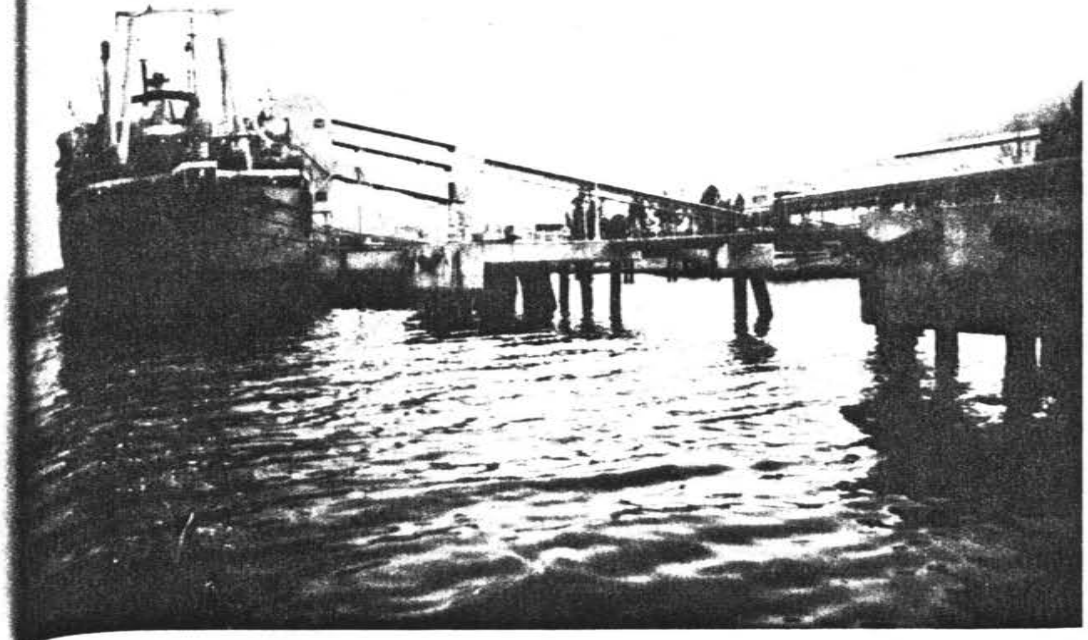
Phosphates

In 1979 mining and beneficiation of phosphate rock was the largest industrial employer and the largest contributor to industry's value added. Phosphate exports accounted for nearly half of the total value of exports in 1974 and 1975 and were 30 percent in 1978. The phosphate industry was therefore critically important to the economy.

The Jordan Phosphate Mine Company, in which the government owned the bulk of the shares, conducted the mining, processing, and export operations. Jordan's phosphate deposits were



Phosphate mine
Courtesy Jordan Information Bureau, Washington, D.C.



Phosphate loading at Al Aqabah
Courtesy Jordan Information Bureau, Washington, D.C.

the eastern extremity of a phosphate belt stretching across North Africa from Morocco on the Atlantic Ocean.) In 1979 two areas were being exploited. The first to be developed was a short distance northwest of Amman and yielded low-grade rock. The richer deposits were in two separate locations near Al Hasa and contained high-quality deposits that could be cheaply mined. Additional although unexploited deposits existed about 100 kilometers northeast of Al Aqabah near the Hejaz Railway. In 1979 a Soviet team was investigating the feasibility of exploiting these deposits. In the late 1970s unofficial reports of reserves ranged from 750 million tons to nearly 2 billion tons. These reports could not be reconciled although the higher estimates at least must have included probable as well as proven reserves. In any event Jordan had substantial phosphate deposits that would support exploitation for many years.

Phosphate production was for export markets and hence at the mercy of foreign developments. Production reached a peak of 1.2 million tons in 1968 and fell sharply thereafter, amounting to 640,000 tons in 1971. Exports had moved by ship from Al Aqabah through the Suez Canal to European markets before closure of the canal in the 1967 war. Subsequently exports were trucked to the Lebanese coast for transshipment until the Syrian border was closed to Jordanian exports in 1971. Trucking of phosphates was resumed when the Syrian border was reopened in 1972. Meanwhile the search for eastern markets that could be supplied by ship from Al Aqabah was intensified. Production reached 1.7 million tons in 1974, finally surpassing 1968 production. Production increased in subsequent years reaching 2.3 million tons in 1978, helped in part by the reopening of the Suez Canal in June 1975. About one-third of the exports went to East European countries, and some additional quantities to Turkey, Lebanon, and West European countries. But Asia had become the biggest outlet and included such markets as Japan, Taiwan, India, and Pakistan. Jordan coordinated marketing with Morocco, the leading exporter of phosphates.

In the late 1970s substantial investments were made to raise phosphate production and export. In early 1979 production capacity reportedly was about 3 million tons a year and scheduled to exceed 5 million tons by 1980 and 7 million tons before the mid-1980s. Ancillary investments had been made in transportation. By 1979 a rail link from the Hejaz Railway to the port of Al Aqabah permitted direct shipments of phosphates by rail. Additional rolling stock was being added to handle expanding production. Port facilities for mechanized loading of phosphates had been upgraded; some of the facilities were the best in the world. The port director claimed loading capacity at the phosphate docks amounted to about 4 million tons in 1978 with additional capacity being added. In the late 1970s nearly all phosphate exports were shipped via Al Aqabah. Officials were counting on substantial increases of phosphate production to contribute to industrial growth and export earning well into the 1980s.

Potash

Perhaps the richest of Jordan's natural resources may eventually turn out to be the Dead Sea. Its waters possess a salt content ranging between 28 and 31 percent, making it the most saline of the world's large bodies of water. The principal salts are chlorides of potassium (potash), magnesium, sodium (table salt), and calcium and also some magnesium bromide. Estimated reserves ranged from about 1 billion tons of magnesium bromide to 21 billion tons of magnesium chloride. The Dead Sea potash reserves (about 2 billion tons) are one of the world's largest single sources; elsewhere potash was mostly mined and in individual deposits.

Modern processing of the brine began in the 1930s in a plant at the north end of the sea constructed by Jewish and British investors. This plant was damaged in the 1948 war. In 1952 the Israelis formed the Dead Sea Works and began constructing processing facilities at the southwest end of the sea. Production gradually rose, reaching 1.2 millions tons of potash in 1977. The Israelis also recovered and processed other chemicals from the brine.

In 1956 the government of Jordan along with other investors formed the Arab Potash Company (APC) to exploit the Dead Sea brine as the Israelis were. The company name came from the fact that the principal shareholders were various Arab governments. However, difficulties including war and the technical problems of constructing dikes in the thick and unstable mud held up development until the mid-1970s. Between 1974 and 1977 feasibility studies and pilot projects indicated large operations were viable.

In 1978 construction began on Jordan's largest industrial project —a US$430 million potash processing plant on the southeast side of the Dead Sea. The brine will be pumped to a series of solar evaporation ponds where salt crystals precipitate out. The salt crystals will be piped to a nearby refinery (under construction) where potash will be extracted and then shipped to Al Aqabah for export. Construction included building a town for nearly 3,000 plant employees and the necessary roads, electricity, water, and other facilities in a barren area. Completion was scheduled for 1982 and capacity rated at 1.2 million tons a year. Financing included equity capital (the Jordanian government would probably own 51 percent of the shares) and concessionary loans from governments and international financial institutions, largely Arab. Production could be raised to 1.7 million tons a year and facilities added to process other chemicals at a later date.

Potash is used principally as a fertilizer and is considered essential for long-term soil fertility when other chemical fertilizers are used. Developing countries initially concentrated on nitrogenous fertilizers, but in recent years they have accelerated use of potash.

Jordan's main potash markets were expected to be in Asia. The combination of the growing use of potash in the region and Jordan's advantage in transportation costs to some consumers compared with major exporters suggested good long-term market prospects. Planners anticipated substantial foreign exchange earnings from the potash plant. Facilities to produce final fertilizer mixes using the country's potash and phosphates were under construction in Al Aqabah.

Industrial Development Policy

The government has essentially relied on private investors for industrial development. Because of the limited financial resources of the private sector and in some cases the threat of bankruptcy to important private enterprises, the government bought shares in many of the larger industrial concerns. The government's ownership shares varied widely, and in a few businesses—the phosphate company, for example—government equity capital was overwhelming. Nonetheless the government considered none of the industrial enterprises government-owned, and no particular lines of endeavor were marked off for public development only. Even electric power was a mixture of public and private companies. Jordanian development policy for industry did not adopt the emphasis on a public sector that was common in many neighboring countries.

Over the years several laws—including revisions in the 1970s—encouraged private investments. Incentives included exemption from income and social welfare taxes for six years, from customs duties and other fees on imported fixed assets before production, and from building and land taxes for five years. Exemptions were longer, and free land might be provided for projects located outside of the Amman-Az Zarqa vicinity where the bulk of industry was located. By 1979 government efforts to obtain more balanced regional development had had little success (apart from the government's own investments in such large undertakings as phosphate and potash processing), largely because of the population concentration and services available near the capital.

Foreign investment was also encouraged and actively sought. Capital from abroad when invested in approved projects (basically the same procedures required for local investors) was treated the same as domestic capital regardless of whether there was a Jordanian equity interest. Transfer in foreign exchange of all profits, capital, and expatriate staff salaries was nearly guaranteed by legal provisions. The government provided additional encouragement to foreign companies, including guidance on how to get started, and undertook feasibility studies. In 1975 offices of foreign companies operating outside of Jordan and their expatriate employees were exempted from income and social service taxes, which resulted in a number of businesses establishing regional offices in

Jordan for operations elsewhere in the Middle East, particularly after the civil war in Lebanon. Except for some Arab investors, including governments and associated investment institutions, foreign equity investments in Jordan have nevertheless been small, particularly direct investments, despite the stability and encouragement of the government.

Government incentives, equity capital, and subsidized credit had been directed primarily toward relatively large-scale industry. In the mid-1970s attention and services were extended to help medium and small industries start up and expand. The government also liberalized its licensing policy at the same time. Licenses were required for establishing or expanding any industrial undertaking. Before the mid-1970s the government tended to limit the number of businesses in any one line in order to avoid underutilized capacity because of the small domestic market. After the 1973 war and the rapid rise of oil revenues in neighboring nations, licenses were granted more easily because smaller industries began producing for export as well as for the domestic market. Since the mid-1970s a broad range of export products have been added from both large and small industries.

Commercial policy contributed to industrialization, but economists were uncertain of the degree. In the mid-1970s tariffs on many industrial products were in the range of 10 to 30 percent ad valorem, and some that directly competed with local manufactures—such as shoes, furniture, tomato sauce, and confectioneries—had duties exceeding 50 percent. The extent of tariff protection was not clear-cut, however, because of the competition from imports from Arab countries within the Arab Common Market and other treaty arrangements. Exports of manufactures probably benefited from the country's participation in the Arab Common Market because of the generally high level of tariff protection that existed in other member countries.

Private investors responded to official encouragement, resulting in rapid growth of industry except during the several times that wars and other disturbances disrupted the economy. After 1974 private industrial investment was particularly high and above levels anticipated by the planners, much of it export-oriented. Since 1975 public sector investment was also exceptionally high, concentrated in the largest industries—phosphates, oil refining, electric power, and cement—as well as in the creation of two new large export-oriented industries of potash and compound fertilizers. Investment amounted to 35 percent of GDP in 1976 and 42 percent in 1977.

In 1979 construction was underway on the country's second largest industrial plant, the Jordan Fertilizer Industry Company at Al Aqabah. Total cost was estimated at US$325 million, partly financed by foreign loans and supplier credits. Completion was originally scheduled for 1981, but delays in beginning construction might result in a later start of production. Full production

would be achieved several years after startup. The plant woul process phosphate rock into phosphate fertilizers. Capacity ir cluded 3,200 tons per day of sulfuric acid, 1,100 tons per day c phosphoric acid, and 2,000 tons per day of monammonium an diammonium phosphate fertilizers. Mixing facilities reportedl would permit packaging compound fertilizers (containing phos phate, potash, and presumably nitrogenous fertilizers) to cus tomer's specifications. Markets were expected to be in Asia.

Jordan's planners had a reasonable strategy for expanding th industrial base. The country's few resources were being devel oped, which would provide employment, income, and foreigr exchange for many years. The country's location and relatively skilled work force permitted development of small- and medium sized plants and could overcome the small size of the home mar ket by producing a number of commodities that would substitute for imports as well as find a ready market in neighboring Arat countries. In 1979 Jordanian economists prepared a study of sev eral such products. The highest priority was assigned to meters (for electricity, liquids, and gas), locks, lighting fixtures, printing ink, furniture, and various metal goods, such as pipes, valves, nails, nuts, and bolts.

Most observers anticipated rapid growth of industrial output well into the 1980s from the base developed after 1974. This industrial development was expected to ease the pressure on the balance of payments by reducing imports and expanding exports. The required investments increased dependence on external funding, but officials expected the dependence to ease once the growth of production and exports in the early 1980s built up the country's own financial resources.

1948 war, imports have

problems. On the eve of the 1980s it was not clear what the various Arab disputes and realignments would mean in the future for Jordan's transportation system or other relations, but economically Syria and Iraq would appear to have little to gain from transit of goods via Jordan except under unusual circumstances.

The Goal for 1980—The Five-Year Plan

Many of the goals for 1980 set out in the 1976–80 plan were nearly beyond reach even by the time the plan was published. The target of 7.2 million tons for phosphate production in 1980 was a critical element affecting other goals, such as export growth and budget revenues. By 1976, however, the target for phosphate production had been lowered to 5.4 million tons without reducing other goals. Technical problems and other delays held up start of construction of the potash facilities and the Maqarin Dam so they would not contribute to production by 1980 as originally planned. It was not clear whether the officials deliberately slowed public investments because of inflation or shortages of skilled and managerial personnel, or whether the slowness resulted from poor administration and implementation. It was recognized from the beginning that the plan would tax the human, physical, financial, and administrative resources of the economy.

By 1979 it appeared unlikely that the goal of a real growth of GDP averaging 12 percent a year between 1976 and 1980 would be achieved because drought conditions had restricted agricultural production, and industry had fallen short of the 26 percent annual planned increase (in constant prices) by a substantial margin. Nonetheless the indications were that real GDP growth would not miss the target by much, perhaps averaging 10 to 11 percent between 1976 and 1980 unless 1980 was a very bad year. More serious for the objective of economic independence was the large increase of imports above that planned and the slow rise of domestic budget revenues apart from the growth of customs duties. If the leaders were serious about reducing dependence on external budget support, the propensity to import had to be reduced and the tax base and source of revenues drastically altered, measures that inherently carried major political risks.

Even though in 1979 the 1976–80 plan appeared overly ambitious, many observers noted the solid accomplishments that had been achieved. The plan properly focused attention and investments on those portions of the economy best suited to rapid growth and to easing balance-of-trade deficits. The productive structure of the economy had been substantially broadened and increased. The prospects for growth and improvements of incomes and standards of living were good in the 1980s barring adverse external developments, particularly another Arab-Israeli war.

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Government agencies prepare a number of statistical publications of which the most useful for general purposes are the *Monthly Statistical Bulletin* published by the Central Bank of Jordan and the annual *Statistical Yearbook* published by the Department of Statistics. The *Financial Times* usually publishes an annual survey of Jordan that contains considerable text and some statistics on current developments. Books on Jordan's economy are infrequent: *The Economic Development of Jordan* authored by World Bank economists is broad but dated, reflecting conditions of the mid-1950s; *Economic Development and Population Growth in the Middle East,* edited by Charles A. Cooper and Sidney S. Alexander; the *Economies of the Arab World: Development Since 1945,* by Yusif A. Sayigh; and *The Hashemite Kingdom of Jordan and the West Bank,* edited by Anne Sinai and Allen Pollack, contain sections on Jordan. Periodicals such as the *Middle East Economic Digest* and the *Arab Economist* carry brief reports on current developments and occasionally contain articles on specific aspects of the economy. (For further information see Bibliography.)