

Jordan Valley becomes an agricultural wonderland

As part of a comprehensive development plan

Text and Photos

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AMMAN -- Three hundred metres below sea level, Jordanian farmers and planners are combining efforts to transform a hot, inhospitable region into an agricultural wonderland as well as a major centre of balanced development.

The massive Jordan Valley comprehensive development project, through which this is being done, is also putting into practice the long-mooted programme of "regionalisation", or developing provincial areas of Jordan to counterbalance the overwhelming growth of the Amman region.

It is difficult fully to appreciate all that is taking place in the Jordan Valley, because of the very wide scope of the endeavour. The valley is about 100 kilometres long, from the Jordanian-Syrian border along the Yarmouk River in the north, to the Dead Sea in the south, and from the Jordan River in the west to the foothills of the mountains that rise onto the Jordanian plain in the east. At some points, the valley is only four kilometres wide. At others, such as near the Dead Sea, the valley floor spreads out into a 20-kilometre-wide flatland.

The scope of the specific projects and programmes underway is similarly wide. This is not a simple "development project" that involves building a housing project or an industrial plant. Rather, the vital core of the valley development scheme is the effort to blend all aspects of agricultural, social and human development into an integrated, comprehensive programme that is implemented coherently and that, therefore, delivers developmental benefits to the valley population in an orderly fashion.

Agriculture is the base of the valley's developmental aspirations, as it has been the basis for socio-economic activity there for many thousands of years. The challenge that faced Jordanian planners in putting together the valley's package of developmental priorities was how to fit in the needs of the agricultural sector (irrigation, farm roads, marketing centres, etc.) with the social requirements of the people who would run the farms, such as housing, schooling, health care, telecommunications, and the like.

Now, in September 1979, phase one of the agricultural (irrigation) projects has been completed. Some 22,000 hectares of farmland can be irrigated, either by sprinklers or by traditional surface methods. Simultaneously, much of the allied social infrastructure is in place. New housing projects are being lived in, schools are filled with the children of farmers, medical centres are operating and power lines are being extended to all corners of the valley. Without much fanfare, and hardly noticed by the rest of the country -- let alone by the rest of the world -- the promises that have been made about the Jordan Valley for the past five years are slowly, quietly, becoming reality.

Driving up and down the length of the valley, one notices physical signs of progress everywhere: houses, schools, roads, agricultural marketing centres and plastic hothouses. The progress that has been achieved on the ground in the first phase of the valley project is also mirrored in the statistics for national agricultural production.

In 1977, Jordan produced 85,000 tons of tomatoes; last year, it produced 208,000 tons. Eggplant production rose from 24,000 tons to 64,000 tons; cucumbers rose from 13,600 tons to 30,000 tons. Cauliflower and cabbage output jumped from 6,200 tons to 27,700 tons. Fruit production, likewise, rose sharply, from 103,000 tons in 1977 to 177,000 tons last year. Most of the increase in production came from the Jordan Valley. And most of it was due to two reasons: increased land area under irrigation, and more efficient farming techniques, particularly the use of drip irrigation systems and plastic hothouses.

The increased agricultural production is also reflected in the country's export figures, with fruits and vegetables now racing neck-and-neck with phosphates to be the country's largest export item. In 1977, food and animal exports actually were worth more than phosphate exports (JD 20.6 million compared to JD 17.2 million for phosphates); but last year agricultural exports slipped back to JD 16.3 million, while phosphate sales were worth JD 19.4 million.

The point is that Jordan -- routinely referred to in the international press as a desert kingdom -- is moving into a stage of national development where its main exports will include fruits and vegetables. Within this context, the Jordan Valley accounts for just 0.6 per cent of the country's area and about four per cent of its population, but it produces 36 per cent of all agricultural produce, and a full 50 per cent of fruits and vegetables. It accounts for a whopping 92 per cent of vegetable exports and 93 per cent of fruit exports. If Jordan is ever going to achieve a balance in its food exports and imports (by producing fruits and vegetables to offset its imports of wheat, barley and red meat), it is the Jordan Valley that is going to carry the day.

But what has been done so far in the valley? And what are the lessons that have been learned along the way? A tour of the region is one way to find out. Another is to talk with Dr. Munther Haddadin, Senior Vice-president of the Jordan Valley Authority, and a man who has been involved with the valley development scheme since the early part of this decade.

"We've learned some important lessons," he says, "because what we are doing in the valley has never been tried before in the country. The first thing we discovered was that it takes a long time to justify projects to international donors. As many of the projects are funded by foreign aid, we had to hire foreign consultants to review the basic feasibility of the schemes. Some projects required two and a half years to be financed; we discovered that we needed much more time to execute the projects than we had first planned.

"The second lesson we learned was that infrastructural bottlenecks would also delay some projects. In the beginning of the 1975-76 boom years in Jordan, we had problems of transport, high prices, and port congestion, all of which contributed to further delays.

"The third important aspect of the experience so far has been that we have had to learn to forecast chain reactions among different sectors. We had no experience in this, because we had never tried the comprehensive development planning approach before. We

had to understand the different effects on people's lives that resulted from the great interaction among sectors and projects. For example, to get an irrigation project going, we needed electricity to run the pumps, but to have that we had to have the power lines in place, but we couldn't start on that until we were also satisfied that the housing was there to accommodate the new farmers, and we

could only do that if we knew the schools and health centres would be ready to start work when the farmers were moved into the new houses.

"Work on one project was directly linked to work on two or three other projects. Any error of major proportions would have backfired, given the pioneering nature of the scheme. We had to move cautiously to meet the chal-

lenge, and that meant having to maintain a reasonable time frame to serve the objectives of integration. Therefore, we are now experiencing a general delay of between 12 and 18 months."

But why was it necessary four years ago to change the Jordan Valley Commission into a more powerful Jordan Valley Authority? Dr. Haddadin explains:

"The commission only planned and built individual projects, and then turned them over to other government agencies for running and maintenance. We realised that we needed a Jordan Valley Authority with greater powers and responsibilities, to make sure that the same group that predicted the benefits from development projects would take charge of the completed projects and carry them through the operation and maintenance stages. There is more challenge in operating a project than in building it."

While agriculture is the economic foundation upon which the Jordan Valley scheme is built, the primary aim is not maximum financial profits from farming. If it were, the valley would have been developed differently, with a few very large mechanised farms and the smallest possible number of farmers and labourers. But this is not the aim of the valley development scheme. Rather, the aim is to break up the farmland into thousands of smaller holdings that

would allow more families to earn a living from farming, and therefore to attract tens of thousands of new families into the valley from other parts of the country. This is the essential social philosophy behind the valley project: to spread the economic benefits of farming to the greatest number of people. Dr. Haddadin explains:

"The objective of development is not only financial; it is both social and economic. Our aim has been to help a wider spectrum of the population. We've chosen a relatively small size for each farm unit because this allows a family to work the farm and earn a good living off it. This provides more jobs, and it achieves the important social objective of spreading the benefits of socio-economic development to more people."

The Jordan Valley Authority (JVA) puts in place all the physical infrastructure required for both agricultural and social needs, such as irrigation systems, farm roads, marketing and packing

centres, houses, roads, schools and health centres. The JVA also oversees a land redistribution programme by which large farms are broken up into smaller units that are sold to families that might not otherwise be able to buy a farm. The actual farming is done by private families who own their land, or by cooperatives. There is no farming done by the JVA itself, or by the state.

The JVA has chosen 38.8 dunums (3.88 hectares) as the standard farm area. This size is large enough to support a family, but also small enough for one family to work, particularly with the advent of sprinkler irrigation. The process of redistributing the land in the valley is what Dr. Haddadin calls "the most delicate part of the operation."

It takes place as follows. After the JVA has assessed the amount of water that is available for irrigation in a certain area, and after classifying the land according to quality and type, it declares a certain area as an "irrigation area". It alerts the Department of Lands and Surveys to freeze all land transactions in that area.

A three-man committee is established that includes two people from the JVA and one farmer from that area, which then studies the applications for farms. Landowners who own as much as 1,000 dunums or more are allowed to keep a maximum of 200 dunums under the JVA's land ownership scheme, with a graduated scale for smaller holdings. This means that landowners will maintain their relative farm sizes after redistribution is completed, but that they will all have smaller landholdings in absolute size. This applies to the regions where sprinkler irrigation is being used; in other areas, some larger farms are allowed.

A separate committee appraises the value of land that is being redistributed. The government-appointed committee includes a representative from the Department of Lands and Surveys, and two others. If the landowner disputes the value of his land as it has been assessed by the committee, he can appeal to another three-man committee headed by an appeals court judge.

When the price of the land is agreed upon, it is bought by the JVA and then resold to other farming families. So far, about 50,000 dunums have been redistributed, near South Shounch and the Zarqa Triangle, at the confluence of the Jordan River and the Zarqa River. Another 32,000 dunums are in the process of being redistributed. Most of the farmland is being sold to farmers at around JD 50 per dunum, which the farmer can pay for over a 20-year period, while the JVA pays for land it buys over ten years.

There are now about 4,500 individual land holdings in the valley, which will rise to 10,980 at full development, according to Mohammad Abu Rumman, Director of Village Development at the JVA.

The result of all this will be a sharp increase in the productivity of the valley, as well as an increase in the number of people living and working there. Already, the population of the valley has started rising. Before 1967, there were

nearly 100,000 people in the valley. After the 1967 war and the subsequent war of attrition, which included regular Israeli artillery attacks on the Jordanian side of the river, the population dropped to a mere 5,000 harried, war-torn farmers. In effect, the valley's social and economic life had come to a halt.

After 1973, with the revival of agricultural activity, the valley's population started to increase. The census taken there in November 1973 showed a population of 63,000 people; the latest census, in November 1978, showed a rise to 82,000. According to Dr. Haddadin, the valley will be able to support 150,000 people when it is fully developed. At least 40,000 new agricultural jobs will be created there in the coming years, as well as 14,000 services jobs, Mr. Abu Rumman says.

A key element in the planning of the valley project was the provision of social services, to entice people to live there. To provide services efficiently, the valley has been planned to have 36 communities of various sizes, housing most of the valley's population. The idea is that farm families would live in the well-serviced communities and work every day on their nearby farms.

According to Mr. Abu Rumman, work has started already on 27 communities with a total of 2,400 individual housing units. Many of the houses are now completed, and families have started moving into some of them, particularly in the northern part of the valley. Demand for new houses has exceeded supply, so applications for houses are reviewed by a committee established for that purpose.

A new house of two bedrooms is sold to a farmer for JD 3,500; the farmer pays JD 500 down and the balance at JD 10 per month for 20 years or more.

A total of 60 schools for boys and girls will be built; to date, 26 schools have been completed and handed over to the Ministry of Education. Many of these are being used for the first time this academic year.

Four large health centres will be built; three are already finished, equipped and working. They each include sections for child and maternal care, outpatient care, chest care and X-rays, an operating room, dental units and bedrooms for 16 patients.

Thirteen smaller clinics are planned; seven have been built and are either being equipped or are already in use.

Four community centres are planned, of which one has been completed, at Kreina village.

Four major agricultural packing, grading and marketing centres will be the focal point of the produce that the farmers grow.

The first one, at Al Arda, in the centre of the valley, is nearing completion. It has been financially aided by the Dutch government. Three more will be built at Wadi Yabis and North and South Shouneh.

The Al Arda centre takes up 40,000 square metres, of which 18,000 square metres are covered. Vegetables and fruits coming into the centres will be graded according to quality, packed in wooden boxes manufactured on the site, and then marketed via a network to be run by the Jordan Valley Farmers Association, which will also administer the girding system.

Four major government administration complexes will be established, of which the first, at South Shouneh, has been completed. It will include offices representing the civil and shari'a courts, the local municipal, the

Ministry of Education, the Ministry of Finance, the postal service, ~~the governor's office, the~~ Transport Ministry, Civil Status Department and the Department of Lands and Surveys.

Nine smaller local administration complexes have all been completed and now being furnished; each of these includes offices of the Farmers Association, a post office and municipal council offices.

The main north-south highway in the centre of the valley has been completed, and work is proceeding on smaller farm road networks. One hundred kilometres of

farm roads have been completed to date.

Electricity projects are also underway, with three main high voltage lines feeding into the valley from Irbid, Salt and Wadi Seer, with low-voltage distribution systems to reach all the villages. The entire electricity network is managed by the Jordan Electricity Authority.

The domestic water supply system throughout the valley relies primarily on artesian wells. Four complexes of wells will supply the domestic water needs of valley residents. In most cases, water is found at the level of between 40 and 80 metres.

Water for irrigation comes from trapping rain water and the water of the rivers and wadis that feed into the valley. A series of large and small dams will eventually provide the water required to irrigate 36,000 hectares of farmland

by sprinklers. But due to the drought of the past five years, and the need to provide domestic water for use in Amman and the highland areas of the country in the north, Dr. Haddadin said that the entire Jordan Valley scheme may be reduced to around 31,000 hectares of irrigated land.

Two rivers (Yarmouk and Zarqa) provide about 470 million cubic metres of water a year, while the rest comes from nine wadis that flow into the valley from the east. The total average annual available water in the valley, when rainfall in normal, is about 570 million cubic metres, which is

trapped, or will be trapped, behind a series of six dams.

The largest existing one is the King Talal Dam, on the Zarqa River, which has a capacity of about 25 million cubic metres of water. Ziglab Dam has a capacity of about seven million cubic metres. Kafrein Dam holds nearly five million metres, and Shu'eib Dam gathers two million metres of water every year. A new dam is to be built in Wadi Al Arab, in the northern part of the valley, to hold between six and eight million cubic metres of water, while the centrepiece of the entire valley scheme will be the new Maqarin Dam, to be built across the Yarmouk River along the northern border with Syria.

Maqarin will hold about 350 million cubic metres of water a year. It will require nearly five years to build, and another three years to fill up its reservoir, which will form a 12-kilometre-long lake. The dam is in the design stage now, and tenders for its construction should be issued by the end of this year. With luck, it will come into operation sometime around 1985.

It will cost in the range of \$250 million, with allied irrigation works costing another \$400 million, and other services yet to be built another \$250 million, according to Dr. Haddadin. About 65 per cent of the financing for these works will come from international sources, with the balance generated locally.

Water from the Yarmouk River now travels through a diversion weir at Addasieh, from where it enters the northern tip of the East Ghor Canal, the 96-kilometre-long canal that is now the main artery of the valley's irrigation systems. A total of 700 people are required to run the canal, out of the 1,500 people who work in the JVA.

The East Ghor Canal can carry a maximum of 21 cubic metres per second, though it is only moving about ten cubic metres per second this year, due to the drought. Because of the lack of water this year, only about 30 per cent of irrigated areas will actually be planted.

Irrigation water is sold to the private farmers at the rate of between six and ten fils per cubic metre, depending on how much they use, though this is likely to increase soon.

The JVA calculates that it spends about \$5,000 per hectare to put in place the infrastructure for the new sprinkler irrigation systems, but the private farmers end up spending more for other infrastructural works, such as machinery, hothouses or equipment. Dr. Haddadin comments:

"The high rate of private investment in the valley means we have a partnership between the government and the individual farmer, with the private sector willing to put up a big share of the money to develop the land, and therefore the country. We give them the start of the thread, and then they go on by themselves."

The role of the JVA, as the representative of the government, is delicately kept out of decisions about the kinds of fruits or vegetables the farmers grow. "We do not impose crop patterns," Dr. Haddadin points out, "but rather the farmers themselves decide what to grow, in response to cost benefits and market demand."

The aim is that the Farmers Association will take on an increasingly important self-regulating role, both for the inputs required for farming (crop decisions, fertilisers, credit, etc.) and the marketing side. The four marketing centres will also act as wholesale markets, which will give the farmers themselves, acting through the Farmers' Association, full control over their produce, and better returns, as opposed to the present system where middlemen and wholesalers reap profits en route on the produce which reaches consumers in the cities.

A new law coming into effect next year will require that produce from the valley only be sold at the marketing centres.

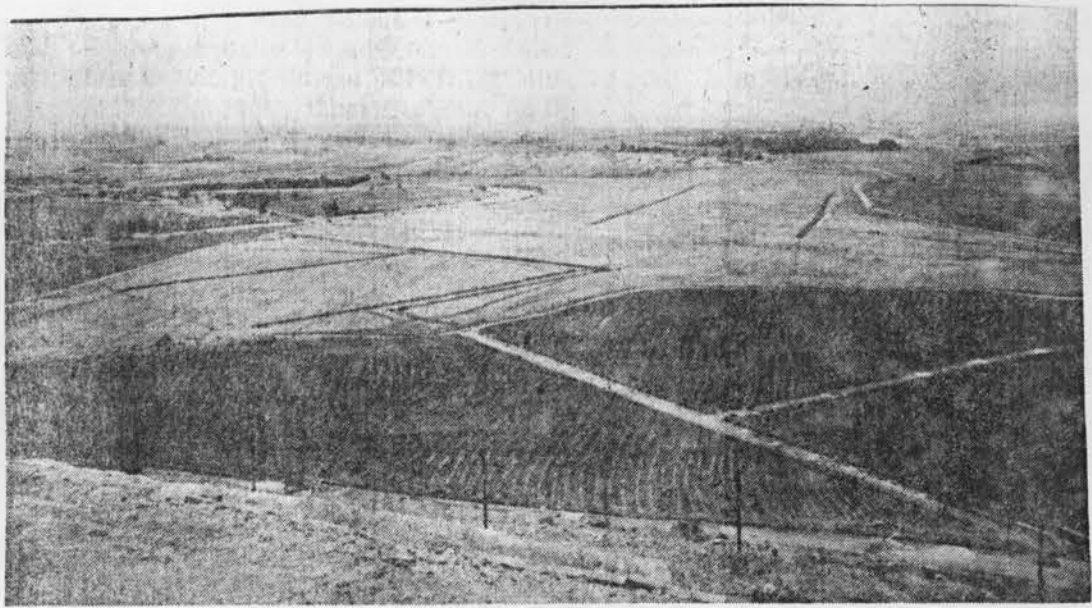
The Farmer's Association's director-general is appointed by the government, but the chairman of the board is chosen by the farmers themselves. The 18-member board includes six members named by the government, and 12 members chosen by indirect election by the farmers living in the valley.

The JVA is careful not to plan elaborate details about what the valley will look like in ten or 15 years. It says that its role is limited to providing the vital infrastructure the farmers require to carry out their agricultural business and have their families live in comfort. The details of what crops are grown and how the marketing is done are all up to the farmers themselves.

To date, about 22,000 hectares of land can be irrigated, but due to the drought much less than this is actually planted and watered. About 12,000 hectares are irrigated by surface flooding from the East Ghor Canal, while the other 10,000 hectares are ready for sprinkler irrigation. When the water come in sufficient quantities, the sprinklers will turn on. And the result will be more spectacular.



Water for irrigation in the Jordan Valley is stored in the reservoir of the King Talal Dam.



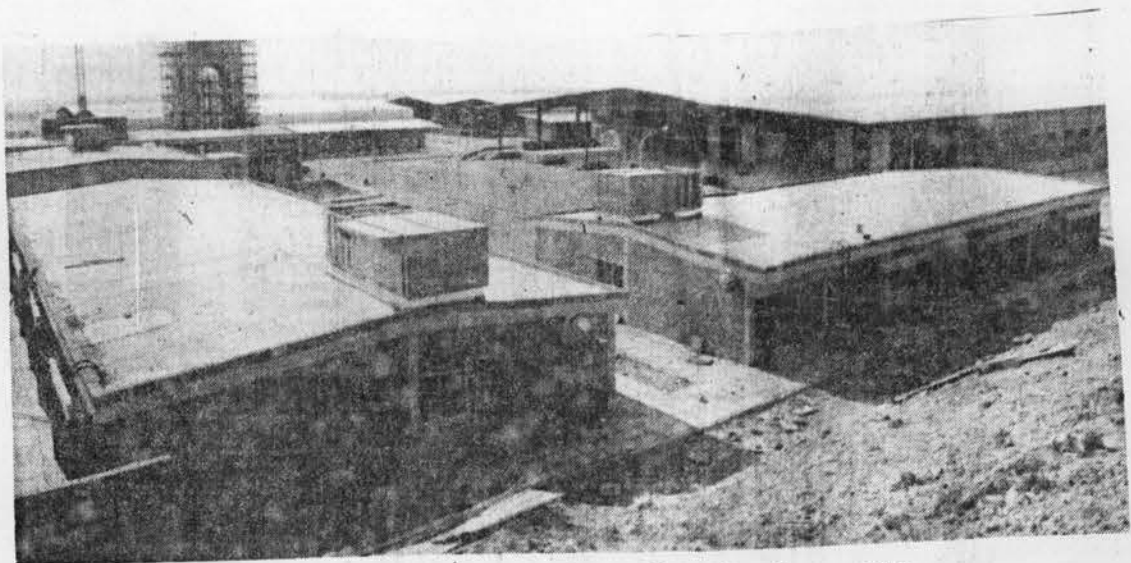
Aerial view near Deir Alla, in the centre of the valley, shows criss-crossing pattern of sprinkler irrigation pipeline network being put into place.



Medical equipment is wheeled into one of the completed health centres in the valley earlier this summer.



Interior view of one of the buildings at the Al Arda marketing complex.



Overall view of the Al Arda marketing, grading and packing complex.