

tion may never be achieved, improvements in productivity can always be made. However, with increased production comes greater pressure on Jordan's overstretched marketing machinery.

In an attempt to counter this problem, a specialist marketing company was established in 1983. Its brief was to handle the grading, packing and marketing of all Jordan Valley crops. To date, the company has been a failure, largely due to lack of administrative experience. It is now being reorganised, and former agriculture minister Marwan Dudin has been appointed to head the operation.

The company's work should be easier now that farmers have adapted to the optimal cropping pattern laid down by the Agriculture Ministry. Applied to all vegetables grown on irrigated land, the system limits land allocation for tomatoes, cucumbers, eggplants and cauliflowers, while offering incentives for increased planting of onions, potatoes and wheat.

Market emphasis

A key question the company will have to face, however, is whether emphasis should be placed on the domestic or the export market. Osama Bilbeisi, assistant under-secretary at the Agriculture Ministry, is heavily in favour of concentrating on the home market. He suggests that estimates of local consumption are based on what buyers are able to find in the marketplace, rather than on what they might actually want to buy. He maintains that an efficient, nationwide retailing operation would boost consumption, particularly of traditional dairy produce and home-grown vegetables.

Food processing is another area in need of reappraisal. The agricultural marketing company in the Jordan Valley has a tomato-processing plant, but production

has been interrupted by technical problems over the past two years. Two new ventures are now being discussed between Jordan and Iraq. One is a tomato juice and orange juice factory to be based in Jordan, the other a vegetable-pickling plant in Iraq.

PD

Tenders called for national water network

THE reluctant cancellation of the Maqarin dam project, which could have been the answer to all Jordan's water problems, has galvanised the government into a complete reappraisal of the country's water supply programme over the past three years. Poor relations with Syria — whose border the dam would have straddled — are blamed for the scheme's failure. The Water Authority of Jordan (WAJ) is now facing up to the task of making the best use of the country's limited resources.

Planning has been simplified since WAJ was set up in February 1984, absorbing the Amman Water & Sewerage Authority, the Amman Water Supply Corporation and the water departments of the Jordan Valley Authority and the Natural Resources Authority.

WAJ has recently submitted its water development plans to the government, but the details have not yet been made public. A key element is known to be the "national water carrier," a proposed nationwide distribution system to pipe water to all settlements of over 500 people. Preliminary

surveys have already been carried out on the section of the network north of Amman. Consultants were the UK's Watson Hawkley and Sir Alexander Gibb & Partners, and the local Arabtech Company.

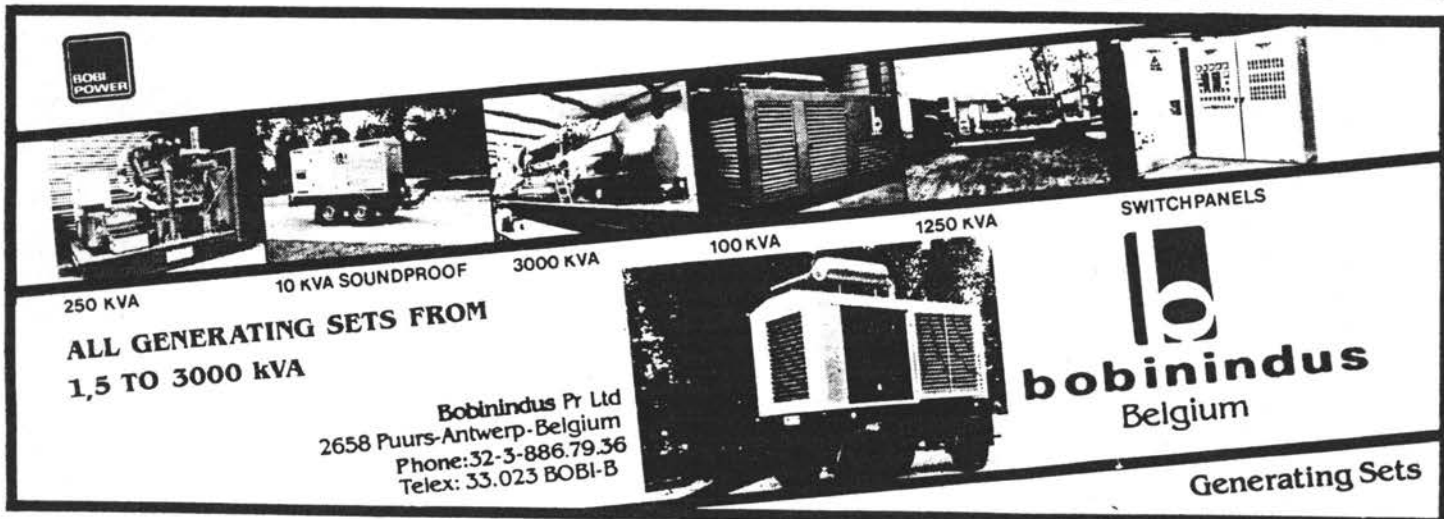
Tenders have now been invited from international companies and local firms to bid for the consultancy contract for the northern section, to include building of a pipeline system and pumping stations. Tenders for the network south of the capital are expected to be called in the next few months.

WAJ officials are confident that financing will be found, although the total cost is expected to be between \$350 million-400 million. When complete, the network will allow WAJ to ensure an even distribution of water throughout the country, thus minimising the impact of drought on particular areas.

Meanwhile, several other projects are in train to increase the water supply. Boreholes have been drilled along Wadi Wala, 45 kilometres south of Amman, to help meet the capital's growing industrial and domestic needs. Tenders have been invited for piping the water to the city.

A pipeline from the East Ghor canal at Deir Allah will soon bring 45 million cubic metres (m³) of water a year from the Jordan Valley. It will feed a 250,000-m³ reservoir, built by the UK's George Wimpey International at Suweilah, on the outskirts of Amman. The \$110 million scheme has involved several foreign firms: Lebanon's Mothercat laid the pipeline, under supervision from US-based Stanley Consultants, and South Korea's Hanbo General Construction Company (HGCC) built the pumping stations and water-treatment plant.

Soon after the Maqarin dam was abandoned, HGCC won two major contracts to increase the capacity of existing dams. The company started work in early



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1983 on a JD 17 million (\$44 million) contract to increase the height of King Talal dam by 15 metres to 108 metres, enlarging its capacity from 56 million m³ to 80 million m³. A \$52 million contract to raise the Wadi al-Arab dam from 65 metres to 83 metres has doubled its storage capacity.

Wadi al-Arab feeds the East Ghor canal, which is itself being extended southwards by 14.5 kilometres to Suweima on the Dead Sea. The work, being done by West Germany's Josef Riepl at a cost of \$26 million, will bring around 6,000 hectares under winter irrigation.

Loan offer

Phase one of another irrigation project, for Mujib and South Ghor, is nearing completion. The project has been designed and supervised by the UK's Binnie & Partners. The first phase, using the baseflow from six wadis at the southern end of the Dead Sea, will feed 5,000 hectares of land at South Ghor through drip irrigation. Under a JD 21 million (\$54.5 million) contract, Italy's Impresit has built the intake works and distribution system for the scheme. Phase two, if it goes ahead, will include diversion of water from Wadi Mujib to irrigate a further 3,000 hectares. The feasibility study is being updated, and a loan has been offered by Japan to help offset costs.

Another potential water source, which could compensate for cancellation of the Maqarin dam, is the proposed pipeline to bring 160 million m³ of water a year from the Euphrates in Iraq. The \$1,000 million scheme would include laying 650 kilometres of pipe from an intake near the Syrian border to the Azraq springs, 100 kilometres north of Amman. Feasibility studies have been carried out by UK consultant Howard Humphreys & Sons, but such an ambitious scheme is unlikely to be

implemented until known supplies within Jordan have been developed.

To maximise its resources, Jordan is using sewage for irrigation. In Amman, around 180 hectares of stabilisation ponds have been built to take pressure off Ain Ghazal sewage-treatment works. Excess sewage flows are diverted en route to the treatment works and fed into a 40-kilometre gravity pipeline to the ponds, where the sewage is treated simply and cheaply. The effluent is then used to open up new farmland. The ponds and pipeline contract, awarded to Turkey's Gama Industrial Plant Manufacturing & Erection Corporation, also included headworks for grit removal, and screening of the raw sewage. Commissioning is now under way.

Sewage from Zarqa and Ruseifa will also be pumped into the pipeline. Sewers are under construction in the towns, and work should start soon on a pump station and pretreatment works. Eventually, the stabilisation ponds will cope with a daily flow of 68,000 m³. Ponds have also been constructed to serve Aqaba.

Most towns in the country already have sewer networks, and there are plans to provide sewers for every village with a population of over 2,500. These will largely be financed by the US Agency for International Development (USAID). Work is expected to start soon on a sewage-treatment works for Greater Irbid, the effluent from which will be used for irrigation. Sewers and sewage treatment works constructed for Amman by the local Hodhod Chand Company are to be commissioned in the autumn, while tenders are being evaluated for two small treatment works, designed by Howard Humphreys, for the village of Wadi Seer, 13 kilometres from the capital, and Bakaa refugee camp.

ANNE CHARNOCK

JHA seeks facelift for tourism

A RECENT memorandum to Prime Minister Zaid al-Rifai could change the face of Jordan's tourist industry. Prepared by Jordan Hotels Association (JHA), the memorandum makes proposals for long-term development that could bring a new approach to this much underrated sector.

In the late 1970s, the government began preparations for an expected tourist boom, only to find that the number of visitors dropped from 480,000 in 1980 to 280,000 in 1984. The regional political situation and world economic recession have been partly to blame, but development has also been hampered by the fact that tourism's status as an income earner has never been established.

JHA seeks to change all this. It has recommended the establishment of a ministry of tourism, separate from the Ministry of Information, Culture, Tourism & Antiquities, and the setting up of a chamber of tourism - equivalent to the present chambers of commerce and industry. The purpose of the chamber would be to bring together related organisations such as hotels, travel agencies and antiquities and souvenir shops.

The association has also proposed the establishment of a higher tourism council on the Syrian model, which would be headed by the prime minister and would include planning department officials as well as industry representatives. In addition, JHA has suggested reductions in taxation



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