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Strategic Analysis Paper

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# The Ord River Irrigation Scheme – Charting a Course for Economic Success

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**Key Points**

- The Ord River Irrigation Scheme commenced operation in 1963 with a grant from the Australian Government.
- The early Ord River Stage One cotton and rice crops succumbed to natural pests and others were very low-yielding, influencing many farmers to leave the region.
- In 2016, the WA Auditor General released an investigation report into the Scheme that was highly critical of its management.
- In 2016, nearly 40,000 hectares were under extensive irrigation, carrying a varied range of food and commercial crops, including genetically modified species.
- Further investment is needed from both government and the private sector to capitalise on opportunities in cotton production, sugar refining and irrigated farming technology.

**Summary**

In order to maintain and expand an agricultural sector capable of providing a secure source of food for the long-term future of the nation, Australia must consider a broad range of development opportunities and be prepared to take calculated risks. Creative new ventures will be essential but this may also include the restructuring of programmes that, despite continued and concentrated investment, have so far met with little economic success. The Ord River Irrigation Scheme in the East Kimberley region of northern Western Australia is one agricultural development plan that has been less than successful over a protracted period. With investment from domestic and international sources and commitment by all levels of government and industry, the East Kimberley region still has the potential to make a significant contribution to the economic and cultural development of northern Australian as well as ensuring our continuing self-reliance in food production and contributing to the export of important food and commodities such as rice and cotton.

## Analysis

### Background and History

The Ord River Irrigation Scheme is the result of a bold plan to develop part of the nation's tropical north for intensive irrigated agriculture by harnessing the waters of the Ord River. First works on the project, in the East-Kimberley region of WA were completed in the early 70s. Those works saw the construction of a dam to store and manage the extensive annual flood waters following the annual wet season. Associated works entailed clearing and preparation of new farmland as well as the establishment of a network of drainage and irrigations channels. The water was to be used to irrigate newly established agricultural farmlands planted with commercial crops such as rice, cotton, sugar as well as some experimental crops. It was intended that this new agriculture venture would instigate an economic expansion of northern Australia as well as enticing industries to the region allied to agricultural commerce, transportation and tourism.

Early agriculture in the Ord River region met with limited success. Despite significant management intervention, extensive losses of cotton crops occurred from infestation by caterpillars and insects such as thrips and mirids. For cotton to be commercially viable, research work would need to be undertaken that would protect the plants from insect attack through the intervention of genetic modification (GM) biotechnology. Other products, tobacco for example, would not prove economically viable due to an emerging negative community attitude towards smoking and tobacco products. The emerging rice crops also fared poorly from regular attack and consumption by large numbers of native Australian magpie geese. In assessing the early broadacre cropping failures, research later determined that some of the experimental crops were simply not suited to the soil types and the regions harsh environmental conditions.

Reviews carried out to identify other reasons why the broader Ord River Irrigation Scheme failed to meet expectations in the early years concluded there were a number of reasons: insufficient water quality research, testing and analysis; high salinity levels; issues with transport; the generally low scale of infrastructure; and low commodity prices were cited. Moreover, reviews also identified a general lack of governmental oversight and regulatory process meant issues were not identified and dealt with in a timely fashion.

### Expansion of the Ord River Irrigation Scheme

The development of the Ord River Irrigation Scheme was devised and implemented in response to perceived agricultural potential for the region that was first observed by the pastoralist M.V. Durack, as early as the 1920s. At that time, the first crops of cotton and rice failed to meet the anticipated agricultural benefits, due to insect infestation in combination with a reliance on methods of farming that were not suited to the region. Since that time, however, extensive research and development has been undertaken in agricultural technology. Commencing in the 1980s, research has identified that, with appropriate management, the Ord River is suitable for growing a wide range of crops, including high-value horticultural and seed crops, some specialty pharmaceutical crops and GM cotton. Now more than 50 crops are grown in the area, including the production of the highly sought and profitable Indian sandalwood, as well as bananas, pumpkins, melons and chickpeas. Allied to these crops, investigative work is being undertaken in diversification of sugar to manufacture ethanol as an alternative fuel source to fossil fuel and fibreboard.

When Ord River Stage One was completed with the creation of Lake Argyle in 1972, it was determined that when filled, the dam held 20 times more water than Sydney Harbour, enough to irrigate up to 14,000 hectares of land under cultivation. After 2012, the area of irrigated land was to increase in size significantly, following extensive consultation with local Indigenous groups. This brought about the release of land under

Native Title Agreements to enact the Ord River Irrigation Expansion Stage Two and Stage Three. As of 2014, those expansions resulted in a combined area of more than 39,370 ha of farmlands under irrigation, extending east to the state border. Expansion works took the form of capitol engineering for drainage and irrigation channels, the erection of levee banks and the building of over 41 kilometres of new roads. A significant outcome of the expansion included infrastructure development with the construction and commissioning of a hydroelectric power station to ensure the provision of electricity. Reliable power would be needed to support the agricultural and related commercial industries as well as supply to the townships of Kununurra and Wyndham and, later, the nearby Argyle Diamond Mine.

*Figure 1:* Ord River Dam Wall. *Source:* Nullysontheroad, Flickr

**Future Investment and Development**

The development of the Ord River Irrigation Scheme to date has been largely funded by the WA government with input by large resource companies. Working jointly with WA, the Australian government has also provided funding for sustainable employment for the local Indigenous people by establishing community-based social and common use infrastructure. In line with the intent of the Australian Government White Paper , opportunities exist for the further economic expansion of the region, enabled through infrastructure investment from the private sector as well as from overseas. An example of investment currently being proposed is expansion of the sugar industry to seek and develop alternative market business opportunities in power generation.

**Future Success**

Agriculture ventures in northern Australia must be based on sound economic and business principles. They must lead to increased export potential and strength in Australia's food security. Successful strategies must directly correlate with the Australian Government's intent and commitment to the economic development

of the north through agricultural production and establishing new and developing industries such as aquaculture and hybridized seed crops. Nevertheless, allowance should be made for possible slow success realisation given the inherent challenges this region presents. Understanding previous problems and mistakes will be critical to future success. Governments, investors and the private sector will, therefore, need to closely review the factors attributed to earlier failures. Inadequate research and development into hydrology and ground water dynamics and slow bureaucratic approval processes for the construction of critical infrastructure are two examples of significant failings that can be overcome. Considerable public criticism of the Scheme prompted the WA Auditor General to closely reviewed development in the Ord and East Kimberly regions in 2016 and determined a number of factors contributed to the mixed results. Inadequate planning, and a lack of cost and benefit analysis to inform major decision making, was identified as a major problem.

For future medium and long-term successes to be realised, stakeholders in the Ord River Irrigation Scheme should adopt an approach that both utilises and builds upon the gains made in development, infrastructure and technology. The growing of GM crops in combination with the latest practices in irrigated pasture management are examples of technological advancements that can contribute to success. A continued commitment to innovation must also complement technological improvements. This will aim to decrease costs and increase productivity with new infrastructure, such as a cotton processing plant.

**Cotton Processor (Cotton Gin)**

Prior to 2009, WA State Government regulations prohibited the farming of GM cotton. A repeal of the legislation resulted in a steady expansion and build-up of the industry improving crop production rates and quality. The expansion in GM cotton in the Kimberley presents an opportunity for private sector investment to build a cotton processor or cotton gin, together with the associated infrastructure, to process the raw cotton locally. Currently, cotton produced at Kununurra is freighted by road to one of three commercial cotton gins located in Queensland where it is processed and shipped for commercial use. Sending the raw cotton inter-state constitutes a significant cost overhead to WA producers and presents a disincentive for future farmers and producers to the region.

*Figure 2:* Commercial cotton gin operating in the USA. *Source: Lubbock Avalanche-Journal, Flickr*.

**Training and Policy Development**

Importantly, successful agricultural development of northern Australia will create employment resulting in a socio-economic benefit. General and specialised training can lead to ongoing employment in agriculture, logistics, construction and related service industries. Roles will also emerge in the applied sciences through the development and application of new technologies associated with the growing GM crops in irrigated agriculture.

Future success of the Ord River Irrigation Scheme will also require Australian and state Government oversight, continued investment and the establishment and implementation of robust policies. Those policies need to be supported by strong political leadership together with rigorous regulatory and reporting frameworks. Not only should the policies dictate governance arrangements, they must list key indicators and measures of success. As stipulated by the WA Auditor General, this will enable the regulators to track outcomes but also, identify and determine avenues for future partnerships and investment.

**Conclusion**

The Ord River Irrigation Project has operated now for many years, with little to minimum success. This has been attributed to a range of complex, though distinct and inter-connected reasons. In 2017, the Australian government has committed to the economic expansion of northern Australia. This is complemented by considerable international interest in capital investment and business development. Therefore, the opportunities exist for the east Kimberly region to benefit greatly as a 'food bowl', and thus realise the enormous value and importance it has to future food security and the Australian economy.

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