The Ord River Irrigation Project, past, present and future: an economic evaluation

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ABSTRACT

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This paper presents a summary of the results of an economic evaluation of the Ord River Irrigation Project carried out in order to determine the economic value of the Project to the Kimberley Region, to Western Australia and to the nation. The evaluation comprised cost-benefit and input-output analysis of the Project carried out in two stages. The first stage involved an ex-post economic analysis of the Project from the time construction commenced, in 1959, to 1990/91. The second stage comprised an ex-ante assessment of the Project for the period 1991/92 to 2020/21 under three scenarios for future economic and social conditions.

The paper concentrates on the results of the second stage of the study which suggests that further development of the Ord River Irrigation Project would yield favourable economic returns.

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1. INTRODUCTION

In 1993 the Kimberley Water Resources Development Advisory Board commissioned a study into the past and future economic value of the Ord River Project to the Kimberley Region, to Western Australia and to the nation. The study was one of eight specific studies undertaken by the Board in order to recommend actions to maximise the value to the community from the development of the Kimberley water resource.

The study comprised an ex-post evaluation of the Project from its inception in 1958 to 1991 and an ex-ante evaluation of the Project over the next thirty years, to 2021. In this paper the findings of both evaluations will be presented with emphasis on the latter since it is with the future of the Project that real interest now lies.

2. BACKGROUND

Interest in the Kimberley region effectively began with Alexander Forrest's exploration of the Fitzroy and Ord Valleys in the 1870's, and was maintained by periodic investigations into the area's potential for tropical agriculture and the suitability for irrigation and pasture development along the Ord River over the following 75 years. The results of this research culminated in the development of a bipartisan proposal in the 1950s to develop the region. The Ord River Project was to be the centrepiece of this development.

The Project as originally planned consisted of three stages - the construction of a diversion dam and works to irrigate 10,000 ha of land; construction of the main dam, (creating Lake Argyle) and works to develop an additional 60,000 ha of land, and the construction of a 30MW hydro-electric power station.

Stage 1 was completed as planned by the end of 1965: some 10,000 ha of land was developed, the township of Kununurra established and encouraging results were achieved from initial cotton crops. Development of the cotton industry continued and in 1967 Commonwealth funding was provided for Stage 2 of the project with construction of the Main Dam completed in 1971. By this time, however, the now well documented difficulties associated with large scale cotton production in the region had resulted in many farmers being in serious financial difficulties. Agricultural activities in the region declined significantly during the late 1970's. The extensive irrigation works originally proposed in Stage 2 could not be justified and neither these nor the proposed power station were ever constructed. As a result, only 12000 ha, or one-seventh of the land originally designated for irrigated agriculture, was ever developed - a major under utilisation of the water resources that had been provided.

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3. EX-POST ANALYSIS

3.1 Methodology

Our analysis is based upon the premise that the Ord Project was primarily constructed to utilise a water resource within the Kimberley Region of Western Australia for the purpose of irrigated agricultural production.

Project analysis involves the definition and subsequent comparison of the classic "With" and "Without" project scenarios in order to quantify the net economic benefit of a the Project to the nation.

To ensure the capture of all economic impacts of the Project, our analysis has two distinct components:

1. Cost-Benefit Analysis - this component defines the direct economic costs and benefits for both the "With" and "Without" Ord River Project cases, and

2. Indirect economic impact analysis - input-output analysis estimates the indirect economic impacts of the "With" and "Without" Ord Project cases.

These components are complementary rather than additive. The Cost-Benefit Analysis identifies economic costs and benefits associated with the Ord River Project, while the Indirect Economic impact analysis utilises these defined costs and benefits to estimate economic "flow-ons" from this expenditure within the region, state and nation.

The nature of non-market costs and benefits associated with the Ord River Project were also identified and their significance assessed.

An ex-post Cost-Benefit Analysis was conducted in relation to the Project, from its commencement to 1991. From this analysis, a very clear picture emerged of the Project, and its associated industries, as they are today. The calculations in the Cost-Benefit Analysis were done on the basis of financial values. There was, for example, no shadow pricing undertaken of water or labour supply.

3.2 Results

3.2.1 Cost-Benefit Analysis

The results of the ex-post analysis indicate that the Ord River Project from 1958 to 1991 incurred a net loss of $497 million in 1990/91 values at a 0% discount rate.

The main factors which contributed to this result were the high cost of capital works, the considerable under-utilisation of the water resources provided by the Project and the lack of profitable crop production in the area until the 1980's.

There has, however, been a sustained growth in total gross margins associated with agricultural production since 1980. As a result, the total annual benefits generated by agriculture exceeded the annual costs of the Project in 1988 and in subsequent years. Annual agricultural variable production costs and benefits for the 1958/59 - 1990/91 period are shown in Figure 1.

A number of non-market costs and benefits of the Ord Project were also assessed in the study, predominantly those associated with groundwater and introduced flora. During the period of cotton production (1963 to 1973), insecticides were applied to crops at an increasing rate in an unsuccessful attempt to limit damage by insects to economically acceptable levels. DDT residues are still detectable in the sediments of irrigation tail drains. However, it is a diminishing problem. Because of the high pH and buffering capacity of the soils, most elements in fertilisers, including phosphate, potassium, and zinc are inactivated rapidly, and there has been no significant increase in nutrient concentrations within water courses of the Ord River Project that could be attributable to other than natural sources. Overall, the effects of these non-market costs of the Ord Project were found to be negligible

3.2.2 Input-Output Analysis

Input-Output Analysis was used to examine the economic impacts on the regional, state and national economies of increased expenditures arising as a result of the Project. The input-output methodology draws on estimates of direct expenditures, from the Cost-Benefit Analysis for agriculture and construction industries, to estimate the indirect impacts for each industry except tourism. Tourist expenditures were estimated independently of the Cost Benefit Analysis.

For the purposes of the input-output analysis, five "industry" groups were considered; namely, the capital expenditures associated with the construction of the Project, agricultural production, tourism, agricultural processing and transport. For each industry group examined, the input-output technique provided estimates of both direct and indirect (flow-ons) economic effects in terms of value added, income and employment

Significant economic effects were provided by construction activities through the 1960's and into the 1970's and by agricultural production in the mid 1960's to early 1970's. However as regional agricultural output declined, flow-on effects from the project declined in the 1970's. With significant changes in land use and associated processing activities in the 1980's, flow on effects increased. Tourism also generated significant flow-on effects in this period

Figure 1 Annual Agricultural Variable Production Costs and Benefits - 1958/59 to 1990/91

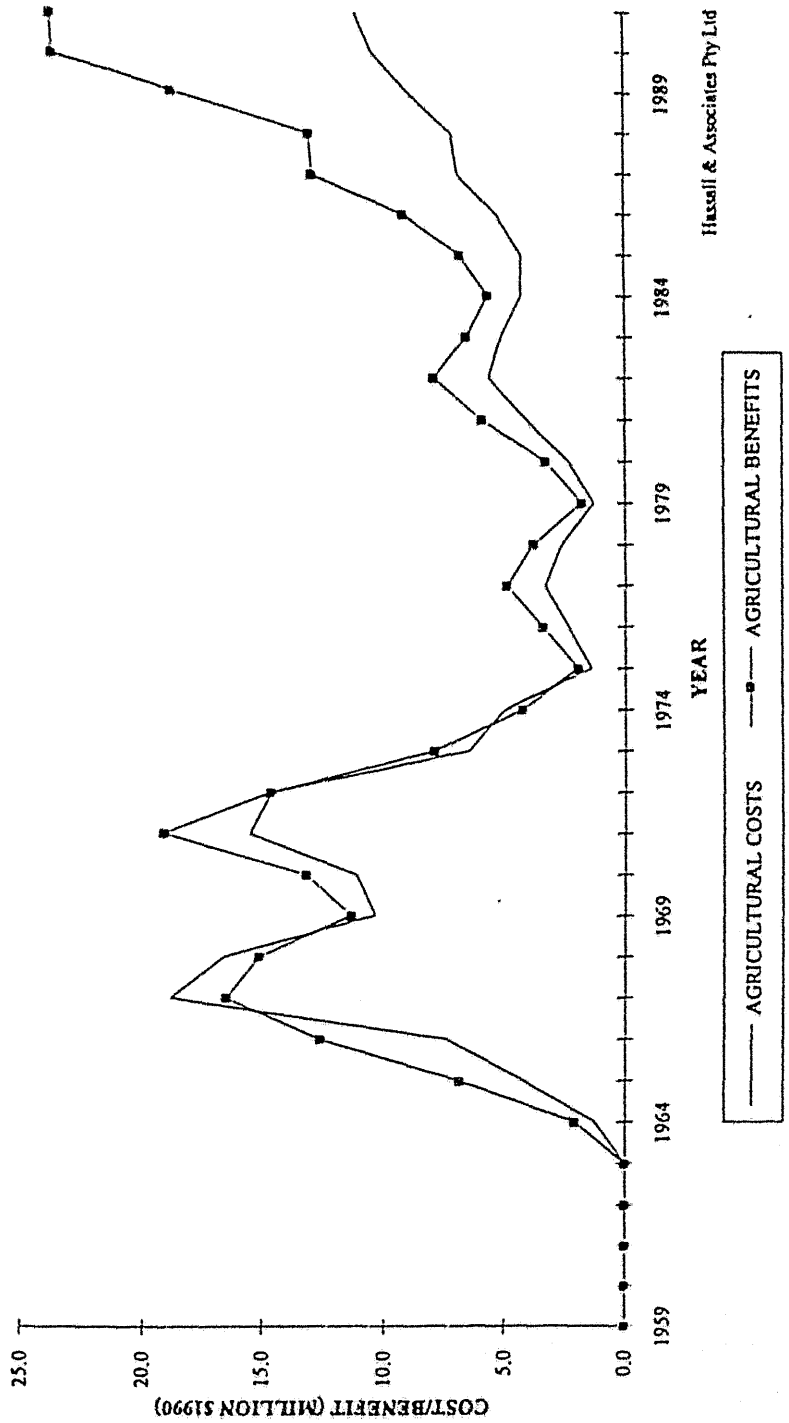


Table 1 shows the direct and indirect economic effects of the Project in the last year of analysis, 1990/91. There was no significant agricultural processing sector in the region at this time.

Table 1 Summary of Direct and Indirect Economic Effects of the Ord Project (1990/91)

	Regional			State			National		
	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
Construction									
Value added ($'000)	1449	2342	3791	1449	2342	3791	1572	3113	4685
Income ($'000)	1264	524	1788	1264	1356	2620	1264	1356	2620
Employment (no)	72	54	126	72	54	126	72	54	126
Agriculture									
Value added ($'000)	13209	6210	19420	13209	13001	26211	13209	25835	39045
Income ($'000)	5599	3783	9383	5599	7347	12946	5599	13081	18680
Employment (no)	267	171	438	267	355	622	267	497	765
Transport									
Value added ($'000)	21	-	21	575	938	1515	2414	4173	6547
Income ($'000)	16	-	16	513	551	1077	1473	2087	3560
Employment (no.)	1	-	1	15	22	44	48	72	120
Tourism									
Value added ($'000)	4407	2067	6474	6347	7185	13532	7660	16180	23840
Income ($'000)	2593	1316	3908	3783	4146	7928	4560	7680	12240
Employment (no.)	155	64	219	219	195	414	220	313	533

3.3 Conclusions

The above results show that implementation of the Ord River Project has resulted in a net loss to the nation of some (1990/91) $497 million (zero discount rate). Non-market impacts of the Ord Project, predominantly associated with groundwater and exotic flora, have been negligible.

As a proportion of value-added, tourism generates the greatest number of jobs. Overall agriculture is the largest employer and generator of income by virtue of its size. Recent success with horticultural crops is the most significant factor in this growth. Capital construction work now encompasses private on-farm investment.

To date, the economic flow-ons of the industries associated with the Project has been confined largely to the regional level. While these industries have generated indirect effects at both the state and national levels, they have been small in comparison to the size of these economies. At the regional level, significant impacts (though variable over time) have been generated by construction, agricultural and tourism expenditures. Cotton processing also made an important contribution in the late 1960s and early 1970s, but, since that time, regional processing activity has been insignificant.

The results of this ex-post analysis are, perhaps, to be expected, given the considerable under-utilisation of the commanded water resources. Indeed, it is a remarkable achievement that annual total project benefits generated from just 12,000 ha of land now exceed the annual costs of a project designed to irrigate 70,000 ha.

4. EX-ANTE ANALYSIS

4.1 Methodology

The second stage of the study involved an extension of the Cost-Benefit and Input-Output models to analysis of the Project over the period 1992 to 2021 under a number of different socio-economic scenarios. These future conditions were represented by three scenarios developed by Fluor Daniel Menlo (1993) for the Kimberley Water Resources Development Office. Each scenario was based on specific assumptions about immigration rates, population, economic growth in Western Australia, level of foreign investment, rate of development of technological skills and level of concern for environmental issues.

Briefly, each scenario can be described as follows:

1. Continuity

This scenario presumes the gradual development of a global economy and political structure similar to the present general framework of nation-states and international institutions. Australia establishes closer ties with Asia, both economically and politically, yet retains its dominantly European culture and thinking.

2. Growth

The growth scenario involves both national and state commitment to integrating Australia more aggressively into the Asian economy. Governments actively promote economic, political and cultural links with Asia.

3. Isolation

This scenario considers Australia as a passive and marginal participant in a dynamic and highly competitive global economy. Australia protects and retains its distinguishing characteristics as a European enclave, a producer of raw materials, and an economy with competitive handicaps in labour relations and government/private sector cooperation.

4.2 Results

The estimated impact of each scenario on development in the Ord Region in terms of the characteristics and pace of expansion of the Project are defined in Table 2. These estimates were derived from the joint considerations of the Ord Development Council, prominent local producers and the consultants undertaking the study and are based on experience and knowledge of the development of the region.

Table 2 Projected Areas of Agricultural Activities within the Ord River Irrigation Area, 1992 - 2021 (hectares)

Activity	No further development	Continuity			Growth			Isolation		
	2021	2003	2014	2021	2003	2014	2021	2003	2014	2021
Soybeans	400	845	845	845	845	845	345	660	845	1030
Maize	250	650	500	500	500	500	500	650	500	500
Chickpeas	400	1155	1155	1155	1155	1155	655	840	1155	1470
Hybrid seed sorghum	500	1750	2250	3030	2000	3000	3000	1000	1050	1930
Hybrid seed sunflower	500	1750	2250	3030	2000	3000	3000	1000	1050	1930
Mango	120	1000	1000	1000	1000	2000	2000	500	600	1000
Banana	150	500	1000	2000	1000	1500	2500	500	800	2000
Rockmelon	260	1000	2000	3000	1500	2500	3500	1000	1250	2250
Watermelon	260	1000	2000	3000	1500	2500	3500	1000	1250	2250
Leucaena	1000	5340	5490	5490	5500	5500	5500	5265	4590	4590
Sugar	0	4000	30060	30200	30060	29560	34010	4000	4740	3000
TOTAL	3840	18990	48550	54250	47060	52060	58510	16415	17830	21950

Actual decisions on selection of crops will depend on market and cost factors. Gross margin data suggest that not only food crops, but also some feed grain crops could be attractive in the future. While current expectations are focused on sugar, there are other crops with similar returns which could be substituted for sugar if necessary.

It is predicted that domestic agricultural commodity prices (A$) will increasingly reflect international market prices (US$). Therefore, prices received for products produced within the region will be determined by the demand/supply relationship for given commodities within the trading region (Asia) and by relative exchange rates (A$/US$).

Price trends over the next thirty years were estimated and the factors likely to affect the real price of farm products, and the real exchange rate (A$/US over the next three decades were examined. The demand for different kinds of agricultural products in Asia, over the same period, was then projected, as a basis for estimating the likely movements in the patterns of agricultural product prices.

The different rates of expansion of irrigated agriculture under each scenario are associated with significantly different capital investment programs. Capital investment, by scenario, over the period 1991-92 to 2020-21 is shown in Figure 2.

The Continuity Scenario requires considerable public expenditure on water supply channels and access roads in the period 2004-05 to 2007-08, as the Weaber Plains area is developed. Infrastructure requirements under the Growth Scenario are similar, but are generally brought forward in comparison to the Continuity Scenario. Under the Isolation Scenario, significantly less public and private capital expenditure is required, and there is no development in the Weaber Plains area, although some expansion occurs in the Carlton Plains (in 1996-97) and the Mantinea Flats area (around 2014-15).

4.2.1 Cost-Benefit Analysis

An analysis of the economic costs and benefits associated with the future development of the ORIA was performed for each scenario. The r ults of the analyses are presented for the total project (1958/59 to 2020/21) and future deve ent (1990/91 to 2020/21) cases in Tables 3 and 4, respectively.

Table 3 reveals that if development proceeds under the Continuity Scenario, the total Project (1959 to 2021) will generate a net benefit of $2,606 million in 1990/91 values at a zero discount rate. Under this scenario the Project breaks even at 2010 (see Figure 3).

Examination of Table 4 indicates that the economic benefits generated from the expansion of the Ord River Irrigation Area (ORIA) significantly exceed the costs for all future development scenarios. Internal Rates of Return (IRR) range from 36% to 61%. The Net Present Value is greatest for the Growth Scenario. The IRR shows high returns for all scenarios, differing between the Continuity and Growth Scenarios mainly as a result of the timing of the major capital expenditures. The higher IRR result for the Continuity Scenario reflects the delay in capital expenditure in comparison to that under the Growth Scenario.

Figure 2 Capital Investment, by Scenario 1991/92 to 2020/21

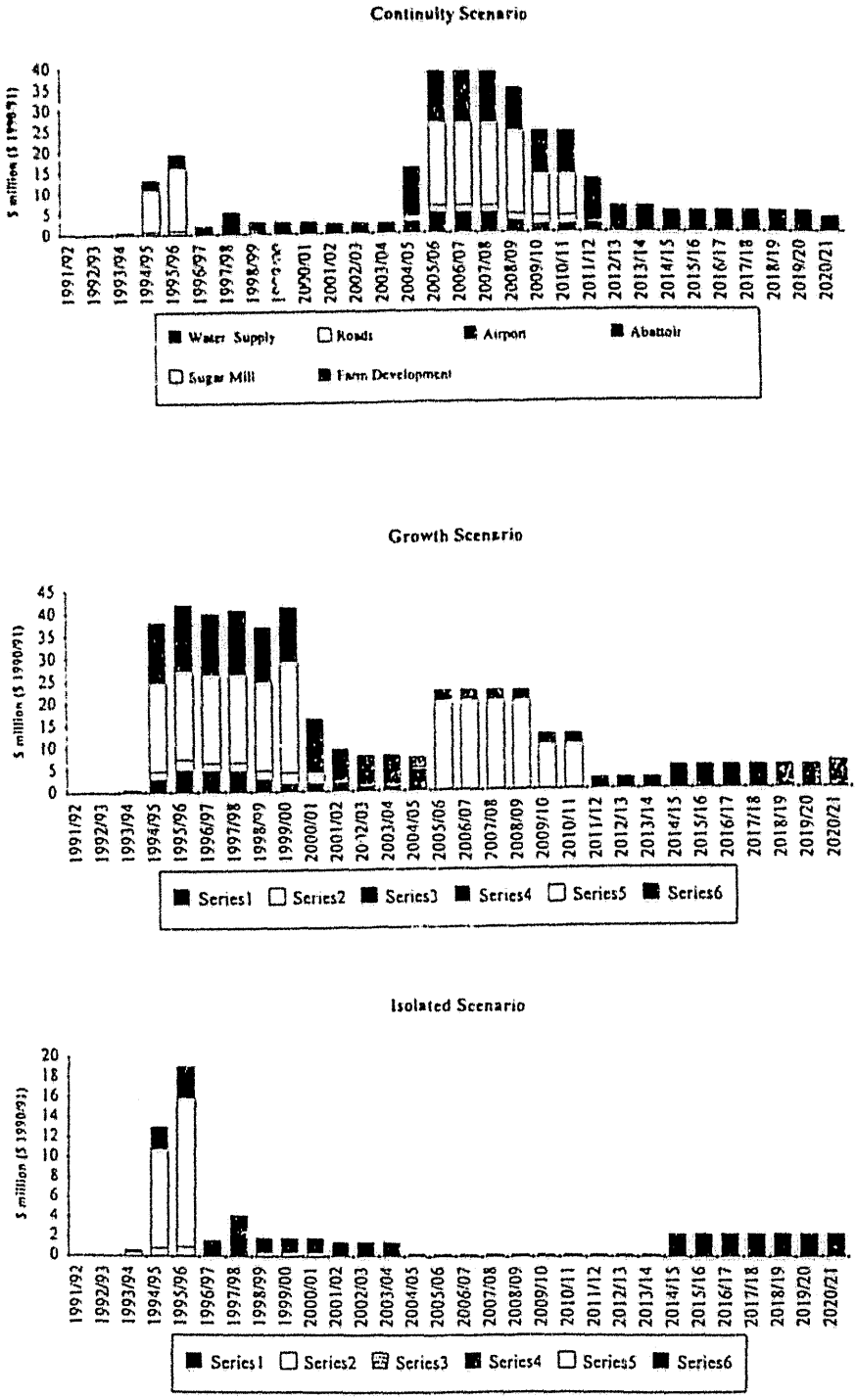


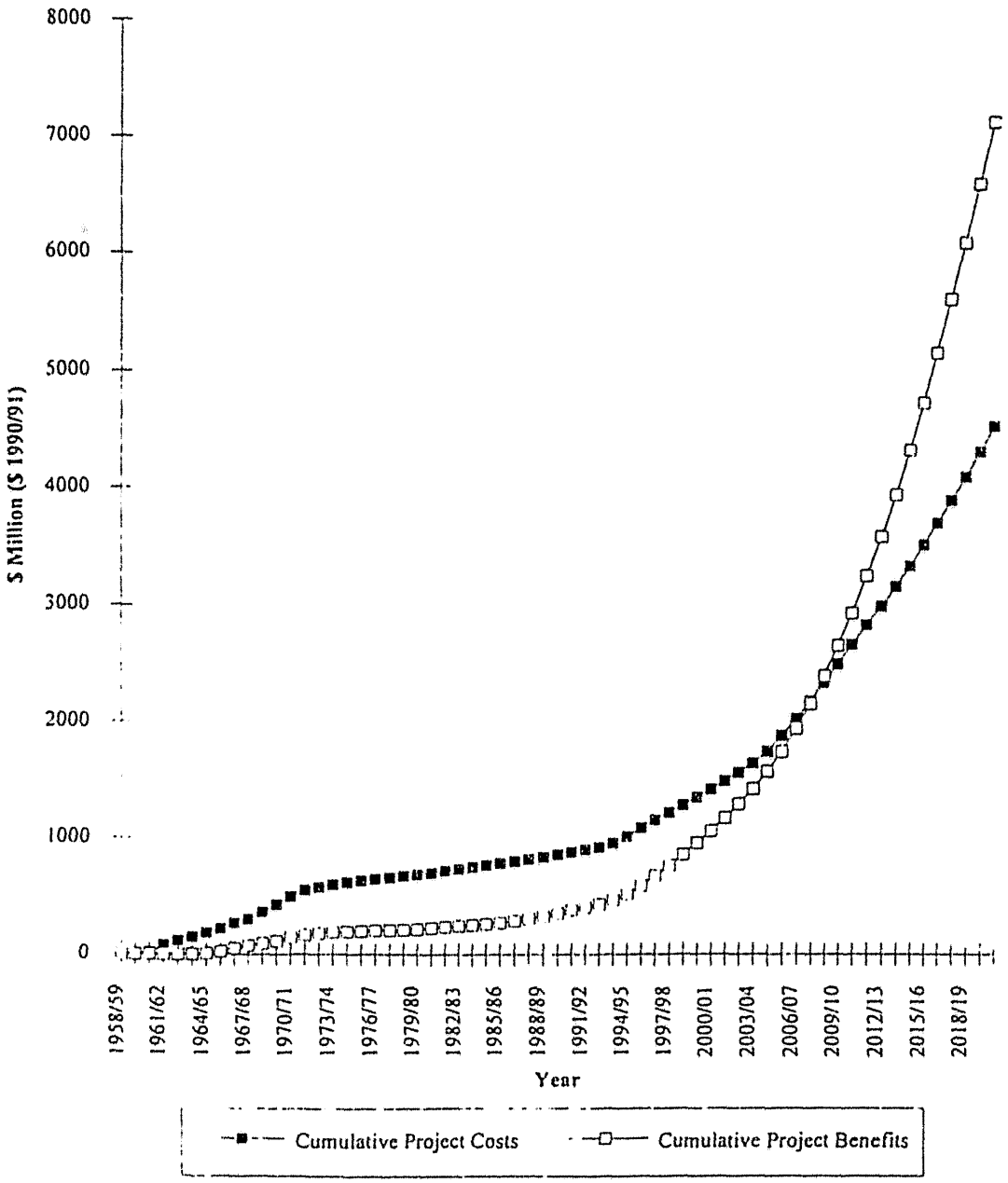
Table 3 Cost-Benefit Analysis: Total Project 1959 to 2020/21

Net Present Value in 1959 ($ million 1990/91)			
Scenario	Continuity Scenario	Growth Scenario	Isolated Scenario
Scenario Infrastructure Developments	Public Expenditure 2004/05 - 2007/08 expenditure on water supply channels and access roads 2012 upgrade Kununurra airport Private Expenditure Mid 1990's major farm development expenditure 1994/95 initial sugar mill investment 1998 expand cattle slaughtering facilities 2005/06 - 2012/13 additional milling facilities	Similar infrastructure development to the Continuity Scenario, but generally brought forward Public expenditure 1994/95 expenditure on water supply channels and access roads 2004 upgrade Kununurra airport Private Expenditure 1994 - 2004 major farm development expenditure 1994/95 sugar mill investment commences 2000 expand cattle slaughtering facilities	Significantly less public and private expenditure Public Expenditure 1996/97 some expansion in Carlton Plains 2014/15 some expansion in Mantinea Flats area 2020/21 upgrading of Kununurra airport Private Expenditure Decreased on-farm capital expenditure 1994/95 initial expenditure on sugar mill only 1998 expand cattle slaughtering facilities
Area of Land Developed (ha)	54250	58510	21950
Discount Rate 0 4 8	 2606 19 -188	 3235 101 -177	 1263 -117 -203
Internal Rate of Return IRR (%)	4	5	3

Table 4 Cost-Benefit Analysis: Future Development Scenarios 1992 to 2021

Net Present Value in 1991 ($ million 1990/91)			
Discount Rate	Continuity Scenario	Growth Scenario	Isolated Scenario
0 4 8	2785 1119 489	3415 1419 634	1434 621 296
Internal Rate of Return IRR (%)	61	36	60

Figure 3 Continuity Scenario - Cumulative Project Costs and Benefits



The benefit flow from the Project takes into account estimated price increases for certain food items likely to arise from increasing food demand in Asia. If the expected price increases were not to occur, the IRR on the total Project would be approximately 3% (see Table 3) compared with the range of estimates under the three scenarios of 3-5%, and the rates of return for the period between now and 2020/21 would still be high.

The Cost-Benefit Analysis suggests that, while the IRR is high under each scenario, for the period to 2021, it is reduced significantly under the Growth Scenario as a result of the need for greater capital investment in infrastructure in the first of the three decades considered. The bulk of such investment is delayed until after the turn of the century under the Continuity Scenario. Investment is lower, and in some cases not required, under the Isolation Scenario.

4.2 Input-Output Analysis

The economic impacts of the development of Ord River Project under each Scenario were estimated for agricultural production, processing of beef cattle and sugar, transport of agricultural produce, construction activity and tourism.

In the 30-year period to 2020/21, it is expected that the expansion of irrigated agriculture on the Ord will generate expansion of agricultural processing activities, transport industries and tourism. The infrastructure requirements of further irrigation development will also result in significant economic flow-ons from construction activity.

The major variables in these scenarios, i.e. the rate of land development, trends in agricultural product prices and infrastructure requirements, dictate, to a large extent, the relative economic impacts of industry groups under each scenario. Table 5 provides the total and indirect impacts of all industries considered, under each scenario at the regional, state and national levels in the year 2020/21.

It can be seen that at each level of analysis the impacts under the Isolation Scenario are approximately half those estimated under the Growth Scenario. It is of note that, even under the least optimistic of the development scenarios (Isolation) the regional employment generated directly and indirectly by agriculture, processing, transport and tourism by the year 2020/21 represents a fivefold increase over that in 1990/91.

In order to provide some comparison of the relative importance of the industry groups in terms of their economic impact over the next 30 years a summary of the estimated total (direct and indirect) economic effects of each industry under the Continuity Scenario is provided in Table 6.

Table 5 Total Direct and Indirect Impacts, Ord Project, 2020/21 ($1990/91)

Impacts	Continuity		Growth		Isolation	
	Total	Flow-on	Total	Flow-on	Total	Flow-on
Total Regional						
Value added ($'000)	570062	106911	666248	131129	302867	60075
Income ($'000)	156242	61543	195515	80134	101441	34966
Employment (No)	6677	3007	8483	3688	4166	1711
Total State						
Value added ($'000)	697056	199290	835332	253507	374824	113074
Income ($'000)	228562	117458	291585	149614	140628	65839
Employment (No)	9641	5271	12440	6667	5757	2948
Total National						
Value added ($'000)	916819	404852	1118338	517449	496469	226434
Income ($'000)	358998	225437	459823	288041	213534	126378
Employment (No.)	13714	8657	17600	11431	8022	4993

The results indicate that the increasing significance of agriculture at the regional level apparent in the latter part of the Stage 1 analysis, will continue over the next 30 years. In addition, irrigated agriculture on the Ord will become a significant industry at the State level. On the basis of the overall growth predicted by Fluor Daniel/Menlo and the present study's estimates of growth of the value of agriculture on the Ord, it is possible that, by 2020/21, agriculture on the Ord could contribute at least 16% of the gross value of agricultural production in Western Australia, compared with only 2% in 1990/91.

The most significant development in terms of processing activity is the establishment of a major sugar-milling facility. Expansion in production of existing horticultural products is unlikely to result in any significant processing development. The upgrading of cattle-slaughtering facilities will also be required with the expansion of cattle-fattening activities on irrigated pastures.

Table 6 Summary of Direct and Indirect Economic Impacts of the Ord Project, Continuity Scenario 1991/92 to 2020/21 ($1990/91)

Industry Sector	Regional			State			National		
	Value added	Income	Employ -ment	Value added	Income	Employ -ment	Value added	Income	Employ -ment
Agriculture									
1991/92	19677	9157	414	23084	11443	487	29098	14417	580
2000/2001	87297	32096	1407	100648	40378	1698	124080	52763	2078
2010/2011	238252	60156	2555	265615	77933	3173	319431	106599	4063
2020/21	487724	108360	4383	527481	133352	5247	602540	173747	643
Processing									
1991/92	383	252	12	383	252	12	659	375	16
2000/2001	5214	3024	131	5214	3024	131	9121	5057	189
2010/2011	22205	12346	521	22205	12346	521	39030	21476	772
2020/21	29607	16389	705	29607	16389	705	52065	28626	1024
Transport									
1991/92	11	5	0	2616	1338	61	7273	4364	166
2000/2001	497	234	10	12190	6237	283	31046	18628	710
2010/2011	2559	1203	51	32081	16414	746	74732	44839	1708
2020/21	3472	1632	69	50826	26004	1182	120779	72467	2761
Construction									
1991/92	1139	720	26	1623	995	39	2265	1440	52
2000/2001	6084	3846	140	8671	5314	210	12097	7692	280
2010/2011	34045	21523	783	48524	29741	1174	67699	43046	1565
2020/21	14635	9252	336	20859	12785	505	29102	18504	673
Tourism									
1991/92	8917	5308	305	16554	9704	484	25952	15158	614
2000/2001	11345	6765	388	20177	11825	591	33516	18578	793
2010/2011	16273	9692	558	29953	17559	877	47847	27955	1132
2020/21	34626	20610	1184	68284	40033	2001	112333	65655	2658

There is also significant potential for increased tourism in the Ord area. The length of the tourist season could be extended if air access to Kununurra could be improved. The demand for increased access to air freight as a result of increased agricultural production, is likely to warrant a major upgrading of the Kununurra airport to international standards. The recent granting of international status to the Broome airport could have significant spin-offs for Kununurra if airport and accommodation facilities were made available there. The results of the impact analysis show that provided these constraints are overcome, tourism will maintain its relative importance as a source of income and employment at the regional level.

As in the past, construction activity will generate increased and significant flow-ons as a result of future infrastructure requirements, but will begin to decline in importance before 2020. In addition to irrigation infrastructure, substantial peaks in construction activity will be generated by the need for upgrading of the airport and construction of the sugar mill.

Flow-ons from transport activity remain small at the regional level but become increasingly significant at the state and national levels. The importance at the regional level may change if there is sufficient incentive for locally based transport operations to be established.

Processing of agricultural commodities, particularly sugar, becomes an important regional industry, employing around 500 people (directly and indirectly) by 2010, and increasing to nearly 700 some 10 years later.

The above results of Input-Output Analysis rely on the use of transactions tables which are a snapshot of the economic linkages between industries at a particular point in time. In Stage 2 of this study, tables for the 1990/91 year were constructed for the Kimberley Region and Western Australia. While these tables are likely to provide a good representation of the economy for some years to come, the study relies on them to predict impacts over a 30-year period.

The current structure of the regional economy, is relatively simple, with a heavy reliance upon the state and national economies for the supply of both consumption and production goods. Examination of Table 6 reveals significant impacts, particularly at the state level, of further development of the Ord Project.

It should be noted that the scenarios assessed here involve, in most cases, significant developments in infrastructure, agriculture and tourism. These developments will, in themselves, lead to a diversification of the structure of the regional economy. Over time, the economy of the Kimberley will become more self-sufficient and, as a result, more likely to retain the economic flow-ons generated by development. Thus, the regional impacts estimated here may be underestimates particularly in the latter part of the 30 year period.

As a result of the predicted expansion of agriculture and associated industries, together with the potential for expansion of tourism, the township of Kununurra is likely to experience significant growth. By the end of the period under consideration, it is likely that an additional town site will be required to service the increased industrial and consumption needs of the economy. Given the extent of population growth likely to be associated with development of the Ord, there would appear to be a need for further investigation of the planning implications of this development for the region.

4.3 Conclusions

The Ord River Project has been one of the most interesting and challenging projects undertaken in Australia. It was not until 1988 that the operating costs of the project were exceeded by the annual benefits derived by agriculture.

Whether or not the Ord River Project generates a net gain or loss to the national economy will now be determined by decisions as to whether further development is enabled beyond the minuscule proportion of the potentially irrigable area developed to date.

Our analysis has indicated that significant expansion of irrigated agriculture in the Ord region, over the next two or three decades, is warranted in economic terms: This expansion is likely to lead to a significant growth in agricultural processing, transport, and tourism industries, with significant and sustained economic impacts at the regional, state and national level. There will also be significant, although variable, flow-ons from further construction activity.

While, in the recent past, there has been little incentive for additional irrigation land to be developed, that situation is now changing. Demand exists to enable some expansion of existing products, such as intensive horticulture, irrigated pasture for cattle fattening, and, to a lesser extent, bananas, tree crops, and culinary beans. It is likely, however, that the main impetus for the development of additional land will come from the cultivation of new crops on the Ord. Of those under consideration, sugar appears to hold the greatest potential (the gross margins for

sugar, however are not significantly different from other crops, potentially suitable for the area)

The scenarios examined indicate that commitment of funds to further development of the project would generate a benefit well in excess of that considered necessary by the Industry Commission (1992) to justify new investment in irrigation. The internal rates of return for funding the expansion of the Project show a return of 36-61% (depending on the scenario) compared to the guideline of 5%, suggested by the Industry Commission, for new investments. The very high rates of return reflect, in part, the fact that new investments in the Project will allow large benefits to be reaped from the very substantial capital investments made in the Project in the past.

In addition, the estimated level of returns from the total Project (1958 to 2021) from the date of commencement, i.e. 3-5%, also exceed the Industry Commission's suggested lower limit of 0% for returns on already sunk investments

The very high returns indicated from further development of the Ord Project must rank this as one of the highest-yielding regional development options available in Australia. We consider that it warrants priority examination by regional, State, and federal authorities.

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