Industry-specific impact assessment program: Citrus

Impact assessment report for project *Citrus trends analysis in China and Japan* (CT17005)

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Executive Summary

What the report is about

This report presents the results of an impact assessment of a Horticulture Innovation Australia Limited (Hort Innovation) investment in Project *CT17005: Citrus Trends Analysis in China and Japan.* This short project was funded by Hort Innovation over the period 1-11 May 2017.

Methodology

The investment was analysed qualitatively within a logical framework that included activities and outputs, outcomes and impacts. Impacts were categorised into a triple bottom line framework. Any impacts identified were then considered for valuation. Investment cost cash flows were expressed in 2019/20 dollar terms and were discounted to the year 2019/20 using a discount rate of 5% to estimate the investment criteria.

Results/key findings

The project investment focused on the application of an existing tool that monitors social trends and explores the patterns and implications of change in social values that are likely to influence the future. Outputs were produced by the project with implications for the future marketing of citrus in Japan and China. However, any outcomes and impacts of the investment were not able to be identified by Colmar Brunton or Citrus Australia.

Investment Criteria

Total funding from all sources for this short and small project was just $15,000. As no impacts were valued, the investment criteria produced were limited to the present value of costs ($0.02 million in 2019/20 $ terms).

Conclusions

Project CT17005 was successful in that the project delivered outputs and a set of recommendations. However, no evidence of outcomes and impacts were identified.

Keywords

Impact assessment, cost-benefit analysis, CT17005, citrus industry, China, Japan, market development, market information

Introduction

All research and development (R&D) and marketing levy investments undertaken by Horticulture Innovation Australia Limited (Hort Innovation) are guided and aligned to specific investment outcomes, defined through a Strategic Investment Plan (SIP). The SIP guides investment of the levy to achieve each industry's vision. The current industry SIPs apply for the financial years 2016/17 – 2020/21.

In accordance with the Organisational Evaluation Framework, Hort innovation has the obligation to evaluate the performance of its investment undertaken on behalf of industry.

This impact assessment program addresses this requirement through conducting a series of industry-specific ex-post independent impact assessments of the almond (AL), banana (BA), citrus (CT) and onion (VN) RD&E investment funds.

Twenty-nine RD&E investments (projects) were selected through a stratified, random sampling process. The industry samples were as follows:

- Nine AL projects were chosen worth $5.84 million (nominal Hort Innovation investment) from an overall population of 21 projects worth an estimated $10.78 million,
- Eight BA projects worth $3.02 million (nominal Hort Innovation investment) from an overall population of 24 projects worth approximately $16.72 million,
- Eight CT projects worth $5.40 million (nominal Hort Innovation investment) from a total population of 35 projects worth $15.78 million, and
- Four VN projects worth $2.40 million (nominal Hort Innovation investment) from an overall population of 8 projects worth $3.89 million.

The project population for each industry included projects where a final deliverable had been submitted in the five-year period from 1 July 2014 to 30 June 2019. The projects for each industry sample were chosen such that the investments represented (1) at least 10% of the total Hort Innovation RD&E investment expenditure for each industry, and (2) the SIP outcomes (proportionally) for each industry. Four projects had been randomly selected as part of a related Hort Innovation project (MT18011) and were included in the samples for the AL industry (AL14006 and AL16004) and the CT industry (CT15006 and CT15013). This left 25 unique projects randomly selected for evaluation under MT19012.

Project CT17005: *Citrus Trends Analysis in China and Japan* was randomly selected as one of the 25 unique MT19012 investments and was analysed in this report.

General Method

The impact assessment follows general evaluation guidelines that are now well entrenched within the Australian primary industry research sector including Research and Development Corporations, Cooperative Research Centres, State Departments of Agriculture, and some universities. The approach includes both qualitative and quantitative descriptions that are in accord with the impact assessment guidelines of the CRRDC (CRRDC, 2018).

The evaluation process involved identifying and briefly describing project objectives, activities and outputs, outcomes, and impacts. The principal economic, environmental and social impacts were then summarised in a triple bottom line framework.

Some, but not necessarily any or all of the impacts identified were then valued in monetary terms. Where impact valuation was exercised, the impact assessment uses cost-benefit analysis as its principal tool. The decision not to value certain impacts was due either to a shortage of necessary evidence/data, a high degree of uncertainty surrounding the potential impact, or the likely low relative significance of the impact compared to those that were valued. Any impacts valued are therefore deemed to represent the principal benefits delivered by the project. However, as not all impacts were valued, the investment criteria reported for individual investments potentially represent an underestimate of the performance of that investment.

Background & Rationale

Citrus Industry

The Australian citrus industry is one of Australia's 'traditional' horticultural industries. A range of citrus types are produced in Australia. Oranges are the predominant citrus type grown by tonnage followed by mandarin, lemon/lime and grapefruit, in that order.

Table 1 illustrates some recent descriptive production and supply statistics for the Australian citrus industry. Table 2 illustrates the change in citrus exports (volume and value over the same period.

Table 1: Australian Citrus Production and Value for Years Ending June 2017 to 2019

Year ended June	Total Australian Production (tonnes)	Fresh Supply (tonnes)	Fresh Imports (tonnes)	Fresh Australian Supply (tonnes)	Fresh Supply Wholesale Value (m$)	Fresh Supply Wholesale Value ($/tonne)
2017	714,740	309,822	34,061	275,761	572.2	1,847
2018	747,032	294,956	27,749	267,207	534.7	1,813
2019	744,354	294,568	24,760	269,808	539.0	1,830
Average	735,375	299,782	28,857	270,925	548.6	1,830

Source: Australian Horticultural Statistics Handbook, 2018/19

Table 2: Australian Citrus Exports and Value for Years Ending June 2017 to 2019

Year ended June	Total Australian Production (tonnes)	Fresh Export Volume (tonnes)	Fresh Export Value ($m)	Fresh Export Value ($/tonne)
2017	714,740	218,211	331.7	1520.1
2018	747,032	258,192	427.7	1656.5
2019	744,354	252,250	457.1	1812.1
Average	735,375	242,884	405.5	1669.5

Source: Australian Horticultural Statistics Handbook, 2018/19

The research and development activities of the citrus industry are guided by the industry's Strategic Investment Plan (SIP). The activities are funded by levies payable on citrus produced in Australia.

The process of preparing the latest SIP was managed by Hort Innovation in consultation with the Industry Representative Body (Citrus Australia) and the Strategic Investment Advisory Panel. The current citrus SIP has been driven by levy payers and addresses the Australian citrus industry's research and development (R&D) needs (and marketing specifically for the orange industry) from 2017 to 2021.

Project Rationale

Australian export markets for citrus were increasingly being targeted at Asian markets. Markets in China and Japan were already increasing and profitable to the industry. However, further information on these markets was considered important in order to sustain the market penetration experienced to date and assess whether it was likely to continue into the future. Also, maintaining and increasing exports to Asian countries was considered essential for the industry in order for the production base in Australia to remain economically viable.

The growth in citrus exports, including those to Asian countries, has been attributed to the reputation of Australian citrus fruit being high quality and having excellent food safety standards. However, the citrus global market is highly competitive with many of Australia's competitors being generally lower cost than Australia, have a larger scale and were generally increasing their marketing sophistication.

An improved understanding of consumer market trends including consumer attitudes and behaviour was considered important as well as the identification of improved marketing opportunities with regard to distribution and positioning in the marketplace. China and Japan were targeted as to where the greatest marketing opportunities could be realised.

Project Details

Summary

Project Code: CT17005

Title: *Citrus Trends Analysis in China and Japan*

Research Organisation: Colmar Brunton Pty Limited

Project Leaders: Denise Hamblin, Colmar Brunton

Period of Funding: 1 May 2018 to 11 May 2018

Objectives

The overall aim of the investment was to provide information to assist the Australian citrus industry to continue to sustain export market growth in Asian markets and maximise sustainable returns.

Specific objectives were:

1) To build a comprehensive and integrated profile of Australian local citrus products in China and Japan.
2) To increase market understanding including customer trends, channel requirements and positioning to identify market opportunities.
3) To identify trends from the past 20 years to predict the future landscapes of these markets over the next 20 years.
4) To further understand the attitudes and behaviour towards various local and imported citrus varieties over the last 10-20 years.

Logical Framework

Table 3 provides a description of Project CT17005 in a logical framework format, organised by project activities, outputs, outcomes and impacts.

Table 3: Logical Framework for Project CT17005

Activities	• The researchers approach to the project was based on Tier 1 cities in China (e.g. Beijing, Shanghai, Guangzhou, and Shenzhen) and Tier 2 cities in China (e.g. Tianjin, Suzhou, Hangzhou, Chengdu, Wuhan and Chongqing), as well as the major cities in Japan including Tokyo, Sapporo/Nagoya, Osaka, and Fukuoka. • The project approach to the trends report was based on the application of Colmar Brunton's Millennium Monitor; this is a monitor of social trends that explores the patterns and implications of change in social values. The Millennium Monitor focuses on the changes in social values that are likely to influence the future. • With the aid of the Monitor, an improved understanding was sought on: ○ the target for current communications, ○ where target consumers reside and what proposition aligns with them most strongly, ○ the tone of voice for delivering future propositions, ○ planning for the next three years, ○ planning for beyond the next three years, ○ the preferred pack format at point of sale, ○ triggers and barriers to purchase & consumption, ○ purchase and consumption occasions for citrus, ○ ideal pricing options for citrus, and ○ current level of satisfaction.
Outputs	• An increased understanding of needs and differences across the two countries, cities and consumer types. • Information and insights for Australian citrus supply chain stakeholders including the following recommendations:

	○ The current Australian fruit offerings in China and Japan can be leveraged to a 'super premium' status to differentiate from other premium offerings currently available. In order to differentiate premium offerings; claims, messages, stories and communication style must clearly go beyond mainstream offerings. ○ Synthesising strategic marketing efforts for the industry is essential for effectively communicating the premium message to the end consumer; the Taste Australia campaign provides a fantastic platform to tell the individual stories of Australian citrus. Adding another layer to this campaign by taking consumers through a journey from 'farm to plate' will provide greater depth, further enhancing premium perceptions. ○ The cartoon imagery on the Now in Season campaign is primarily targeted towards children, however parents are looking for a higher end premium product. The imagery should be tailored for adults who are the household decision makers and convey premium perceptions. ○ In general, Japanese and Chinese consumers perceive Australia to be a nice, safe country with pristine natural conditions. However, outside of major cities and tourist attractions, awareness of specific regions in Australia is low; creating interest and awareness in the different citrus growing regions will enhance Australia's clean and green image.
Outcomes	• The Colmar Brunton representative (Denise Hamblin) was unable to provide any information on whether the recommendations made by the project has been actioned by the industry. • Also, discussions with the Citrus Australia Marketing Manager revealed he was unaware of the project (no final report was provided to Citrus Australia). Furthermore, it was suggested the outputs from the project (including the recommendations) would have been of little value to the industry. • This was because the Japanese market was already mature and the exporting companies were aware of much of the information in the report, including the conditions and perceptions of consumers and the trade in both Japan and China. • It is concluded that the project investment would have made little difference to the efficiency, effectiveness or confidence of Australian citrus marketing in both target countries.
Impacts	• Any potential impact via an increase in competitiveness of Australian citrus in markets in China and Japan would likely to be minor. • Further neither Colmar Brunton nor Citrus Australia knew of any impact of the project.

Project Investment

Nominal Investment

Table 4 shows the annual investment in project CT17005 by Hort Innovation. There were no 'other' investors in this project.

Table 4: Annual Investment in the Project CT17005 (nominal $)

Year ended 30 June	Hort Innovation ($)	Total ($)
2018	15,000	15,000
Totals	15,000	15,000

Program Management Costs

For the Hort Innovation investment the cost of managing the Hort Innovation funding was added to the Hort Innovation contribution for the project via a management cost multiplier (1.162). This multiplier was estimated based on the share of 'payments to suppliers and employees' in total Hort Innovation expenditure (3-year average) reported in the Hort Innovation's Statement of Cash Flows (Hort Innovation Annual Report, various years). This multiplier was then applied to the nominal investment by Hort Innovation shown in Table 4.

Real Investment and Extension Costs

For the purposes of the investment analysis, investment costs of all parties were expressed in 2019/20 dollar terms using the GDP deflator index (ABS, 2020). As far as can be ascertained ,there were no additional costs assumed that were associated with project extension.

Impacts

Table 5 provides a summary of the principal types of impacts potentially delivered by the project. Impacts have been categorised into economic, environmental and social impacts.

Table 5: Triple Bottom Line Categories of Principal Impacts from Project CT17005

Economic	• Potential contribution to increased exports of Australian citrus to China and Japan, with implications for a small increase in price on the domestic market.
Environmental	• Nil
Social	• Regional community spillover impacts driven by any increased profits by citrus growers and their supply chains.

Public versus Private Impacts

Predominantly private industry impacts to Australian citrus supply chains were identified as potentially emanating from the investment. Some public impacts were potentially delivered as a spin-off to regional communities in citrus growing areas.

Distribution of Private Impacts

Any potential impacts on the citrus industry from investment in this project are likely to be shared along the supply chain among growers, packers, wholesalers, and exporters and associated agents.

Impacts on Other Australian Industries

Potential impacts on industries other than the citrus industry are not anticipated from the CT17005 investment.

Impacts Overseas

No direct overseas impacts of CT17005 were identified.

Match with National Priorities

The Australian Government's Science and Research Priorities and Rural RD&E priorities are reproduced in Table 6. The project findings and related impacts will contribute potentially to Rural RD&E priority 4 and to Science and Research Priority 1.

Table 6: Australian Government Research Priorities

Australian Government	
Rural RD&E Priorities (est. 2015)	**Science and Research Priorities (est. 2015)**
1. Advanced technology 2. Biosecurity 3. Soil, water and managing natural resources 4. Adoption of R&D	1. Food 2. Soil and Water 3. Transport 4. Cybersecurity 5. Energy and Resources 6. Manufacturing 7. Environmental Change 8. Health

Sources: (DAWR, 2015) and (OCS, 2015)

Alignment with the Citrus Strategic Investment Plan 2017-2021

The current strategic outcomes and strategies of the banana industry are outlined the Banana Strategic Investment Plan 2017-2021[1] (2017). The funding of Project CT17005 was directly relevant to a number of the desired outcomes in the SIP. First the project directly addresses Outcome 1: "Market opportunities in both domestic and especially export markets have been developed and maintained, leading to increased demand and support for citrus prices". This outcome is directly addressed by CT17005 through the embedded strategies 1.1, and 1.3. In addition, the project was relevant to Outcome 4 via strategy 4.2 (Ensure growers and other members of the value chain are fully aware of industry developments).

Valuation of Impacts

Impacts Valued

As far as can be ascertained, the project did not produce any quantifiable impacts, so no quantitative evaluation processes were applied to estimate benefits.

Impacts Not Valued

As no impacts from the project investment were identified in the logical framework, there were no actual impacts identified that were not valued.

Results

All past project investment costs were discounted to 2019/20 using a discount rate of 5%. All analyses ran for the length of the project investment period plus 30 years from the last year of investment in Project CT17005.

Investment Criteria

Investment criteria were estimated in accordance with the guidelines of the CRRDC (CRRDC, 2018). Tables 8 and 9 show the investment criteria estimated for different periods of costs for the total investment and Hort Innovation investment respectively. Note that, as no impacts for this project were identified or valued, the investment criteria reporting are restricted to the Present Value of Costs (PVC).

In the interests of consistency with other project analyses, aggregation and reporting, the PVC was reported for the length of the investment period plus for different periods up to 30 years from the last year of investment (2017/18). The PVC was the same for each period as shown within each of Tables 7 and 8.

[1] For further information, see: https://www.horticulture.com.au/hort-innovation/funding-consultation-and-investing/investment-documents/strategic-investment-plans/

Table 7: Investment Criteria for Total Investment in Project CT17005

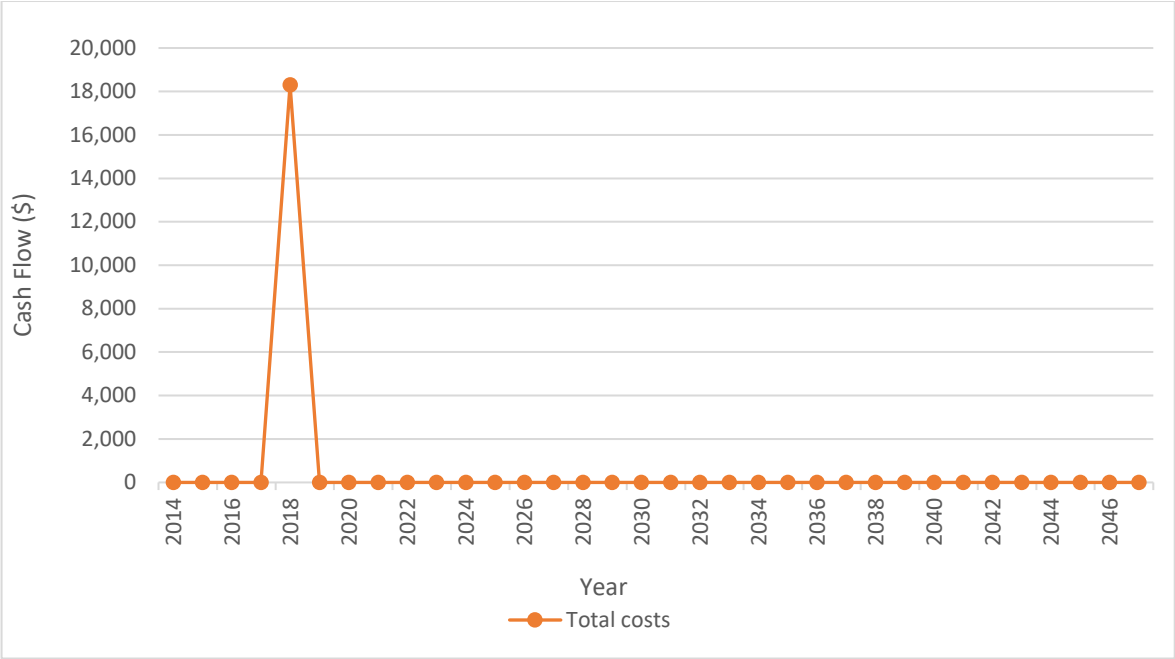
Investment criteria	Number of years from year of last investment						
	0	5	10	15	20	25	30
Present value of costs ($m)	0	0.02	0.02	0.02	0.02	0.02	0.02

Table 8: Investment Criteria for Hort Innovation Investment in Project CT17005

Investment criteria	Number of years from year of last investment						
	0	5	10	15	20	25	30
Present value of costs ($m)	0.02	0.02	0.02	0.02	0.02	0.02	0.02

The annual undiscounted cost cash flow for the total investment for the duration of the investment period is shown in Figure 1.

Figure 1: Cash Flow of Undiscounted Total Costs



Conclusions

Total funding for the total investment over the two years totalled $0.02 million in present value terms. The Hort Innovation investment costs also were $0.02 million in present value terms.

For various reasons provided in the assessment, it was not possible to identify any impacts from the investment and therefore no monetary values on the impacts could be ascertained. Hence, the appropriate BCR was estimated as zero.

Glossary of Economic Terms

Cost-benefit analysis:	A conceptual framework for the economic evaluation of projects and programs in the public sector. It differs from a financial appraisal or evaluation in that it considers all gains (benefits) and losses (costs), regardless of to whom they accrue.
Benefit-cost ratio:	The ratio of the present value of investment benefits to the present value of investment costs.
Discounting:	The process of relating the costs and benefits of an investment to a base year using a stated discount rate.
Internal rate of return:	The discount rate at which an investment has a net present value of zero, i.e. where present value of benefits = present value of costs.
Investment criteria:	Measures of the economic worth of an investment such as Net Present Value, Benefit-Cost Ratio, and Internal Rate of Return.
Modified internal rate of return:	The internal rate of return of an investment that is modified so that the cash inflows from an investment are re-invested at the rate of the cost of capital (the re-investment rate).
Net present value:	The discounted value of the benefits of an investment less the discounted value of the costs, i.e. present value of benefits - present value of costs.
Present value of benefits:	The discounted value of benefits.
Present value of costs:	The discounted value of investment costs.

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Abbreviations

CRRDC	Council of Research and Development Corporations
DAWR	Department of Agriculture and Water Resources (Australian Government)
GDP	Gross Domestic Product
OCS	Office of Chief Scientist Queensland
R&D	Research and Development
RD&E	Research, Development and Extension
SIP	Strategic Investment Plan