

Climate change and the Tasmanian Wine Cluster

Research explores the reactions of wine clusters to changing environmental conditions as interest in this area intensifies.

Dr Jeremy Galbreath

CLIMATE CHANGE IS an acknowledged concern for Australia winemaking, yet its effects appear to be diversely distributed across the country. For example, Galbreath (2011a, 2012) finds that the Margaret River wine region may benefit from some of the effects of climate change, while some regions in eastern states may suffer more ill-effects (Webb *et al.* 2010). The evidence that we do have on how Australian wine producers are responding to climate change is limited mainly to Western Australia (Galbreath 2011a, 2012) and the dominant wine-producing regions of the eastern-states, including South Australia and Victoria (Galbreath 2011b; Park *et al.* 2012; Webb *et al.* 2010). Given that stakeholders in the wine sector – and, importantly, consumers of wine – appear to be viewing wine producers' response to climate change (and from a broader perspective, the natural environment) as increasingly important, my interest was in exploring the extent to which wine clusters in Australia are addressing the matter as a group. In this article, to supplement previous findings, insight into how Tasmanian wine producers are addressing climate change is presented.

The method

Research demonstrates that clusters (clusters are groups of businesses in the same sector that share geographic proximity) are inordinately successful as groups due to social interaction, direct observation of competitors, scale efficiencies, and better access to information. However, perhaps the key contributor to cluster innovation and success is knowledge exchange (Porter, 2000). To assess knowledge exchange on the climate change issue, all businesses involved in wine production in the Tasmanian wine cluster were included to receive a study survey, based on names drawn from the Winetitles' annual *Australia and New Zealand Wine Industry Directory*. However, importantly, as the production of wine is increasingly identified with 'place', I categorised wine businesses by their respective sub-clusters. In Tasmania, there are seven recognised sub-clusters: Coal River Valley, Derwent Valley, East Coast, Huon/Channel, North West, Pipers River, and Tamar Valley.

Thirty-eight surveys were received, yielding a nearly 40 percent response

rate. Two businesses had to be eliminated because they were located outside of the seven identified sub-clusters, resulting in 36 survey responses used for analysis. In the survey, respondents were asked a series of questions. First, I asked respondents to assess the degree to which they had exchanged knowledge about climate change with wine businesses in other sub-clusters in Tasmania (where knowledge exchange levels were ranked on a four-point Likert scale from 'no exchange' to 'very high exchange'). Secondly, a list of 16 mitigative and adaptive actions that have been identified as appropriate responses to climate change in the Australian wine industry were listed, and participants were asked to assess the level to which they agreed/disagreed that they had successfully implemented any of the actions (on a seven-point Likert scale from 'strongly disagree' to 'strongly agree').

The results

To test the general pervasiveness of knowledge exchange on climate change, I calculated the proportion of firms, by sub-cluster, reporting any level of knowledge

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exchange to the total number of sub-clusters in the sample (n=7). The average proportion of knowledge exchanged across the sample is .31. The intensity of knowledge exchange appears to be mixed. More specifically, respondents were asked to rate the intensity of knowledge exchanges from 0 ('no exchange') to 3 ('very high exchange'). Taking into account knowledge exchanges across all sub-clusters, for those businesses not exchanging any knowledge (0), the average proportion is .69. For very little exchange (1), the average proportion is .15. For moderate exchange (2), the average proportion is .11. For very high exchange (3), the average proportion is .05. The results suggest that, when examined across all sub-clusters, less than half of wine businesses in Tasmania are exchanging knowledge on the climate change issue.

To test if businesses in certain sub-clusters are exchanging more knowledge than businesses in other sub-clusters, I first classified each respondent business by its corresponding sub-cluster, including their knowledge exchange ratings. I then calculated the proportion of exchange across each sub-cluster, using this value to create a matrix for analysis in ORA, Carnegie Mellon's social network analysis software. Figure 1 demonstrates the results of the network analysis. As can be seen, this analysis graphically reveals knowledge exchanges of businesses in each sub-cluster, and whether these exchanges are internal or external to the sub-cluster. However, to statistically compare sub-clusters, the proportion of exchange within the sub-cluster (intra-exchange) was examined relative to the proportion of exchange with the other sub-clusters (inter-exchange) across each sub-cluster. Analysis of variance (ANOVA) tests were conducted to detect statistical differences in the proportions. In all cases, no statistically significant differences were found (Coal River Valley, $p=0.62$, Derwent Valley, $p=0.68$, East Coast, $p=0.28$, Huon/Channel, $p=0.49$, Pipers River, $p=0.68$, Tamar Valley, $p=0.37$; NB: North West was not calculated as no exchanges were recorded). The findings suggest that companies are not exchanging more knowledge about climate change within their sub-cluster relative to other sub-clusters.

Lastly, mitigative actions (those actions designed to curtail and reverse climate change through carbon footprint management and reductions in greenhouse gas emissions) and adaptive actions (those actions that seek to take advantage of new opportunities resulting from climate change or to adjust to detrimental climate change impacts) were

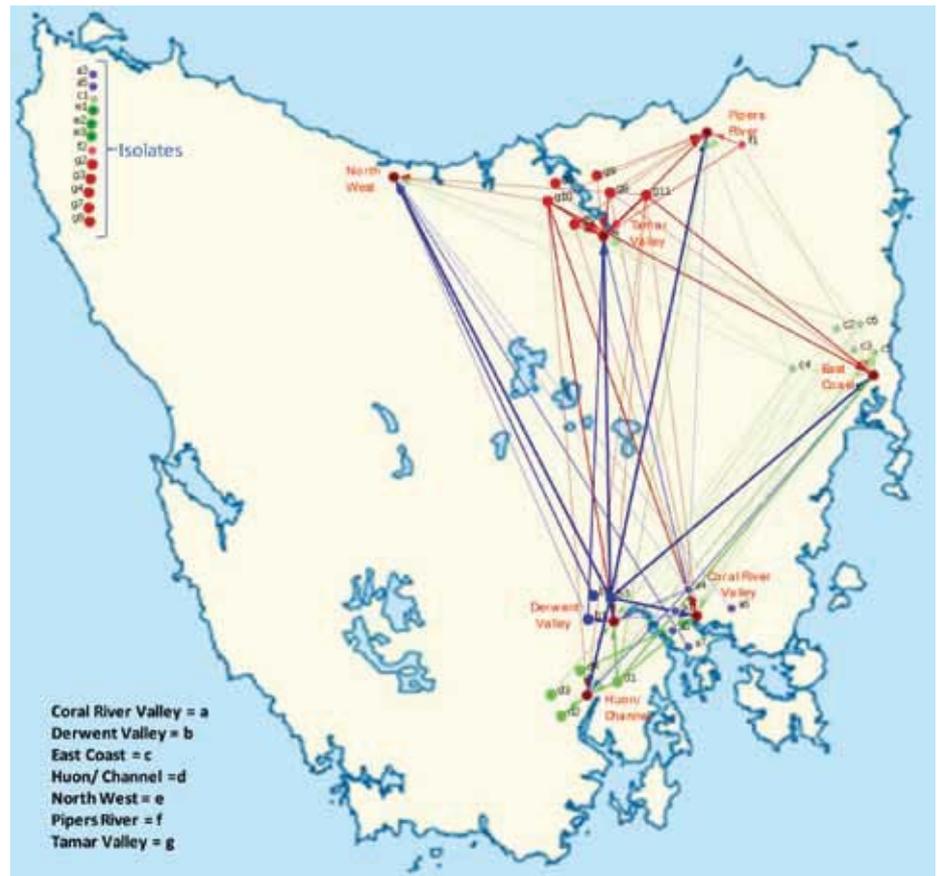


Figure 1. Network analysis.

Note: line thickness represents intensity of knowledge exchange.

assessed. As for mitigative actions, 90% of respondents are reducing the extent to which they use agrichemicals (which reduces greenhouse gas emissions). Further, more than half of the respondents have some form of environmental management system, which aids in the monitoring and control of greenhouse gas emissions. Alternatively, 61% of respondents are sequestering carbon (e.g. through planting trees or shrubs), which enables them to further mitigate climate change.

As for adaptive actions, there is a clear effort being made to manage water resources; namely, in the form of conserving water use in wineries (53%), water efficiency techniques in the vineyard (87%), and the use of technology to monitor water applications to vines (55%). On the other hand, some of the more highly discussed adaptive actions in the wine industry are receiving less attention. For example, less than 25% of respondents are attempting to grow or source grape varieties better suited to hotter temperatures. However, given Tasmania is a cool climate region, this finding should be put in perspective. Also, there is evidence to suggest that some wine businesses are attempting to mitigate the risk of climate variability by purchasing land or sourcing grapes from locations less vulnerable to these risks.

Conclusion

On the whole, wine businesses exchanging knowledge on climate change within and between Tasmanian wine sub-clusters appears to be relatively weak. Given the high profile nature of the climate change issue, particularly in the wine industry (given its high reliance on climatic conditions), one might expect to find more significant results. However, a few of the respondents acknowledged that climate change might not be a risk in Tasmania—at least not a significant one. For example, one respondent said: '(It is) very hard for us to say climate change appears to be occurring', while another stated 'You missed the option of the climate cooling over the next decade or more as suggested by several solar scientists!' Lastly, another respondent claimed, 'we may never have to think about changing things in [Tasmania] to counteract global climate change. Alternatively, it may impact us on a more positive perspective'. This, in part, could explain lower levels of knowledge exchange relative to, for example, more significant, pressing issues, such as how to economically sustain a wine business in current market conditions.

As for response to climate change, there is evidence to suggest that wine producers in the various Tasmanian wine sub-clusters are looking to be good

stewards of the natural environment, while implementing actions that will help to reduce greenhouse gas emissions (i.e., curtail climate change). The implementation of adaptive actions was, however, generally less common. One explanation for a lack of findings here might be due to respondent perceptions that climate change is not likely to have an overly disruptive force on wine production in Tasmania. In addition, previous studies suggest that implementing adaptive actions in the wine industry can be very costly, and can take several years (if not decades) to achieve economic returns (Galbreath 2012). Hence, in the context of this study, Tasmanian wine producers could be hesitant to expend scarce resources on actions that adapt to climate change, particularly if short-term gains cannot be realised.

In conclusion, the results of this study confirm previous wine industry findings in Australia and abroad: impacts of climate change depend on location. Therefore, wine producers and various supporting industries are cautioned not to generalise affects, but rather to assess climate change impacts by location, including regional, macro, and micro-level considerations. This would especially be the case before making costly, and potentially long-term impacting decisions on production practices and new product development.

For further information and a copy of the full report of this study, please contact the author at: jeremy.galbreath@gsb.curtin.edu.au 

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Toby Barlow, senior winemaker/site manager, St Hallett Wines, Barossa Valley.

Toby Barlow takes top honours at AWAC 2012

THE AUSTRALIAN WINE Research Institute and the Royal Adelaide Wine Show have awarded Toby Barlow, senior winemaker at St Hallett, Dux of the 2012 Advanced Wine Assessment Course.

The AWRI's 2012 AWAC was held at the Adelaide Showground in June. Over four challenging days, 30 participants evaluated a diverse range of more than 320 wines under simulated wine show conditions.

Lectures were presented by staff from AWRI and contributions were also provided from 12 leading wine show judges, journalists and winemakers.

"Dux is awarded to the AWAC participant who is, statistically, the most highly reliable, consistent taster and who possesses the ability to clearly articulate with confidence the attributes and quality of wines tasted," AWAC coordinator Con Simos said.

"Toby Barlow is a worthy recipient of the award of Dux."

The Dux of AWAC is offered a position as an associate judge at the next Royal Adelaide Wine Show. Chair of judges of the Royal Adelaide Wine Show, Sue Hodder said. "The wine show system supports the continued development of quality Australian wine. Therefore, it is essential that show judges are well trained and skilled wine assessors. The Royal Adelaide Wine Show supports the development of quality assessors and we are delighted to accept Toby as an associate judge for the next show."

Barlow completed an undergraduate degree in philosophy before he discovered a passion for wine while planting a vineyard in the Strathbogie Ranges in 1996. He has since acquired a Graduate Diploma in Oenology from the University of Adelaide and has completed vintages in France, the US, New Zealand, Hunter Valley and north east Victoria. Barlow was winemaker at Mitchelton for seven years before moving to St Hallett in the Barossa in 2007.

"The AWAC is a rare opportunity in a competitive industry to solely focus on wine assessment technique and building understanding of wine quality differentials that influence judging. The course has certainly positively impacted my tasting style in the winery tasting lab," Barlow said. "One of the most valuable lessons was to focus on being present with the wine in the glass while constantly cognisant of the factors that could be affecting your perception at the point of tasting."

The delivery of the elite AWRI AWAC continues to be an important career development opportunity for those who wish to strengthen their knowledge in wine show judging and improve or benchmark their sensory skills. Over 930 participants have completed the program since 1992. Enquiries about the course can be made to Virginia Phillips at: virginia.phillips@awri.com.au 

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