

RMIT Campus Climate Risk & Resilience

Tertiary Sector Benchmarking Survey – Analysis Report

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1. About the survey

In late 2015 the RMIT Climate Change Adaptation Program carried out a survey investigating climate change planning in tertiary sector institutions, as part of the development of a Campus Climate Adaptation Plan for the university. This survey aimed to benchmark the current state of play of climate adaptation planning in the tertiary sector globally, with a particular focus on Australia. This research was funded by the RMIT University Sustainability Committee in order to place the development of an adaptation plan within a broader global and Australia-wide context. Preliminary findings from this survey were presented at the 15th International Australasian Campuses Towards Sustainability (ACTS) Conference in Geelong, Australia on the 21st of October 2015.

An internal version of this report including the identification of tertiary institutions will be distributed to the RMIT Sustainability Committee as an integral component of the RMIT Climate Adaptation Plan. Only those institutions that have developed or are developing a stand-alone climate change adaptation plan have been identified in this report to highlight some of the leading institutions in this field.

2. Methodology and limitations

The survey was launched on the online survey platform Qualtrics in mid-September and remained open until mid-December 2015 (~3 months). More than 100 universities and tertiary institutions in Australia and overseas were invited by email, via campus network bulletins/ communication channels, and social media. Recruitment targeted most Australasian higher education institutions – 50 from Australia, 10 from New Zealand, and the 50 highest-ranked universities in the Times Higher Education list (2014-2015).¹ Campus networks included the Australasian Campuses Towards Sustainability (ACTS), the Association for the Advancement of Sustainability in Higher Education (AASHE), the International Sustainable Campus Network (ISCN) and Nordic Sustainable Campus Network (NSCN). The survey attracted interest from at least 68 higher education institutions (HEIs) and was completed in full by 42 tertiary sector representatives and partially by three (see Appendix I). Attention focused on sustainability / environmental managers who were often based in campus facilities / infrastructure / operations departments (only one respondent was a teaching / research academic). Analysis of the survey responses was mainly carried out in January and February 2016.

Considering that all the survey respondents originate either from English speaking countries and / or from Europe, results need to be considered in the context of a highly Anglo-Saxon or ‘Western’ cohort within the

¹ The Times Higher Education World University Rankings 2014-2015 is available at:

<https://www.timeshighereducation.com/world-university-rankings/2015/world-ranking#!/page/0/length/25>

tertiary sector. This is largely due to the survey language being English and the distribution channels being international campus networks whose main language is English. The role of the respondent at his / her institution was explicitly included; in part to document the personal level of knowledge and experience on the survey topic. This reflects an understanding that the respondents answered “to the best of their knowledge” and not necessarily from a formal institutional position. Hence, some level of subjectivity will be present in the answers. Furthermore, some of the specific technical questions may have not been fully understood (e.g. the climate scenario and time slice used). A few of the survey participants also mentioned that they did not have all the information and said they would need additional input from their colleagues.

Despite approaching some of the institutions known to have carried out or intending to carry out climate adaptation or resilience planning (as identified through public statements or online information), a number of these institutions did not respond. As climate-related impacts are often associated with internal risk management processes, it was possible that some institutions may have preferred to keep such information - regarding their hazard exposure - confidential.

In general, however, respondents can be considered as representatives of leaders in the tertiary sector, as institutes lacking sustainability / environmental representatives (or climate planning processes more specifically) are unlikely to have participated in a planning for climate change survey. The survey was also coupled with an online search for sectoral climate adaptation planning, which closely matched the survey findings; as well as earlier analysis for the RMIT University Climate Risk Assessment report (2012) which highlighted a lack of action in the sector.²

3. Findings of the survey

University information and characteristics

3.1. Country distribution of respondents

A map displaying respondents by institution type is shown in the figure below (Fig.1). The largest single share of the 45 higher education institutions participating in this survey originate from Australia (41%). North American institutions contribute 40% to the survey (20% of HEIs from Canada and 20% from the USA). 13% of the institutions come from New Zealand, 4% from Finland and 2% from Switzerland.

The majority of the institutions that participated in this survey were universities (80%). Institutes of technology and colleges both made up 7%, while a small number classified themselves as technical institutes (6%).

² The RMIT University Climate Risk Assessment report is available at: <http://apo.org.au/resource/rmit-university-climate-risk-assessment>.



Figure 1. Country distribution of respondents' institutions.

3.2. Campus characterisation/location

As noted in the 2012 RMIT Climate Risk Assessment, campus location was noted to significantly modify both the need to interconnect campus adaptation planning with local government processes and structures (as well as potential government and commercial partnerships opportunities), and the hazards to which the institution was exposed. For instance, City Business District (CBD) campuses were noted to have higher dependency on public transport, while peri-urban or rural campuses may have higher chances of exposure to bushfire risk.

Most primary campuses responding to the survey were located in the city centre or CBD area (62%) (Fig. 2). 22% of the campuses are categorised as peri-urban or city fringe while 11% of them are located in rural areas or in the countryside. 4% of the respondents expressed 'Other', i.e. their university being located half in the CBD and half in the peri-urban area; or no campus was specified as a main campus (one university mentioned having seven campuses in the region, some of them in the urban setting). Of all respondents, 69% stated having at least one other major campus beyond the noted primary location.

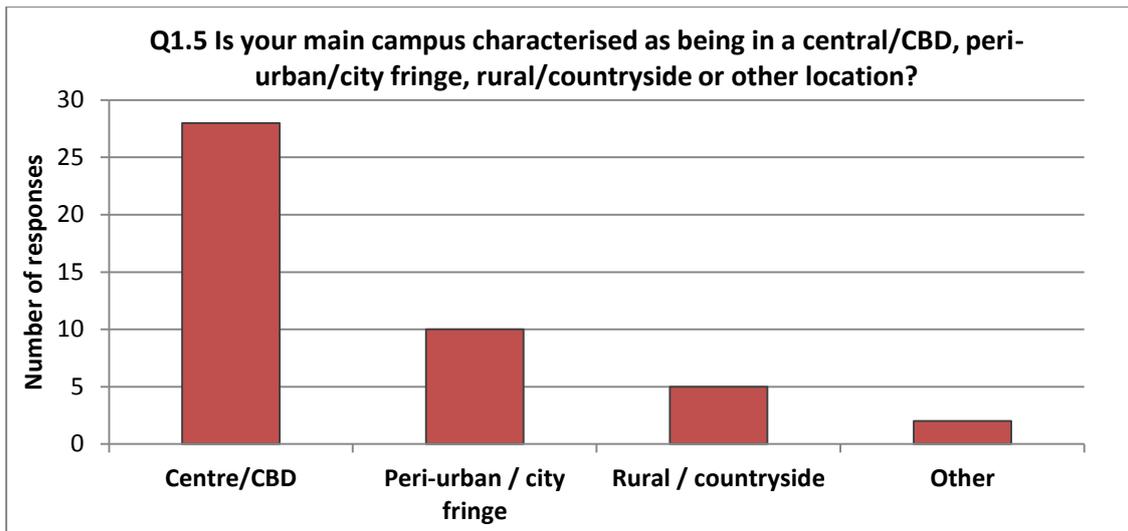


Figure 2. Campus location of the institutions participating in the survey.

Institutional planning for climate change

3.3. Climate change mitigation planning

Although the focus of the survey was primarily on climate change adaptation (responding to and planning for current weather-related extremes or potential future climate change impacts), climate change mitigation (preventing or reducing greenhouse gas emissions) was observed to be more prevalent in the sector. As such, the survey included some limited analysis of mitigation efforts in order to provide a contextual baseline for comparing adaptation efforts by the respondent group.

More than half of the tertiary institutions that responded had set some type of targets or goals to reduce their greenhouse gas / CO₂ emissions (56%) (Fig. 3). 27% had established a stand-alone climate change mitigation plan including specific mitigation-related initiatives, targets and/or low-carbon investment strategies. A further 20% of the institutions included climate-related ‘motherhood statements’ in their strategic planning, policies or related organisational documentation while only 11% of the institutions reported having no climate change mitigation goals, objectives or strategic statements whatsoever.³

³ It was noted in feedback to the survey report that ‘motherhood statement’, although commonly used, is an outdated and gendered term. A more appropriate descriptor would be “institutional policy commitments to climate mitigation/adaptation, without inclusion of tangible actions, targets, or resourcing”.

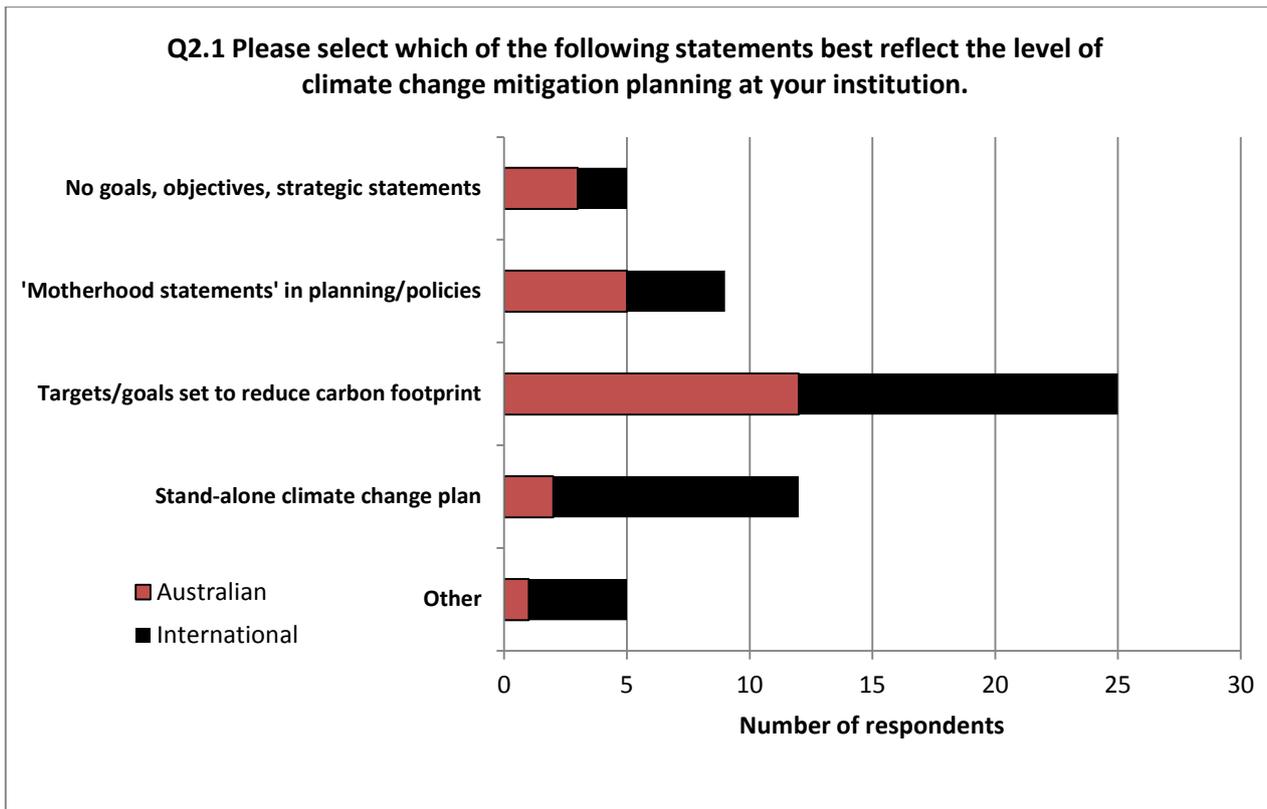


Figure 3. Level of climate change mitigation planning. Selection of multiple answers allowed.

Those that responded 'other' (11%) stated that they are in the process of developing climate change mitigation related documents and / or measures to cut emissions (2 HEIs) or that their emission reduction goals are connected to their energy management plan (2 HEIs).⁴ The RMIT Sustainable Urban Precincts Program (SUPP) was considered here as a stand-alone climate change mitigation plan; the university also has a more detailed carbon management plan in development.⁵

3.4. Climate change adaptation planning

While 49% of the respondents stated that their institution had not set any goals, objectives or strategic statements in terms of climate change adaptation, almost a third (29%) of the institutions can be considered to have taken specific steps towards analysing or adapting to climate change impacts, i.e. assessing risks or vulnerabilities, including adaptation actions or objectives as part of a broader climate change plan, or developing a stand-alone climate change adaptation plan (Fig. 4). Of this latter 'specific steps taken' group, 38% are Australian institutions.

A stand-alone climate change adaptation plan with specific initiatives or actions has been developed or is being developed by five institutions. In addition to RMIT University, these are University of Melbourne, University of Tasmania, Massachusetts Institute of Technology (MIT), and Aalto University.

⁴ One university mentioned that their planning and implementation includes bushfire mitigation and utilisation of recycled water on one of their campuses.

⁵ More information on the SUPP can be found at: <http://www.rmit.edu.au/about/our-strategy/values/living-our-values/sustainability/sustainable-urban-precincts-program/>

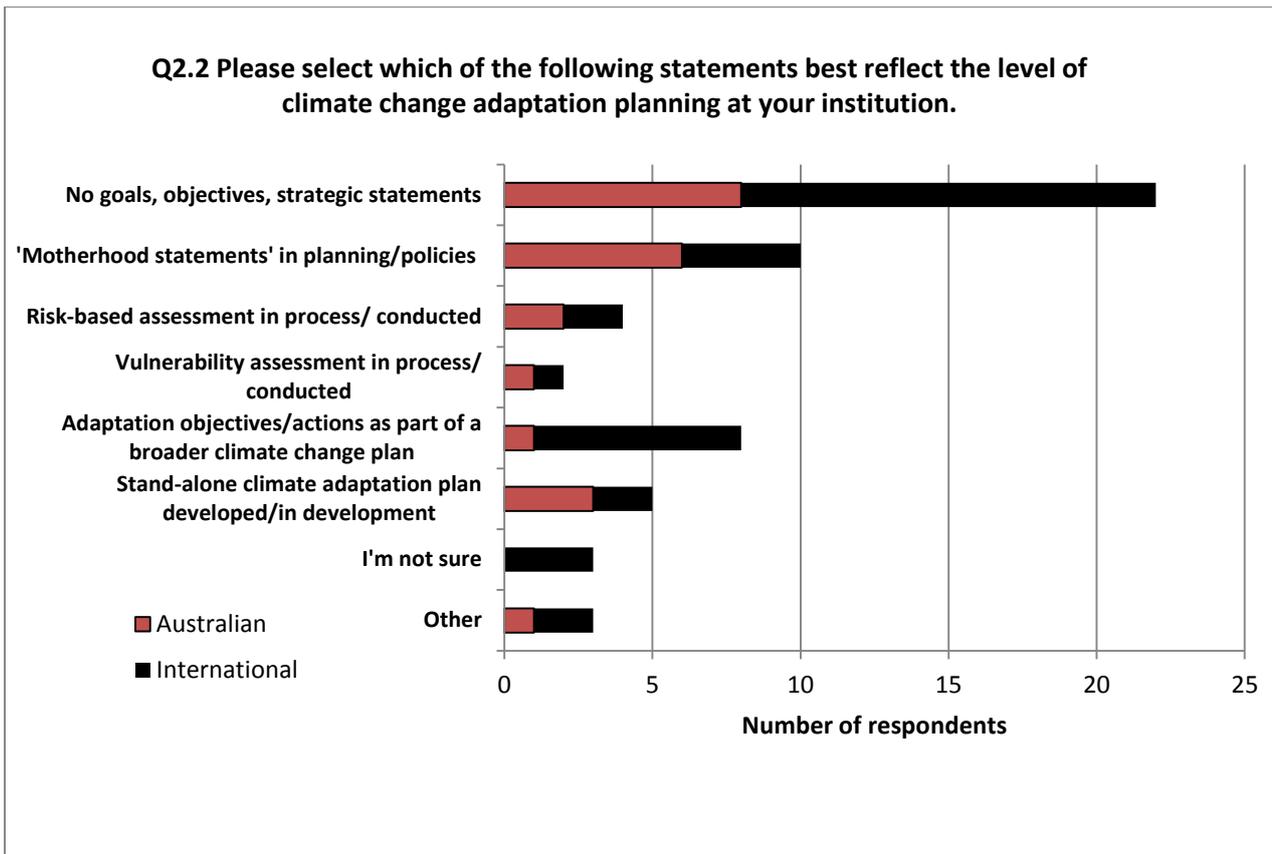


Figure 4. State of climate change adaptation planning. Selection of multiple answers allowed.

Climate impact assessment – approach, status and application

3.5. Stage and status of the climate impact assessment

27% of the respondents stated that the potential impact of current and / or future climate events on their institution had been investigated at least to some extent (Fig. 5). This assessment of risks and / or vulnerabilities varied in terms of completion: only three institutions had completed the assessment process; while assessments were stated as being currently underway in four institutions. Assessment has been proposed or flagged for action without a determined timeline in the case of three institutions. Two institutions were identified as having undertaken a partial assessment (“limited to investigating space heating and cooling infrastructure rather than a whole of campus approach”; “broad themes covered in environmental management system and associated programs”).

Of those universities that had assessed climate impacts, only three stated to have received formal endorsement of their reporting on these impacts by the university board, CEO or committee, while two universities have made it publicly available (Fig. 6). Three institutions cited a defined process for monitoring or reviewing their assessment. The report or analysis is at another stage in two institutions (soon to be released or proposed with no specific timeline). The assessment report (or analysis) is reported to be underway in five institutions (two of them refer to their partial assessment within their certification scheme and proposed assessment).

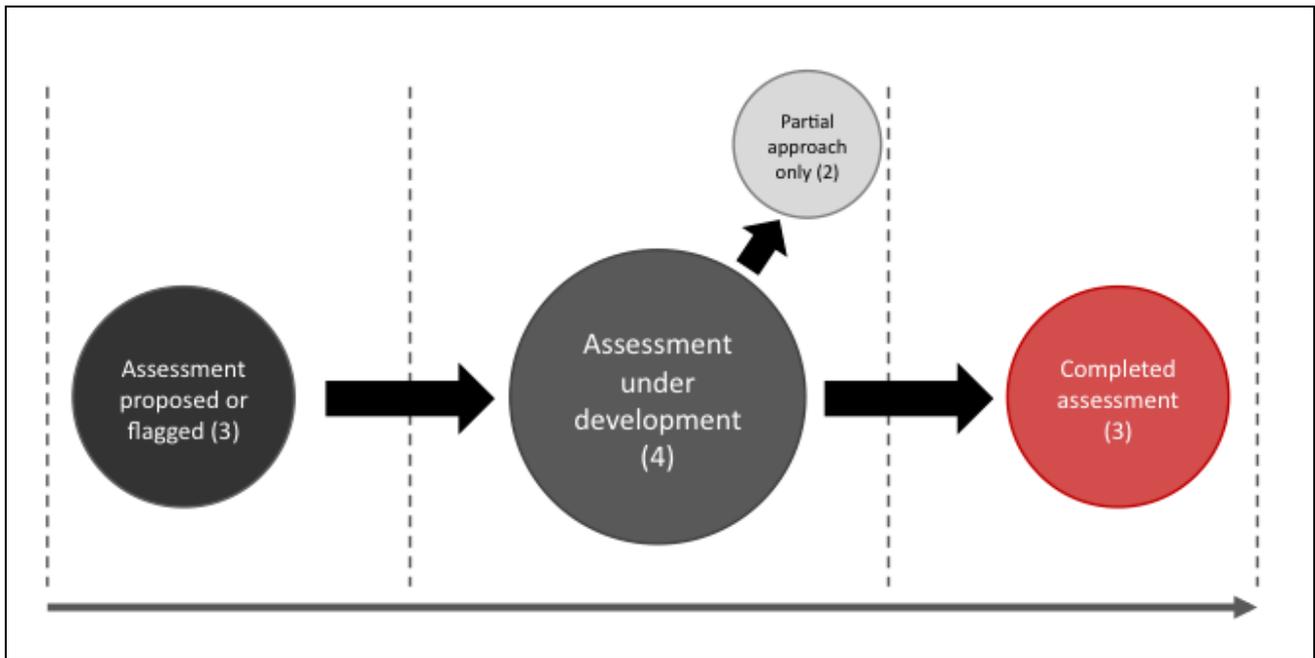


Figure 5. Stage of the assessment of climate change impacts.

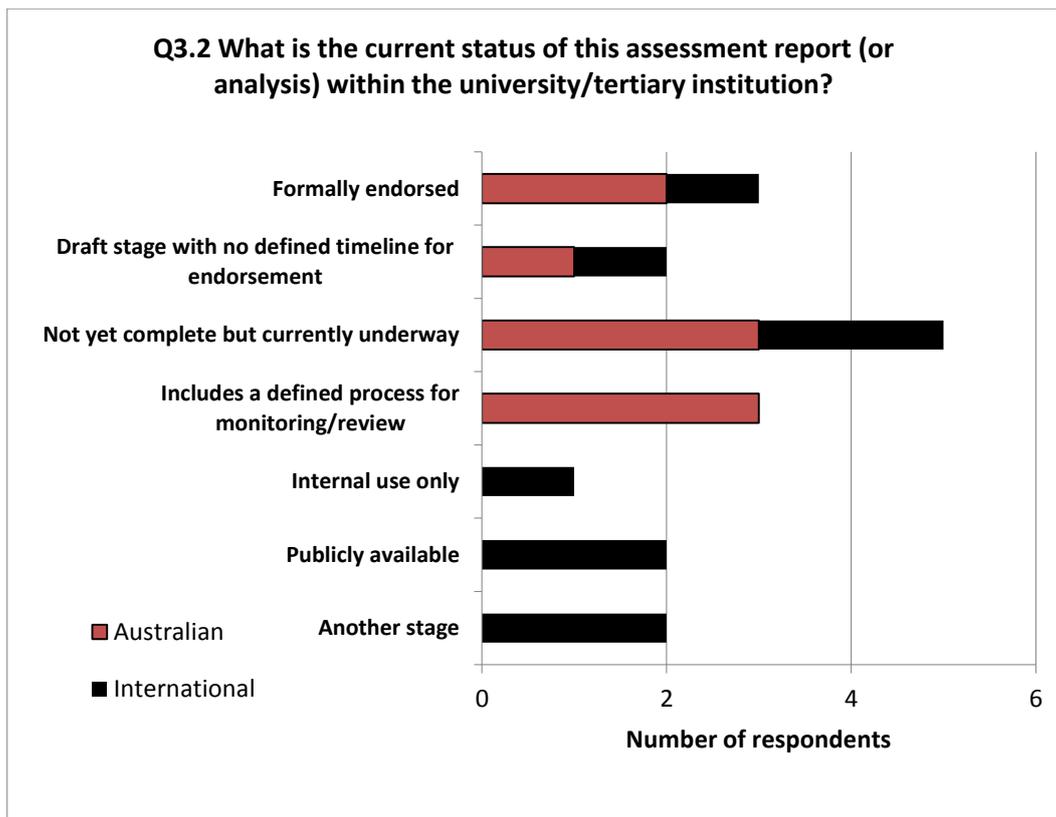


Figure 6. Current status of the assessment report or analysis. Selection of multiple answers allowed.

3.6. Motivation to examine climate change exposure and/or adaptation actions

When asked what motivated the university or tertiary institution to examine its exposure to and/or potential adaptation actions for dealing with climate impacts, a clear majority (69%) of those that responded

to this question replied that it was the sustainability or facilities management team’s own initiative (Fig. 7). Four institutions have been motivated to do so due to a mandate or directive from their Vice Chancellor, Board or similar. Two universities mentioned it was due to it being part of an accreditation process (Green Building Council of Australia (GBCA), Green Star Communities; “partly due to a significant campus master planning process underway as significant earthquake damage to whole of campus is remediated”). None of the institutions was driven to examine climate change impacts because of an unsolicited academic or research group proposal.

One university responded that mitigation is still their priority (one university – in line with their response in the earlier question, specified that adaptation objectives/actions are considered as part of a broader climate change plan). Representative of one institution elaborated that they were motivated by the commitment to city, industry, and higher education “Cambridge Climate Compact”. There was also a shared interest from all groups in pursuing collaborative assessment efforts. Another university indicated that they were driven to assess climate change impacts because of their Environmental Management System (EMS) that addresses environmental compliance, sustainability of campus operations, and general themes of environmental risk management (hence climate change is considered through a mainstreaming approach).

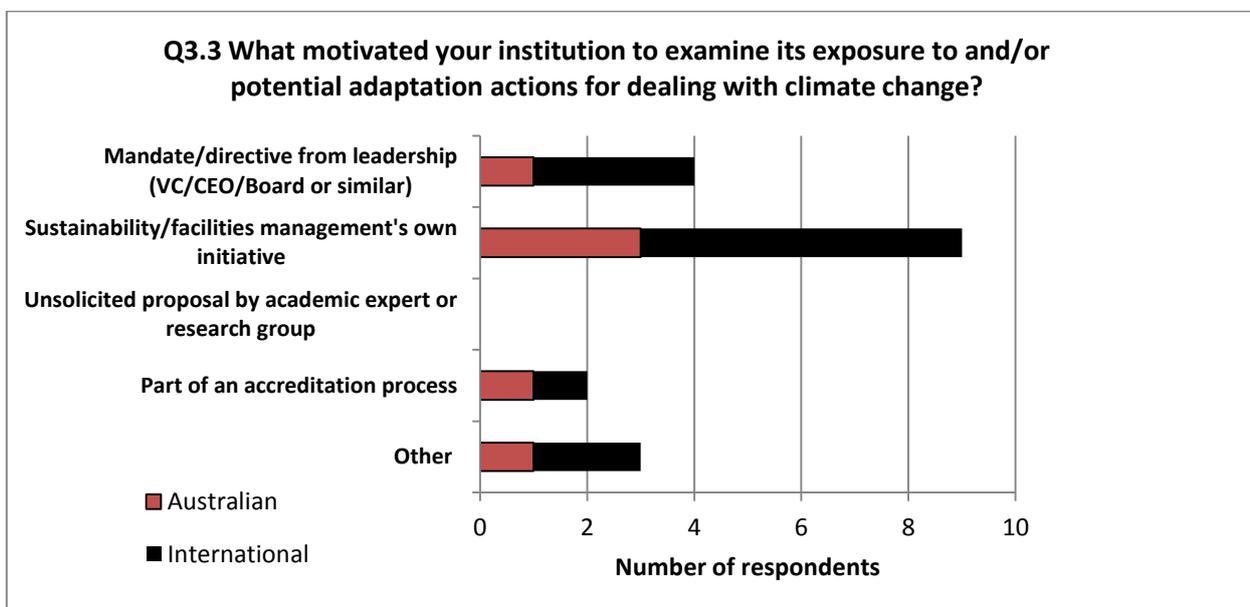


Figure 7. Factors motivating institutions to examine climate impacts and adaptation actions. Selection of multiple answers allowed.

3.7. Assessment approach

Consistent with the previous responses, only 12 of the total 45 participants responded to the question about the details of their assessment approach (Fig. 8). Two respondents were modelling off a similar assessment (such as a surrounding municipality or other institution), another two basing their assessment on an international standard, guideline or methodology (such as RMIT University, ISO31000:2009). The majority of the respondents (67% of those who responded) selected the ‘Other’ option in this question, indicating that a variety of approaches have informed their institutional assessment from modelling other climate action plans and international campus network approach to a modified EMS approach:

- Assessing the approaches suggested by the GBCA in their innovation credit for a Climate Adaptation Plan
- Based on content on climate action plans commonly seen in US and UK institutes;
- Examined research/plans – worked with Environment Canada on modelling and developed community process for further engagement;
- Mainly International Sustainable Campus Network models;
- Landscape vulnerability assessment modelled off a regional tool;
- Modified ISO 14000 EMS to reflect their risk management framework; and
- Second Nature's Resiliency Commitment Implementation Guide.

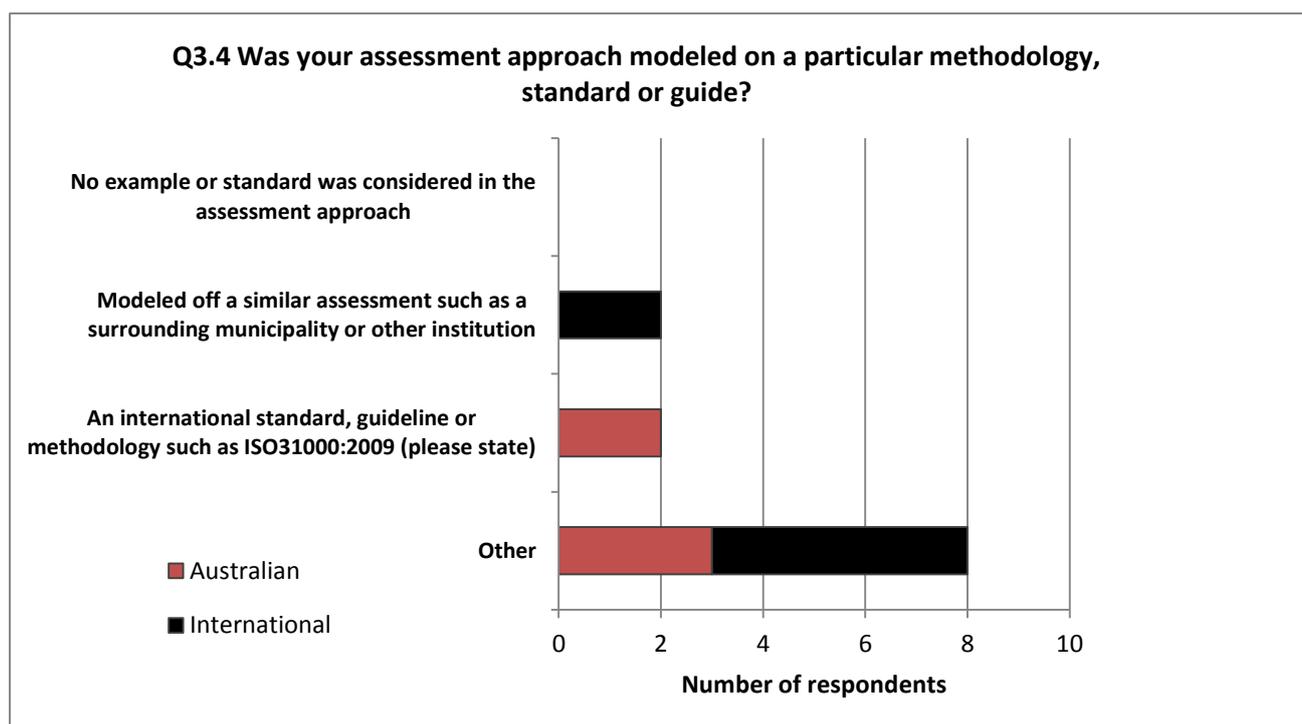


Figure 8. Climate change assessment approach.

3.8. Climate scenarios and time slices

Only three respondents specified their institutional approach concerning the climate scenarios and time slices selected in their climate change impact assessment. One institution has used Representative Concentration Pathways (RCPs) 2.6 (2030) and 6 (2070) whereas another chose 'SRES' Scenarios (Special Report on Emissions Scenarios, IPCC 4th Assessment approach) 2020/2050/2080 A1B, A2, B1 selected for all three future time periods. RMIT University considered 2030 and 2070 timeframes in its 2012 risk assessment, with two SRES scenarios (A1B and A1FI) – only the 2030 scenario was used for the risk analysis workshop. For the RMIT Climate Adaptation Plan in development, two time slices (2030, 2070) will be used, with RCP4.5 and RCP8.5. One university was in the process of selecting scenarios and / or time slices and could not yet specify its selections. Another university representative stated that they used downscaled regional models designed for their Climate Action Plan, and the impacts are considered for 2020-2050 and 2050-2100 timeframes.

3.9. Climate-related hazards of most concern

Only 22% of the survey participants were able or willing to identify the key current or future climate-related hazards that their institutions face.⁶ The most common hazards were: severe storms, heatwaves, extreme wind events, drought, and flash flooding (Table 1).

Hazard/threat	Response	% of the total respondents
Severe storms	8	80%
Heatwave	6	60%
Extreme wind events	6	60%
Drought	6	60%
Flash flooding	6	60%
Sea level rise	5	50%
Cyclones/hurricanes/ typhoons	3	30%
Storm surges	3	30%
Wildfire	2	20%
Electrical storms	1	10%
Blizzard/ snowstorms	1	10%
Coastal erosion	1	10%
<i>Power blackouts</i>	<i>1</i>	<i>10%</i>
<i>Ice-related hazards</i>	<i>1</i>	<i>10%</i>
<i>Estuarine flooding</i>	<i>1</i>	<i>10%</i>
<i>Sewer overflow</i>	<i>1</i>	<i>10%</i>
<i>Invasive species</i>	<i>1</i>	<i>10%</i>

Table 1. Climate-related hazards indicated by ten tertiary institutions. Hazards or threats in italics were identified by the respondents. Selection of multiple hazards/threats allowed.

Adaptation actions, implementation and learnings

This section of the survey highlights adaptation actions or plans that have been (or are planned to be) developed as a result of an assessment of institutions' climate risks or vulnerabilities.

3.10. Responses to climate change

Based on the responses of the 10 most active institutions, it can be determined that most often climate adaptation action plans (or similar) contain (or are planned to contain) infrastructure investment and/or design requirements (10/10), monitoring and evaluation (8/10) and investigation of co-benefit opportunities with emissions reduction (7/10) (Table 2).

⁶ This question specified 'as identified in the assessment process' – based on the previous responses, it can be determined that the hazards are identified based on already completed assessments; or those underway, proposed, or partial climate impact assessments.

Answer	Response	% of the total respondents
Infrastructure investment and/or design requirements	10	100%
Monitoring & evaluation	8	80%
Emissions reduction co-benefit areas	7	70%
Specific targets (qualitative or quantitative)	6	60%
Integrated academic-facilities partnerships	6	60%
Implementation timelines	6	60%
Integration with long-term strategic planning structures	5	50%
Student projects	4	40%
Specific staff positions	3	30%
Changes to institutional policy	3	30%
Climate risk 'treatments'	3	30%
Ecosystem-based adaptation actions	3	30%
Economic assessment processes (e.g. cost-benefit analysis)	2	20%
Ongoing funding	1	10%

Table 2. Key climate adaptation action plan components. Selection of multiple answers allowed.

3.11. Status of climate adaptation planning or similar

10 institutional representatives answered this question (Fig. 9). The plan has been formally endorsed (through a university board, council or similar) in three institutions while four institutions are developing their plans. One additional institution stated that their planning work will begin after completing their vulnerability assessment in mid-2016.

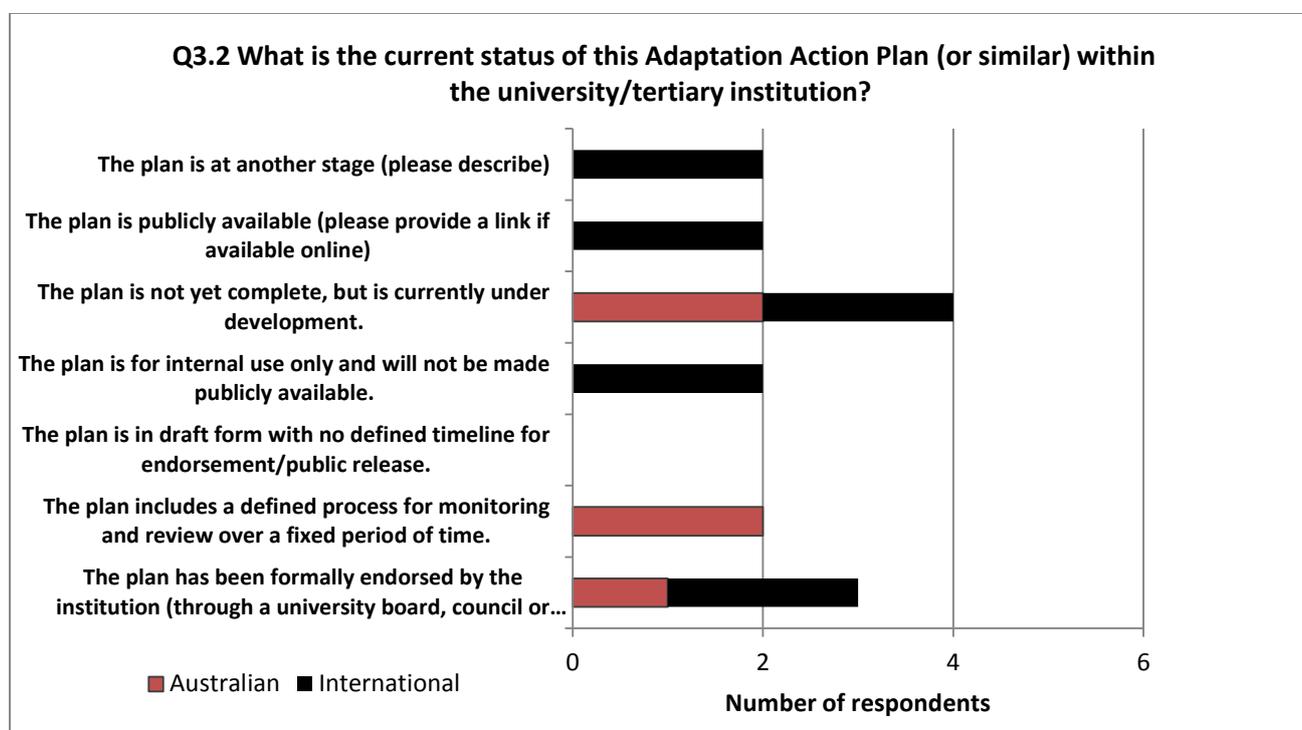


Figure 9. Status of the climate adaptation plan (or similar). Selection of multiple answers allowed.

3.12. Climate change-related risks vs. other risks

This question aimed to compare the relative risk posed by climate change to that of other threats to one's institution on a rating 1-10 ("1" represents minimal risk, "10" the highest level or risk). The highest risks to institutions were rated as: changes to government tertiary sector funding / tax structures, global financial shock / crisis and climate change (average value of varying from 5.1 to 6.2, and selected by 84-89% of the total number of survey respondents) (Fig. 10). Respondents also mentioned other sources of risks to their institutions' operations such as under-enrolment and acts of terror.

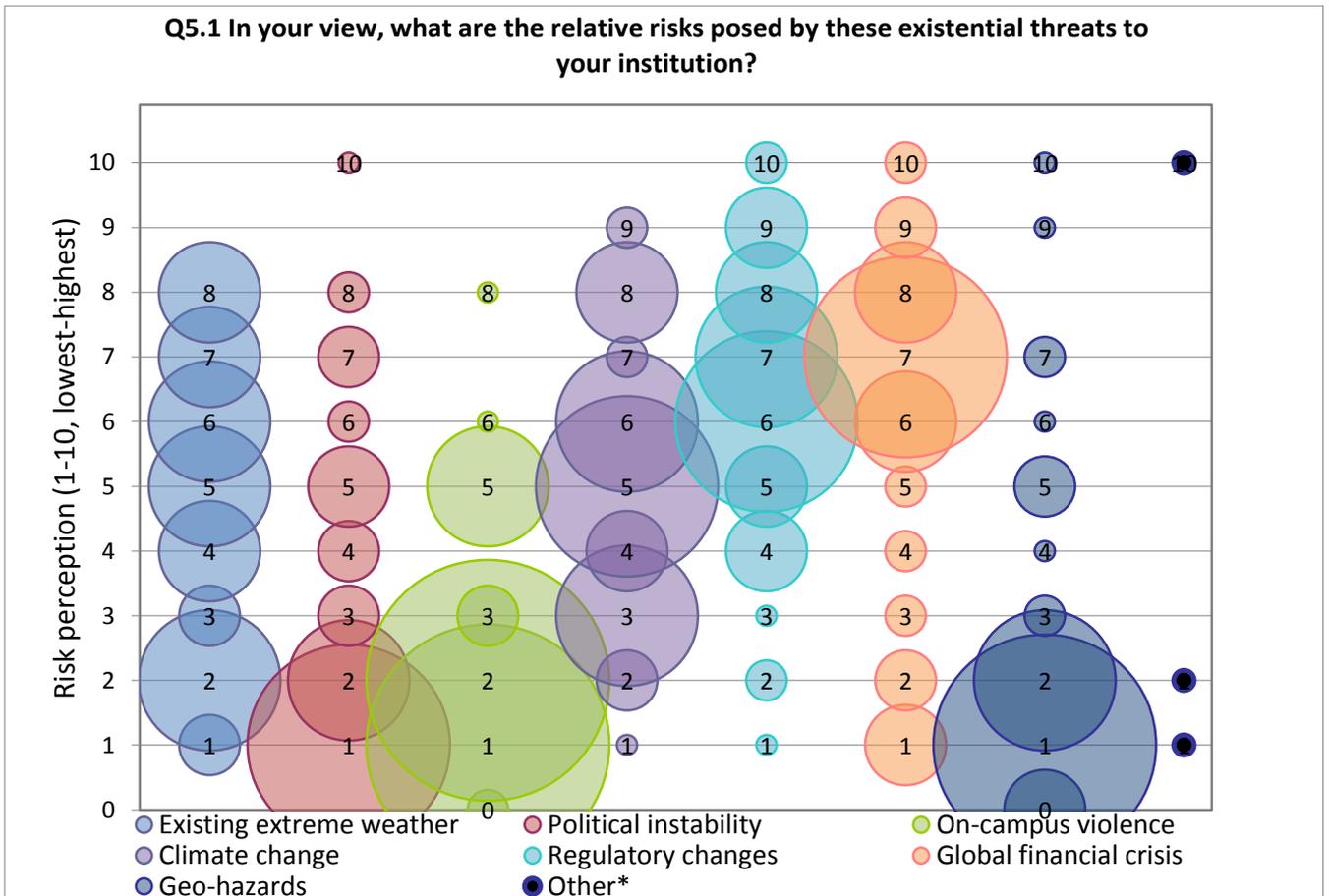


Figure 10. Climate change-related risks vs. other risks. Other risks identified were under-enrolment (10), acts of terror (1) and technological /structural change in the sector (2).

3.13. Lessons learned from the planning/assessment process and additional comments

Some respondents commented on lessons learned in their institutional planning or assessment process. Drivers or facilitating factors were considered as:

- commitment to Green Star buildings;
- recognition of the value of sustainability and assigning it a representative committee within the Senior Management Team;
- engagement of many groups who have specific insight into the campus and community;
- utilisation of expertise of government scientists if possible; and
- development and review of the EMS.

Other comments including insight into factors motivating or driving institutions to plan/ assess were:

- leadership in this space both academically and operationally and showcasing bringing these together to get the best solutions/approaches;
- unless exposure to risk is not measured, the institution will not be prepared for it; and
- increasing unreliability of supply of the quality of coal required by university boilers.

Barriers to adaptation planning were highlighted as:

- resource limitations related to staff and funding;
- institutional focus on other things like restructuring;
- the complex nature of the topic, and sharing the plans and actions with real estate company and other actors make it difficult to form a holistic picture;
- difficulty in sharing GIS data maps across city / campus and great concerns about security and safety in sharing data; and
- challenge to gain visibility or support inside an institution due to the gradual / modest climate risks compared to other regions.

Additional comments touching upon barriers were:

- not an institute priority;
- climate change science is still yet to provide adequate guidance around realistic risks posed by climate change, making it difficult for any organisation to plan effectively for likely (or unlikely) impacts;
- climate change-related activities around campus not necessarily joined up into a larger strategy; and
- climate change could be addressed as a risk by other groups (such as senior management team) but the respondent does not have the access to that information.

3.14. Opinion about the value of assessing climate impacts and developing adaptation plans

Based on 32 responses (71% of the total participants), 81% were of the opinion that their institution should develop a climate change adaptation action plan or assess its climate impacts (if it has not already done so). 9% responded 'no' and equally 9% were not sure (Fig. 11).

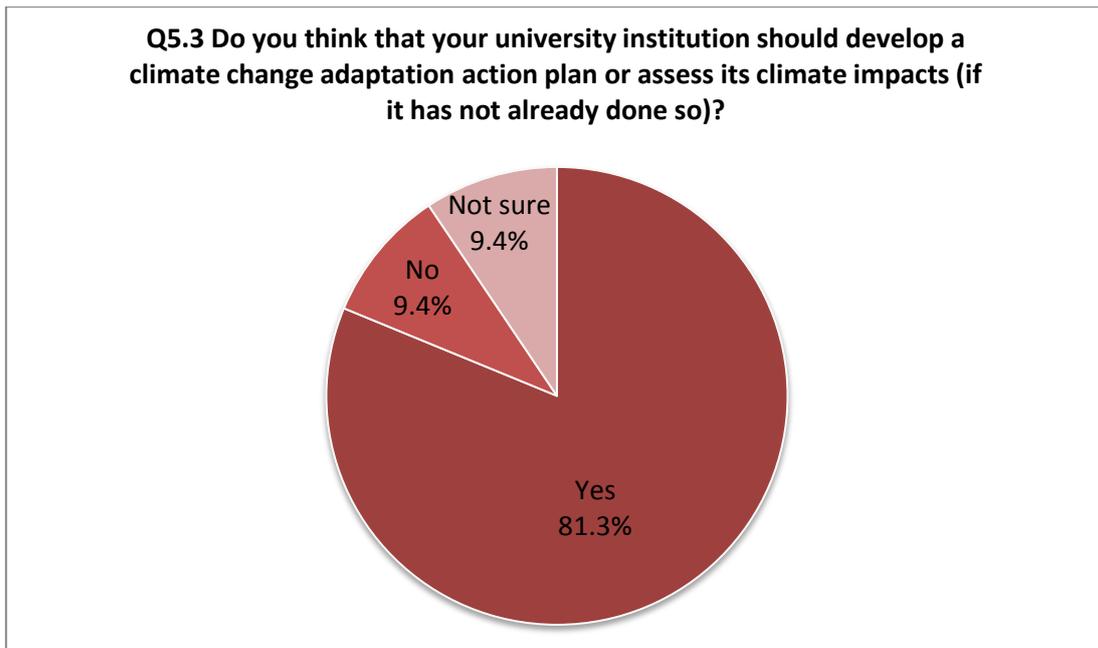


Figure 11. Should your university assess its climate impacts and develop a climate change adaptation action plan?

Most of the respondents provided additional comments. Those that responded affirmatively gave reasons such as:

- to identify and mitigate long term risks;
- coastal location vulnerable to sea level rise, long-term lease, most campuses located next to the ocean;
- climate change represents a real and increasing risk to the operation due to the institution having a strong focus on agricultural-related research and physically located with close proximity to the flood plains of the Murray-Darling river system; these risks should be identified and mitigated against as per other business risks;
- “no regrets” approach, i.e. reduction of operating costs and the load to the electricity grid as well as provision of a buffer in the event of increase in heatwave frequency / intensity through actions such as retrofitting passive cooling systems to buildings; an “extreme weather” plan would be useful irrespective of climate change;
- large organisation should address risk management;
- publicly funded university of technology with a role model function for society;
- very important for a forward-thinking institution to embark on despite the uncertainty about what the future will bring for the institution because of climate change;
- reasonable extension or adjunct to the EMS and established risk management;
- changing climate is already having an impact on campus;
- a good idea for any organization to consider adaptations and impacts; and
- “changes required take decades” – it is understood that the respondent wanted to emphasise planning being a long-term process.

However, the planning or assessment requires:

- funding and resources;
- working together with the research arms of the university assessing climate change impacts and communicate broadly;
- formal recognition and planning of future impacts;
- administration viewing climate change as a risk;
- more awareness raising to educate especially those in executive positions about the direct and indirect impact of climate change on the institution; and
- more discussion and common strategic initiatives across the sector.

One respondent replying 'no' stated that their institution has built the necessary goals into other plans. Also uncertainty about the future impact of climate change on the country and economy can make an institution (with resource constraints) to likely prioritise mitigation above adaptation (as the benefits of the mitigation activities are clear and simpler to get traction). Those that were not sure whether their institution should proceed with planning for climate adaptation expressed that the issue will be considered in their new framework but could be expanded later, and that their institution is still well below the national reporting threshold for carbon emissions and greenhouse gases; another respondent admitted that "we are so far from thinking this way that it is difficult to conceive of what this would look like or what might be in it".

4. Conclusions

This survey examined tertiary education sector organisational planning for climate change, focusing especially on the assessment of climate change impacts and adaptation plans.

The results show that while more than half of those surveyed have set emission reduction targets (mitigation) and a quarter of the 45 institutions have established stand-alone climate change mitigation plans, only five of them have (or are developing) similar plans for adaptation. However, the results also indicate that almost a third of the institutions participating in this survey can be considered to have taken specific steps towards analysing or adapting to climate change impacts. In addition, the survey confirms that RMIT University is one of the few tertiary sector institutions planning for climate change in a structured manner. While it was not the intention of this report to rank any university or plans, results of the survey (and a desktop review) indicate that three out of five leading institutions are Australian (however with the caveat that although the survey was international, Australia was the main focus of attention).

Whilst mitigation action is clearly being adopted by many tertiary institutions, this can be attributed to clearer and more immediate economic and reputational drivers. The arguments for adaptation have yet to become so clear-cut with many universities, and therefore remain a lower priority. Other cited barriers include: complexity of the topic and uncertainty of climate scenarios in the longer term, lack of awareness among staff (especially executive staff), a 'scattered/ unknown approach' across university departments, and in many instances a lack of resources for an issue that is not yet seen as central to university operations. The survey also highlighted the fact that although there is a great deal of 'internal' academic expertise that could be drawn upon for assessment and adaptation planning purposes, in the majority of cases this is disconnected from the operational planning of universities. This represents a lost opportunity but latent potential for the tertiary sector to exploit in the future.

The results indicate a strong support for assessing climate impacts and for developing a climate adaptation plan in response. The survey has nevertheless likely attracted responses from those institutions that are engaged in the field and hence already have an interest in this area.

Appendix I. Participating institutions

Institution	Country
University of Tasmania	AUS
Macquarie University	AUS
RMIT University	AUS
La Trobe University	AUS
Federation University	AUS
The Gordon TAFE	AUS
The University of Melbourne	AUS
Charles Sturt University	AUS
James Cook University	AUS
Victoria University	AUS
Murdoch University	AUS
Central Queensland University	AUS
University of South Australia	AUS
TAFE Illawarra	AUS
The University of Queensland	AUS
Durack Institute of Technology	AUS
Western Sydney University	AUS
The University of Western Australia	AUS
University of Toronto	CAN
Dalhousie University	CAN
University of New Brunswick - Saint John Campus	CAN
University of Prince Edward Island	CAN
University of Alberta	CAN
Capilano University	CAN
Kwantlen Polytechnic University	CAN
University of British Columbia	CAN
Nova Scotia Community College	CAN
ETH Zurich	CHE
Aalto University	FIN
University of Helsinki	FIN
Otago Polytechnic	NZL
Victoria University of Wellington	NZL
University of Otago	NZL
AUT University	NZL
University of Canterbury	NZL
University of Auckland	NZL
Yale University	USA
University of Illinois at Urbana-Champaign	USA
University of Washington	USA
Massachusetts Institute of Technology	USA
Jamestown Community College	USA
Loyola University Chicago	USA
Williams College	USA
University of San Francisco	USA
Vanier College	USA