



WORKSHOP BRIEFING PAPER

Queensland Climate Adaptation Strategy

A collaborative way forward

Exploring how stakeholder led initiatives can enhance Queensland's adaptive capacity

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1 Collaborative action

Because no single organisation can address shared climate risks on its own, collaboration is an essential ingredient in successful adaptation responses. Actions undertaken through Q-CAS should align with (not duplicate) actions at Federal and local government levels

For example, while a water infrastructure provider can ensure its assets are well-managed and retrofitted to fit more intense severe weather conditions, water infrastructure can be compromised if energy networks go down during major weather events. Conversely, if NRM revegetation efforts bolster the resilience of coastal ecosystems, inland communities and coastal infrastructure may also be protected from storm surge. Likewise, the continuity of small businesses depends on resilient communities emerging from natural disasters, so business has an interest in household disaster preparedness relating to its own continuity planning.

Because interdependencies are prevalent as climate change impacts cascade from one sector to the next, models that align shared interest in managing risks can deliver more impact than individual organisations or sectors acting alone.

Collaborative initiatives should endeavour to build the capacity of small business and the most vulnerable in our communities as they are least equipped to adapt.

An example of collaboration action in SEQ is the Resilient Rivers initiative, a partnership between Council of Mayors (SEQ), the Queensland Government, water utilities, key regional waterways and catchment organisations and the community. The initiative aims to improve the health of our waterways and Moreton Bay by delivering more coordinated catchment management to protect our water and keep soil on our land and out of the waterways. The initiative recognises that we can deliver more together than alone.

1.1 Key elements of ‘Collective Impact’ model

John Kania and Mark Kramer’ defining article about ‘collective impact’ published in the Stanford Social Innovation Review in 2011 identified five key ingredients of success:

- ✓ All participants have a **common agenda** for change including a shared understanding of the problem and a joint approach to solving it through agreed upon actions.
- ✓ **Collecting data and measuring results consistently** across all the participants ensures shared measurement for alignment and accountability.
- ✓ A plan of action that outlines and coordinates **mutually reinforcing activities** for each participant.
- ✓ Open and **continuous communication** is needed across the many players to build trust, assure mutual objectives, and create common motivation.
- ✓ A **backbone organisation(s)** with staff and specific set of skills to serve the entire initiative and coordinate participating organisations and agencies.

See more about the collective impact model here: http://ssir.org/articles/entry/collective_impact

Summary case study: Chula Vista’s collaborative adaptation response.

A local philanthropic foundation released a climate impact study about this Californian city of 247,000 with information on how climate change will affect things such as temperature and water availability, wildfires, and public health, with a level of detail that makes it possible for local leaders to have some idea of what action to take. Chula Vista City Council formed a Climate Change Working Group, which included representatives from business, education, environmental groups, and community residents. The group selected 11 climate adaptation strategies that the city is now implementing such as improving community preparedness for extreme heat events, promoting the reuse of rainwater and grey water, and educating businesses about how to reduce their risks and costs from local climate change impacts.

The estimated cost of implementation is \$554,000 for three years, then \$337,000 annually after that. Given that Chula Vista’s 2011-2012 budget is about \$290 million, this investment seems both feasible and worthwhile. See more in the Appendix section.

1.2 What is needed to progress ‘Collective Impact’ in Queensland

In order to progress collaboration action in the climate adaptation area using the Collective Impact model, stakeholders need to align their aspirations and activities in a manner which addresses the key ingredients of success outlined above, calibrated for our local circumstances. This may include introducing a mechanism whereby the Queensland Government can formally recognise and encourage voluntary agreements between multiple stakeholders.

Building on successful wine industry collaboration delivered through the South Australian Government’s climate adaptation strategy, Q-CAS is exploring the possibility of introducing “Sector Agreements” similar to South Australia’s to support Q-CAS implementation.

Anticipating the more active role of philanthropy in the US compared to Australia, we also are exploring innovative funding sources that might be leveraged through a co-investment model as outlined further below.

Partners will need to address each of the key elements below in order to build successful Collective Impact initiatives that advance Queensland’s adaptive capacity.



Graphic source: <http://www.collaborationforimpact.com/collective-impact/>

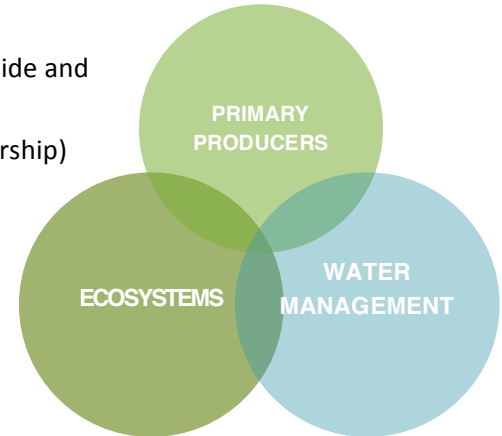
Collaboration for Impact is an emerging Australian initiative jointly supported by the **Centre for Social Impact** and **Social Leadership Australia**.

2 Possible collaboration opportunities

Manage risks to natural assets & resource-based industries

Enable the economic benefits of more efficient farming through fewer herbicide and pesticide inputs delivered by research based, industry and community driven initiatives such as Project Catalyst (WWF, NRM, Coca Cola Foundation partnership) to be accessible to all farmers through Apps and web based support tools.

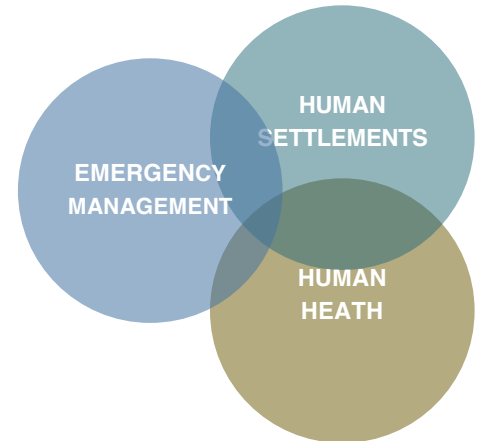
Create opportunities for multiple land management benefits through shared-fencing/planting project that improves farming objectives as well as environmental outcomes, and community planting initiatives that build wildlife corridors through private land with biodiversity benefits.



Building resilience of Queenslanders to heat waves

Build neighbourhood scale collaboration that improves heat wave health outcomes (involving schools, hospitals, energy providers, community groups, shopping centres, cool public buildings, local government, health agencies).

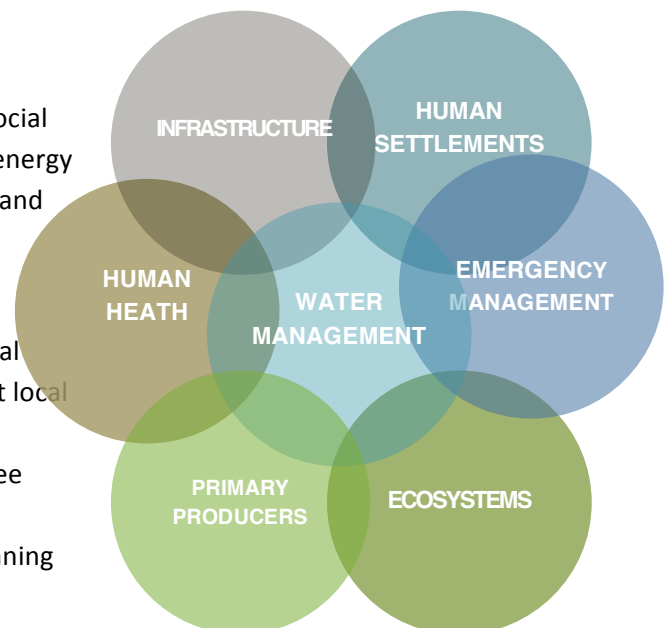
Create city-wide social media campaigns with partners across sectors reinforcing heat-wave messages that catalyse the public to act (personally, reaching out to friends and strangers) including curated large scale Twitter conversations that unite stakeholder social media capacity around shared themes (#beattheheatgoldcoast for example) that link to BoM early warning system and align with official health system communications.



Resilient master planned communities and neighbourhoods

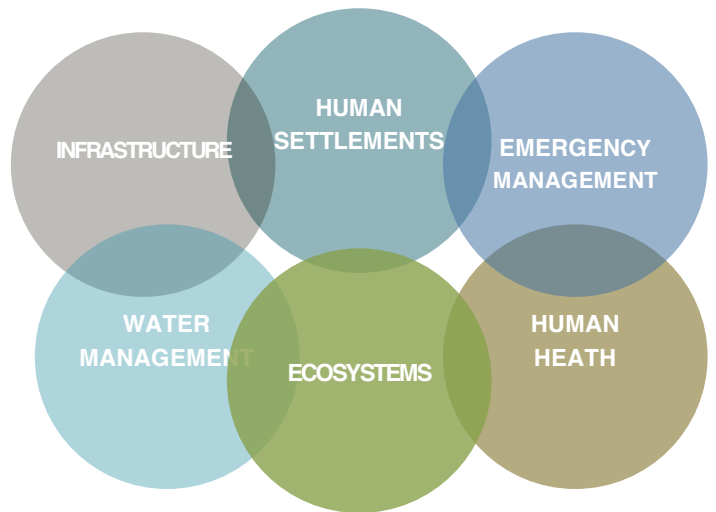
Partnerships between developers, infrastructure providers, emergency management agencies, local government and the social sector that advance innovative and adaptive models for NRM, energy and water management that anticipate severe weather events and gradual climatic stresses. Reflect different urban/rural planning requirements and leverage industry systems in place.

Neighbourhood partnerships that enable schools, hospitals, local government, community groups and NRM groups to implement local adaptation plans bringing together shared understanding and resources to tackle priority responses (including for example tree planting and ecosystem remediation, support for vulnerable residents, engagement with local businesses in emergency planning and educational activities.)



Urban landscape partnerships to mitigate heat wave and flooding

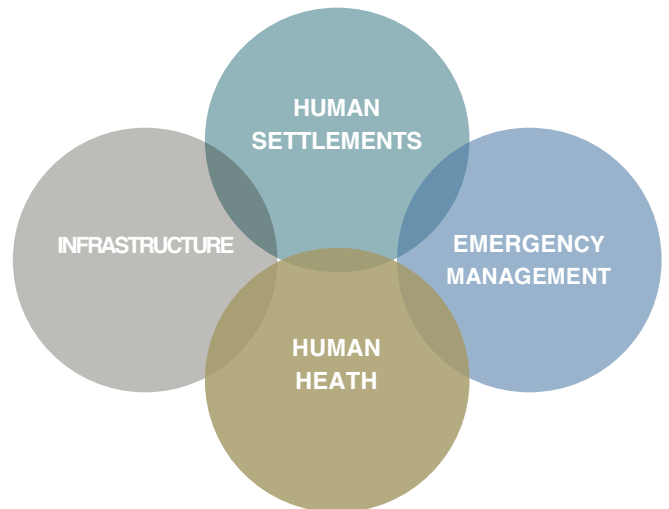
Pilot intensive street tree planting program around heavily walked public transport/commerce hubs that currently are hot spots and/or flood affected in partnership with local government, transport agencies, local businesses, NRM groups, horticulture specialists and community groups.



Property resilience partnerships that promote design principles, enhance community safety and make insurance more affordable

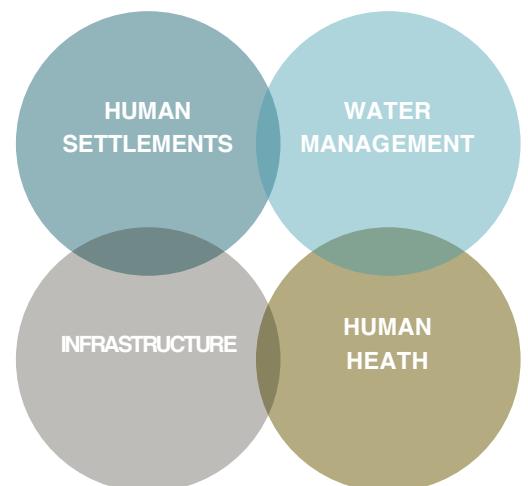
Insurance/building materials/property/design/ community/research/ government partnerships that offer research validated advice for homeowners and commercial property owners and incentives to retrofit homes and buildings to make them more resilient to high wind and cyclone storm surge impacts in order to negotiate reduced insurance premiums.

Initiatives that encourage use of advanced design principles build resilience into buildings in ways that mitigate and adapt to climate change, offering value for money (eg: white roofs that reduce HVAC costs).



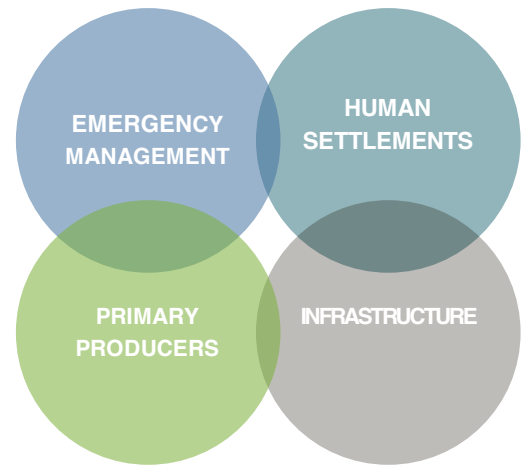
Partnerships that engage the community on innovative water demand and supply options

Pilot deliberative community engagement models (such as citizen juries) that enable ordinary citizens and their values to inform use of recycled water, demand management and water sensitive urban design, working with LGAs and IAP2 practitioners, under guidance of New Democracy Foundation. Steering Committee guidance can include infrastructure providers, community groups, researchers, health care experts and all levels of government.



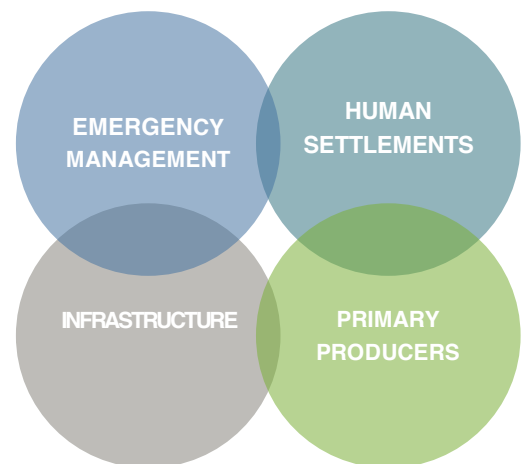
Addressing infrastructure severe weather interdependencies and business continuity

Collaborative scenario planning bringing together public and private energy, water, transport, communications and health care infrastructure providers with emergency management experts and primary producers to join up disaster planning and build stronger people to people connections. Bringing businesses, infrastructure providers, local government and emergency management agencies to improve capacity of local business to have continuity through major weather events



Building disaster resilience in communities

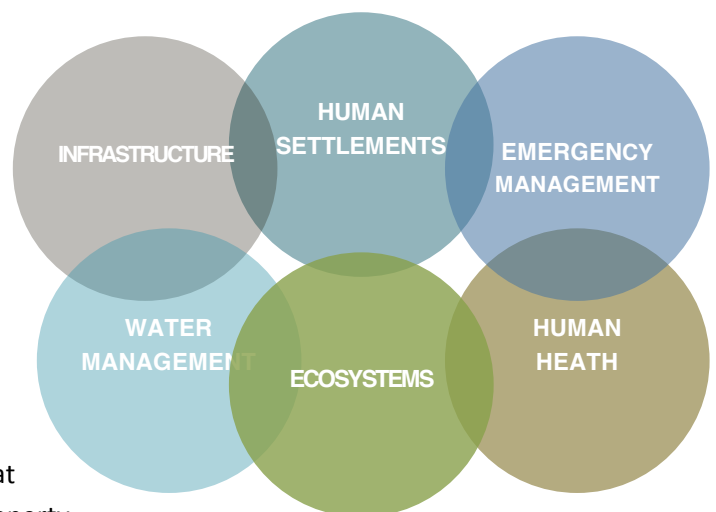
Partnerships between local government, community organisations, mining companies, researchers and emergency response agencies that build disaster resilience in local communities to enhance community safety and business continuity. Including advanced warning community based communication systems in partnership with LGAs, and opportunities to co-invest in leveraged infrastructure improvements.



Coastal adaptation pathway collaborative planning

Partnerships between local government, local community and business organisations, planning, research and infrastructure experts that engage ordinary citizens in adaptation pathways planning using citizens juries and other deliberative models to test values and prioritise short, medium and longer term responses to local adaptation challenges.

In addition, fostering more responsible and sustainable new development along Queensland’s coastline to address the multitude of severe natural hazard risks that are anticipated that will threaten life, wellbeing and property.



3 Investing in Q-CAS collaboration action

The Queensland Government is investing \$3 million over three years to support the development and implementation of a Queensland Climate Adaptation Strategy in order to improve opportunities and reduce risks to our economy, environment, infrastructure and communities from current and future climate impacts.

Funding for voluntary collaboration initiatives under Q-CAS may be able to leverage a range of philanthropic, capital market, corporate, government and research funding pools discussed below.

3.1 Philanthropy

In the US and Europe philanthropy has become an important source of funding for climate adaptation resilience initiatives. The Rockefeller Foundation is investing US\$100million in supporting Chief Resilience Officers and forward planning across 100 global cities, including Sydney and Melbourne.

Chris Addy, from social impact advisory firm Bridgespan Group, further notes there are five pathways for philanthropic funders to invest in climate adaptation (See full article here:

http://ssir.org/articles/entry/philanthropic_opportunities_for_climate_adaptation):

- ✓ **Support local science and local scientists.** Scientific information about the observed and potential impacts in a community's backyard, prepared by locally trusted and credible sources including industry-led science, can sway public opinion and mobilize local government leaders.
- ✓ **Invest in neutral conveners.** Climate adaptation is multifaceted and benefits from the involvement of diverse stakeholders, but engaging stakeholders and keeping them at the table requires considerable effort and trust in the community to reach across political and socioeconomic divides. Philanthropy can support "backbone" organisations with their own independent staff to advance the initiative and coordinate participating agencies, thus fostering "collective impact."
- ✓ **Build the field of climate adaptation.** Climate adaptation is a diffuse problem and requires local solutions that oppose special interests. More than any particular policy or intervention, progress will depend on the development of a strong field with a shared identity, common standards of practice, a robust knowledge base, and influential leaders. The US Kresge Foundation and others have already begun to invest in field building, but even more support is needed to develop a strong field.
- ✓ **Re-frame adaptation around equity.** Recognition that climate adaptation raises fundamental questions of fairness and equity can be a powerful motivator for sparking public discourse and applying pressure to decision-makers. As we have seen in other arenas such as health (where the US Robert Wood Johnson Foundation has developed a Vulnerable Populations portfolio) and education (addressing the achievement gap), philanthropy can use its voice—publicly and pointedly—to re-frame discussions around who is likely to be most affected and who benefits from investments.
- ✓ **Support advocacy.** Grassroots organizations are critical partners for mobilizing local residents, setting an agenda, and developing a plan for engaging with local policy makers to push from talk (or silence in many cases) to action on adaptation. Organizations such as <http://uprope.org/> in Brooklyn, which has deep community ties, can continue to increase grassroots support for adaptation.

In Australia the philanthropic sector is only beginning to engage with climate adaptation and resilience funding for domestic initiatives, though philanthropy has long supported disaster resilience and adaptation in overseas aid program.

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The following case study is drawn from a Stanford Social Impact Review blog about philanthropic support for climate adaptation posted by Bob Searle of the Bridgespan Group. See the full blog here: http://ssir.org/articles/entry/a_tree_grows_in_chula_vista

In a recent *Stanford Social Innovation Review* post, “Disadvantaged Populations Feel the Heat,” Karim Al-Khafaji from the Bridgespan Group described research that explores the effects of climate change on elderly and low-income people, as well as those with medical conditions in the United States. Bridgespan has talked with community adaptation leaders. An emerging hypothesis is that there are things that community leaders can do to incorporate climate impacts into their normal operations, without adding materially to local budgets.

Consider what’s taking place in Chula Vista, California, a city of 247,000, located seven miles from San Diego. While the city doesn’t have a high percentage of low-income families (the median household income is \$72,326), it is a diverse storm surge and sea level rise exposed community that includes a range of ethnicities and income levels.

Chula Vista also has the most well developed [climate adaptation plan](#).

Brendan Reed is Chula Vista’s Environmental Resource Manager. He says that Chula Vista was an early mover on the climate change issue – primarily focused on mitigation at first. Adaptation was catalysed by the publication of a climate impact study “[Focus 2050](#),” commissioned by the San Diego Foundation. The study addresses temperature, water availability, wildfires, and public health, with a level of detail that makes it possible for local leaders to have some idea of what action to take.

Chula Vista City Council directed staff to form a Climate Change Working Group, with representatives from business, education, environmental groups, and community residents. This group published 11 climate adaptation strategies that the city is now implementing including improving community preparedness for extreme heat events, promoting the reuse of rainwater and grey water, and educating businesses about how to reduce their risks and costs from local climate change impacts.

The estimated cost of implementation is \$554,000 for three years, then \$337,000 annually after that which seems worthwhile given Chula Vista’s 2011-2012 budget of about \$290 million (see “[Implementation Progress Report](#)”).

So what are some of the keys to Chula Vista’s success?

- ✓ **Sustainability** is a core community value.
- ✓ *The San Diego Foundation is an **honest broker**.*
- ✓ *There is **broad stakeholder engagement** in the Climate Change Working Group*
- ✓ **Quick wins** built momentum. See [CLEAN Business program](#) for example. Also, the city passed a Cool Roof policy for new homes - a very small average incremental cost for utilizing cool roof material (\$75) delivered energy cost savings with a quick payback for the new homeowners (less than 3 years in many instances).

Brendan noted some challenges for communities that want to address climate change through increasing resilience (a community’s ability to adapt to the effects of climate change):

- ✓ **Metrics for performance.** It’s relatively easy to track activities such as the number of trees planted or square feet of cool roofs, but it’s much harder to know whether the community has become more resilient to the effects of climate change. Much work remains to be done to develop good measures of resilience and to link activities to improvement.
- ✓ **Modelling the cost/benefit of resilience investment.** While we’ve highlighted actions that are relatively inexpensive to implement, there are many potential adaptation actions that require significant investment (for example, building a seawall to protect a development against rising sea levels). Given uncertainties associated with climate change impacts and the lack of effectiveness measures, this modelling will be incredibly challenging.

Chula Vista is a great example of what’s possible when community leaders think creatively about incorporating climate adaptation into their core work.

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3.2 Bond funding

3.2.1 Climate Adaptation Bonds

The London based Climate Bonds Initiative has been tracking growth in bond financing of greenhouse mitigation and climate adaptation funding.

The 'Bonds And Climate Change: The State Of The Market In 2015' report claims that, "a large liquid universe of climate mitigation and climate resilience investments exist today" with climate-aligned bonds totalling \$597.7bn.

Stockland, NAB and ANZ have all issued green/climate bonds over the past 12 months. See more here:

<https://www.climatebonds.net/files/files/CBI-HSBC%20report%207July%20JG01.pdf>

According to this report, the 4.3% of total climate bond funding addressing adaptation relates to 'Water (\$3.2bn), Waste & Pollution (\$7.1bn), and Agriculture & Forestry (\$2.3bn)' investment areas. In the water sector alone, 292 bonds have funded climate adaptation investments such as such as widening storm water tunnels and efficiency in wastewater treatment.

3.2.2 Resilience Bonds

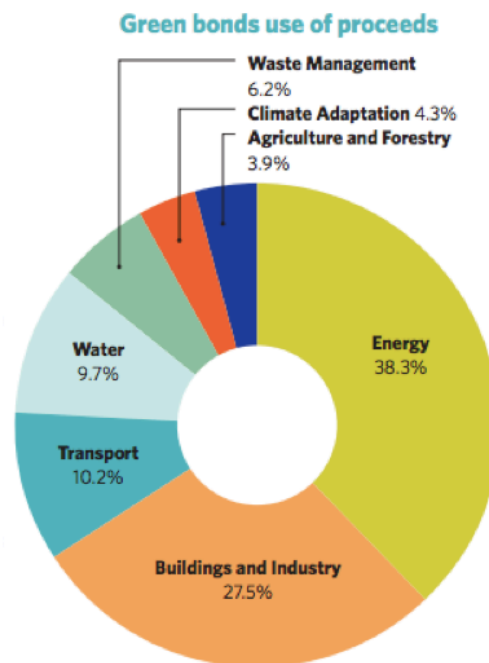
Resilience bonds are an emerging investment class with the first issuance currently being pioneered through collaboration between a US innovative finance social enterprise called 're:focus partners' <http://www.refocuspartners.com/>, The Rockefeller Foundation, Swiss Re, Goldman Sachs and RMS.

Through RE.bound, "a team of private sector leaders is taking steps to design a new catastrophe bond-like product that can promote project-based risk reduction solutions".

These new types of instruments would realize the potential insurance benefits from infrastructure improvements and monetize the physical and financial risk reductions associated with investments in resilient systems, such as seawalls and green stormwater infrastructure" – see more here: http://www.refocuspartners.com/press-releases/refocus-partners_REbound-Program-Press-Release-20150402.pdf

The US based RE.invest initiative <http://www.reinvestinitiative.org/> is another example of collaborative finance innovation addressing new approaches to funding resilient infrastructure.

RE-invest is supported by re:focus and 8 US partner cities that seek to creatively leverage telecommunications, paving, transport and other infrastructure investments to lift urban resilience, as the case study about describes below.



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The RE.invest initiative is hosted by Re.Focus and involves Bechtel, Wall Street Without Walls, Atkin Gump and 8 US partner cities. The initiative helps cities invest in resilient infrastructure and protect communities. The case study below is drawn directly from <http://www.reinvestinitiative.org/>.

RE.invest is a collaboration of eight US partner cities and leading engineering, law, and finance firms to create new public-private partnerships for resilient infrastructure. Cities across the US are facing serious challenges in rebuilding their aging water, energy, and transportation systems. RE.invest was designed to help cities develop more flexible, sustainable, and integrated networks and use public resources more efficiently to leverage private investment in building stronger communities.

The main goals of RE.invest are to:

- ✓ Ease the burden on government by bringing together technical experts from inside and outside government.
- ✓ Mobilize resources to protect communities by aligning public resources with private investment.
- ✓ Increase the resilience of vulnerable cities by taking a systems approach that can offer a national model for infrastructure planning, delivery, and investment.
- ✓ Improve integrated planning capacity at the local level by creating a template for cross-sector design and project implementation.

The RE.invest team developed these original ideas in order to creatively address multiple resilience challenges with integrated and implementable solutions. What makes these ideas innovative is their pragmatic combination of elements from across sectors. Each concept is cutting-edge but practical, developed with near-term financing and implementation in mind and specifically connected to the challenges faced by one or more RE.invest partner city. Together these concepts represent a set of building blocks of established technologies and services that can be mixed-and-matched in new combinations to meet individual city needs and generate greater benefits than any one could alone.

By bringing together project ideas from multiple sectors, each of these design solutions opens up the potential to capture multiple revenue streams and access different financing sources. These concepts are intended to move cities beyond urgent short-term fixes to enduring systems solutions. By linking this project design process to private financing through new public-private partnerships, these solutions are aimed to help all RE.invest partner cities ensure that their resilient infrastructure plans are aligned with a clear pathway to action.

Examples of RE:invest solutions include:

- ✓ **re:pave** - a design concept for coordinating and sequencing road repaving and other capital improvements with cost-saving strategies for expanding street-level green infrastructure. The RE.invest team is focused on creating opportunities for integrating surface green infrastructure strategies, such as porous pavement, site grading, tree trenches, with other streets and parking upgrades. For example, designing surface parking areas to retain stormwater overflow can create multiple benefits at lower construction cost, while also tapping into street parking revenues as a source for repaying private investors who provide upfront investment capital.
- ✓ **re:wire** - a pathway for engaging IT and telecom companies as partners in street and water system upgrades. By identifying IT upgrade priorities (e.g. wireless, broadband, fiber-optic, camera, and monitoring systems), cities can plan capital improvements that create additional revenue generation opportunities. For example, building on the push for new "dig once" policies to proactively lay conduit while repaving roads or upgrading sewers can allow cities and companies to coordinate on accessing and expanding high-priority space below city streets at lower cost and with fewer disruptions from uncoordinated construction projects. The re:wire concept has the added benefit of limiting wear-and-tear of porous streets in ways that can lower their effectiveness.

For more solutions see: <http://www.reinvestinitiative.org/about-reinvest/solutions/>

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3.3 Other co-investment funding sources

Because climate change presents risks shared by multiple sectors and stakeholders, it follows that funding programs addressing risk management and commercial opportunities for related sectors may be leveraged for adaptation co-investment. Potential co-investors in climate adaptation activities in Queensland include:

Co-investment opportunity	Overview of possible leverage available for collaborative adaptation initiatives	Who is eligible or how can I apply
<p>National Disaster Resilience Program</p>	<p>The Natural Disaster Resilience Program (NDRP) is a competitive grants program that historically has been jointly funded by the Queensland and Australian Governments under a National Partnership Agreement on Natural Disaster Resilience.</p> <p>NDRP funds mitigation and resilience projects relating to all types of natural disaster hazards. Potential recipients include councils and non-government organisations such as volunteering groups and not-for-profits. Recipients can work with private sector and government partners.</p> <p>The Department of Infrastructure, Local Government and Planning administer the program.</p> <p>A National Partnership Agreement was agreed to that committed funds of \$12 million from the Australian Government to NDRP for 2013-14 and 2014-15. States and Territories matched these funds.</p> <p>In 2014-15, the Queensland Government provided a joint application package that also includes the Local Government Floods Response Subsidy and the Royalties for Regions programs. Both these programs provided dedicated funding for local governments toward flood mitigation and resilience projects.</p> <p>Currently the NDRP program is not open pending negotiation of a new National Partnership Agreement.</p> <p>There has been an allowance for \$6million in the Commonwealth Budget for 2015-16 but negotiations are only now beginning with States including Queensland. States would match the \$6million if an agreement were reached.</p>	<p>Organisations considered eligible for NDRP funding are:</p> <ul style="list-style-type: none"> • Local government bodies constituted under the Local Government Act 2009 and the City of Brisbane Act 2010 • Regional Organisations of Councils • River Improvement Trusts • Government bodies, including Queensland Government departments and other government agencies within Queensland • Government owned corporations • Incorporated non-government organisations (including volunteer groups), and Queensland based not-for-profits. <p>Partnerships between organisations have been encouraged and an eligible organisation was allowed to submit an application with an ineligible organisation.</p> <p>Other entities may be deemed by the Minister as an eligible applicant for the purposes of the NDRP.</p> <p>Ineligible organisations include: small businesses, for-profit volunteer groups, organisations based outside of Queensland, and any other group not specified as eligible in these guidelines.</p> <p>If and when the NDRP is re-opened more information will be available here: http://www.dilgp.qld.gov.au/local-government/grants/current-programs.html</p> <p>For an example of previous Queensland NDRP grant details see 2014/15 guidelines here: http://www.dilgp.qld.gov.au/resources/guideline/local-government/ndrp-2014-15-guidelines.pdf</p>
<p>Advance Queensland</p>	<p>Advance Queensland will position Queensland as a place where entrepreneurs, industry, universities and government work collaboratively to turn great ideas into investable products and growing businesses that</p>	<p>Specific funding options include:</p> <ul style="list-style-type: none"> • Business development fund available that offers between \$125,000 and \$2.5million in

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Co-investment opportunity	Overview of possible leverage available for collaborative adaptation initiatives	Who is eligible or how can I apply
	<p>create the jobs of the future.</p> <p>A \$50 million Advance Queensland Best and Brightest Fund, which will develop, attract and retain world-class talent both scientific and entrepreneurial.</p> <p>A \$46 million Advance Queensland Future Jobs Strategy that will open the door to new industry/research collaborations, tackle the big innovation challenges, focus on translation, and deliver 10 year roadmaps for industries with global growth potential.</p> <p>A \$76 million Business Investment Attraction package, which will encourage a new wave of Queensland start-ups, support proof-of-concept projects and attract co-investment through the Business Development Fund. And lastly, \$8 million will be set aside to give us flexibility to respond as new opportunities arise, especially as we develop roadmaps with industry partners.</p>	<p>investment in early stage businesses: http://advanceqld.initiatives.qld.gov.au/funding/business-development-fund.aspx</p> <ul style="list-style-type: none"> • Research fellowships of up to \$300,000 over 3 years to support researchers focussing on Queensland government priorities which include, “Building resilience and managing climate risk, through the design and development of construction technologies for extreme weather event resistance (floods, cyclones, droughts), particularly in tropical environments” Apply here: http://advanceqld.initiatives.qld.gov.au/funding/research-fellowships.aspx • PhD scholarships of up to \$45,000 to support undergraduate researchers in gaining a PhD degree. The 2015 funding round is now closed. There will be a further round of scholarships available in 2016. See: http://advanceqld.initiatives.qld.gov.au/funding/phd.aspx • Knowledge Transfer Funding of up to \$50,000 per project is available to help businesses with the cost of hiring a graduate from 8 eligible Queensland universities to work on an innovative project. The funding subsidises two-thirds of the eligible project costs with the business contributing one-third. Funding is available for Queensland businesses that employ less than 200 full time equivalent staff members subject to innovation criteria listed here: http://advanceqld.initiatives.qld.gov.au/funding/knowledge-transfer-partnerships.aspx • Further information Email: advancequeensland@dsiti.qld.gov.au Facebook: Advance Queensland Twitter: @AdvanceQld Phone: 13 QGOV (13 74 68)
<p>Rural Research and Development Corporations</p>	<p>Australia’s Rural Research and Development Corporations (RDCs) are the main way the Australian government and primary producers co-invest in research and development (R&D) for industry and community benefits.</p> <p>There are currently 15 RDCs—five Commonwealth statutory bodies and 10 industry-owned companies</p>	<p>Primary producers are able to participate in RDC funded programs if they are members.</p> <p>Strategic funding pools that might be leveraged by Q-CAS collective impact initiatives include Horticulture Innovation Australia’s ‘Strategic Co-Investment Funding Pool’ which will offer \$20million in government funds if matched by</p>

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	<p>(IOCs). All the RDCs manage R&D services, with most IOCs also providing other industry services, mainly marketing.</p> <p>The RDCs invest in R&D and innovation to improve the profitability, productivity, competitiveness and long-term sustainability of Australia's primary industries. These include agricultural, fishing and forestry industries. Both industry and government recognise that creating and meeting demand for Australian produce is essential to the competitiveness and profitability of our primary industries and provides benefits for the whole Australian community. The government-industry partnership model that supports the RDCs has been operating successfully for over 25 years.</p> <p>The RDCs are funded primarily by statutory R&D levies (or charges) on various commodities, with matching funding from the Australian Government. To expand Australia's rural R&D efforts, the government matches expenditure on eligible R&D, generally up to 0.5 per cent of the determined industry gross value of production. RDCs are accountable to both industry and government.</p> <p>Levies for R&D and marketing are initiated at the request of industry and are collected and administered by the Department of Agriculture and Water Resources. These funds are distributed to the RDCs to undertake R&D and industry services.</p> <p>Many climate adaptation related research projects are funded by RDCs – one example of an exciting program supported by Horticulture Innovation Australia is described in the column to the right.</p>	<p>external partners.</p> <p>HIA is currently developing guidelines for this pool – they have identified a 'Green Cities Fund' as an eligible source for co-investment by external partners alongside horticulture firms.</p> <p>The Green Cities Fund:</p> <ul style="list-style-type: none"> • Will leverage the co-investment potential associated with the considerable and diverse stakeholder interest and momentum generated by the successful urban green space campaign 2020 Vision (http://2020vision.com.au/) to further investigate the key challenges associated with urban greening. • Green cities represents a significant cross-industry issue, specifically encompassing all stakeholders in the non-food sector – nursery, turf, flowers, landscaping as well as having limited application to horticultural produce as well as sectors outside of horticulture such as urban planning, property developers and local government. • Innovation is required to leverage the diversity and heterogeneous nature of urban environments so that these industries can respond to their different needs and target consumer groups. When unified, they provide a real platform for overall growth, as exemplified in the 2020 Vision goal of 20% more green space in our urban areas by 2020. <p>More information about this pool is on page 15 here: http://www.horticulture.com.au/wp-content/uploads/2015/08/The-Strategic-Co-investment-Funding-Pool-Summary.pdf</p>
<p>“Get Ready Queensland”</p>	<p>RACQ Get Ready Queensland is an initiative to build the state's resilience to deal with natural disasters. It aims to make Queensland Australia's most disaster resilient state.</p> <p>The State Government is determined to help all Queenslanders achieve this in partnership with local councils. In 2015-2016 \$2 million has been committed in grants to local governments to encourage local community participation in preparedness and resilience building.</p>	<p>The 2015-16 RACQ Get Ready Queensland funding program has been allocated, and presumably funding for 2016-17 will open during the first half of 2016.</p> <p>This initiative applies to all Queensland councils and the Weipa Town Authority. All grant recipients will receive funding for community resilience-building activities.</p> <p>Projects that involve other local governments, business and community groups are encouraged.</p>

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	<p>A major focus for the statewide program is RACQ Get Ready Week (12-18 October 2015) and RACQ Get Ready Queensland Day (18 October 2015).</p> <p>RACQ Get Ready Week is an opportunity for the community to commit to actions across all areas, to develop public-private partnerships and to showcase innovation and capability from these partnerships.</p> <p>Grants to councils, as part of the RACQ Get Ready Queensland resilience initiative, will facilitate activities that will make a real difference to resilience in local communities. These activities should encourage:</p> <ul style="list-style-type: none"> ✓ greater community connectedness ✓ an understanding of risk and vulnerability within the community and at an individual level ✓ planning and procedural preparation, or ✓ availability of local resources. <p>Funding for local government will help facilitate local-driven events and initiatives that focus on the individual and community aspects of preparedness and resilience that involve local people offering the best opportunity for the community to be inspired into action.</p> <p>See more here: http://www.dilgp.qld.gov.au/local-government/grants/racq-get-ready-queensland-program.html</p>	<p>To apply for future funding Queensland councils can go to:</p> <p>http://www.dilgp.qld.gov.au/resources/guideline/local-government/2015-16-racq-get-ready-qld-funding-program-guidelines.pdf</p>
<p>Community Resilience Fund</p>	<p>The Queensland Government through the 2015-16 Community Resilience Fund (CRF) aims to support local governments to deliver critical infrastructure that will develop and improve resilience in the built environment.</p> <p>While spending for this round is already decided, it is possible the program will re-open for following years.</p> <p>The 2015-16 Community Resilience Fund (CRF), totalling \$40 million, aims to support local governments to:</p> <ul style="list-style-type: none"> ✓ help local governments deliver key natural disaster infrastructure that is informed by the Department of Natural Resources and Mines Queensland Flood Mapping Study or a completed flood management study ✓ fund essential disaster mitigation 	<p>The Queensland Community Resilience Fund is currently closed with \$40million of projects to be announced in late 2015. However the program may re-open, and there appears to be flexibility on eligibility with Ministerial approval so collaborative initiatives may be supported through local government applicants.</p> <p>Eligible applicants under the CRF are local government bodies constituted under the Local Government Act 2009 and the City of Brisbane Act 2010. Other entities may be deemed by the Minister as an eligible applicant for the purposes of the CRF.</p> <p>Future rounds may open here: http://www.dilgp.qld.gov.au/local-government/grants-ilgp/community-resilience-fund.html</p>

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	<p>infrastructure that will support communities to build resilience to future natural disaster events</p> <ul style="list-style-type: none"> ✓ fund projects that protect existing essential public infrastructure ✓ fund projects that safeguard residents in 'at risk' communities. <p>Outcomes of this program will be to protect existing essential public infrastructure, make Queensland communities more resilient in relation to natural disasters and reduce future expenditure on asset restoration. See more here: http://www.dilgp.qld.gov.au/local-government/grants-ilgp/community-resilience-fund.html</p>	
<p>Social Benefit Bonds</p>	<p>According to KPMG:</p> <p>Social Benefit Bonds “Social Benefit Bonds (SBB) are an innovative payment by results model for financing social programs, which rely on evidence of social outcomes. In this model there is a three way partnership between investors, government and service providers – private sector investors fund a program delivered by a social service provider.</p> <p>The rate of return to investors is dependent on program outcomes – if the program has positive outcomes for beneficiaries they receive a higher rate of return.</p> <p>KPMG in Australia has evaluated the first Australian SBB trial which is working to keep children with their families out of foster care, reducing social services costs in New South Wales.</p> <p>The model relies on measurement of outcomes and measurement of progress towards outcomes. There is a lot of activity around Social Benefit Bonds internationally – they are being trialled or explored in many countries including UK, Australia, the US and Canada.”</p> <p>- See more at p 6: https://assets.kpmg.com/content/dam/kpmg/pdf/2014/05/unlocking-value-social-investment.pdf</p>	<p>Social service organisations that wish to mount the business case for investing (for example) in disaster preparedness to avoid health care and other costs are encouraged to contact Westpac and NAB, which participated in the first Social Benefit Bond in Australia.</p>
<p>Corporate Social Responsibility</p>	<p>According to Pro Bono Australia reporting on a survey with 990 respondents:</p> <p>“Australia’s top 10 business leaders in the Corporate Social Responsibility field have been revealed amid</p>	<p>Non-profits and government agencies are encouraged to approach Australian companies to explore opportunities for CSR partnerships.</p> <p>This requires proactive framing of shared interests,</p>

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	<p>warnings that CSR practice in Australia is lagging.</p> <p>The top 10 includes broadcaster ABC, professional services firms ARUP, GHD and PwC, miners Newmont Mining Corporation and Rio Tinto, The University of Queensland, Melbourne Water, National Australia Bank and Main Roads Western Australia. The list, compiled based on analysis by the Australian Centre for Corporate Social Responsibility (ACCSR), was part of the organisation’s State of CSR in Australia and New Zealand Annual Review, which revealed an overall lag in corporate social responsibility in Australia and New Zealand.</p> <p>ACCSR Managing Director, Dr Leeora Black said that future progress in CSR would be closely tied to innovation in the arenas of supply chain, environment, reporting and collaboration with stakeholders and that going forward organisations simply needed to do more on a systemic, rather than just organisational basis.</p> <p>- See more at: http://www.probonoaustralia.com.au/news/2014/06/australia%E2%80%99s-csr-top-10#sthash.DiqBRfsX.dpuf</p>	<p>and the Collective Impact model can work well insofar as common targets can be identified.</p>
<p>Private Sector Adaptation Funding</p>	<p>According to the ‘Trends in private sector climate finance’ report released on October 9 2015 by the climate change support team of the United Nations Secretary-General:</p> <p>“Overall, the UNFCCC’s Private Sector Initiative database of actions on adaptation¹⁰ lists around 100 adaptation projects supported by the private sector including initiatives by Ericsson, Microsoft, General Electric and BASF, and across all continents.</p> <p>However, evidence on the overall investment in adaptation by the private sector remains elusive. An initial review of the role that Multilateral Development Banks have played in supporting private sector adaptation suggests that this activity has led to around \$5.5 billion of total adaptation investment (Vivid Economics, 2015).” For more see: http://www.un.org/climatechange/wp-content/uploads/2015/10/SG-TRENDS-PRIVATE-SECTOR-CLIMATE-FINANCE-AW-HI-RES-WEB1.pdf</p> <p>While this report is useful it understates private sector investments which are increasingly incorporated into mainstream developments.</p>	<p>Researchers, community organisations and government agencies that wish to leverage private sector investments creatively require proactive outreach to corporates already investing in adaptation.</p>

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	<p>For example, consider the significant features incorporated into Lend Lease’s large Sydney coastal development Barangaroo (see image below, more here: https://www.barangaroosouth.com.au/about/~media/Developments/AU/BR/Images/About/SustainabilityClimate%20Change%20Adaptation%20%20Community%20Resilience.pdf</p>	
<p>Climate Bonds</p>	<p>The ‘Bonds and Climate Change State of the Market’ report by the Climate Bonds Initiative states:</p> <p>The largest theme in the \$597.7bn climate-aligned universe continues to be Transport with \$418.8bn bonds outstanding since January 1, 2005. Rail accounts for 95% of this, largely from state backed entities. Energy (\$118.4bn) is the second largest sector, with 20% of the universe.</p> <p>This theme is comprised of a range of renewable energy power producers including hydropower, wind, solar, bioenergy, geothermal and nuclear (p5). Buildings and Industry (\$19.6bn) is the third main theme and has captured the attention of the labelled green bond market in the past year.</p> <p>The remaining themes, Water (\$3.2bn), Waste & Pollution (\$7.1bn), and Agriculture & Forestry (\$2.3bn), are crucial investment areas for climate adaptation.</p> <p>These will require scaling up if we are to address the climate risks of food supply, flooding, water scarcity, and health issues, such as pollution.</p> <p>For more see: https://www.climatebonds.net/files/files/CBI-HSBC%20report%207July%20JG01.pdf</p> <p>Stockland, ANZ Bank and NAB have all issued significant climate/green bonds over the past 12 months, mostly related to energy efficiency retrofitting of buildings.</p>	<p>All major banks in Australia are currently exploring opportunities to issue climate adaptation bonds.</p> <p>If infrastructure providers, local governments and other corporates have strong investment propositions that could be funded through bonds they are encouraged to approach banks through their Environment teams or Infrastructure Finance teams.</p>
<p>Resilience Bonds</p>	<p>Resilience Bonds are an emerging new financing mechanism which combines elements of the more traditional Green/Climate Bonds with Social Impact Bond features.</p> <p>The world’s first Resilience Bond is under development in NYC led by Re:Focus partners as described above</p>	<p>Innovative funding vehicle that requires proactive development by finance, local government and infrastructure providers in Australia.</p>

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<p>Philanthropy</p>	<p>The US advisory group Bridgespan Group notes in the 2013 report ‘How Philanthropy Can Help Communities Advance Climate Change Adaptation’ that philanthropy has followed the lead of policy makers and environmentalists and placed big bets on mitigation, while virtually ignoring adaptation. Bridgespan suggest five strategies for engaging philanthropy in local adaptation activities:</p> <ul style="list-style-type: none"> ✓ Support local science by local scientists; ✓ Invest in neutral conveners to maximise collaboration with diverse stakeholders; ✓ Support community advocacy for change given powerful interests involved in development; ✓ Build the field to share adaptation strategies by building climate adaptation as a field of practice; ✓ Reframe the dialogue around people and social benefits beyond ecosystems and wildlife which conveys a narrow focus. <p>The Bridgespan report is available here: http://www.bridgespan.org/getattachment/d2af8fca-02e6-4850-86f3-9c24f5c3f1fc/How-Philanthropy-Can-Help-Communities-Advance-Clim.aspx</p> <p>There are emerging examples of philanthropy funding adaptation in Australia.</p> <p>The Myer Foundation’s large grant environment focus is currently the generation and preservation of urban landscapes to build urban resilience. In 2009 the Ian Potter Foundation offered funding to support Green Cross Australia’s youth emergency volunteering online campaign ‘Extreme Weather Heroes’.</p>	<p>Australian Environmental Grant-makers Network: non-profits can access information here: https://www.aegn.org.au/for-grantseekers/</p> <p>Philanthropy Australia advice about how to seek funding: http://www.philanthropy.org.au/seek-funding/how-to-seek-funding/</p>
<p>Local Government capital works programs</p>	<p>Local governments have access to significant funding pools that could be leveraged towards climate adaptation initiatives if there was capacity to mount an effective business case. In early 2010, Gosford City Council’s Manager of Integrated Planning suggested that staff should develop a business case to outline Council’s existing climate change adaptation initiatives and gaps, and provide a roadmap for future strategic direction.</p> <p>If Queensland local councils had access to tools enabling effective business cases to be made for</p>	<p>Local governments are encouraged to consider the business case for integrating adaptation programs into existing capital works investments.</p> <p>According to the NCCARF Review ‘Portfolio of Case Studies Of Climate Change Adaptation Tools And Application Processes Used By Local Government Practitioners’ for example:</p> <ul style="list-style-type: none"> ✓ <i>The Senior Managers Group and other staff designed the Gosford City Council Business Case for use across council including those responsible for land use planning, floodplain</i>

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	<p>adaptive investments, considerable funding could be made available to co-invest in adaptation projects alongside other stakeholders or separately. For more see: https://www.nccarf.edu.au/settlements-infrastructure/sites/www.nccarf.edu.au/settlements-infrastructure/files/ACCARNSI_CASE_STUDIES_PORTFOLIO_May2012_Final_0.pdf</p>	<p><i>management, social planning and corporate planning. It is both an internal corporate document and a living document to which new information and research can be added. Rather than adopt an existing template for the Business Case, staff decided to tailor a framework that would be suitable for Council's needs. Staff analysed various frameworks for business cases and selected certain elements that would be useful from different business case models. Although Council had a standard template for business cases that is successfully utilised by the water and sewer team, it is designed for outlining a rationale for individual projects rather than for charting the key elements and potential directions of a program."</i></p>
<p>Mining biodiversity offsets and conservation support</p>	<p>There are a number of Queensland offset projects that demonstrate support for biodiversity resilience. For example, Santos's:</p> <ul style="list-style-type: none"> ✓ GLNG's publicly available water portal, where the public can view results from surface water and groundwater monitoring programs, and access information about Santos' responsible water management strategies - see: http://www.santoswaterportal.com.au/ ✓ Beneficial water use projects (Roma town aquifer recharge, tree plantings in Fairview and agriculture irrigation projects). <p>Although community and stakeholder views in relation to offset programs are mixed, it is noteworthy that LNG proponents and the Queensland state government have bought back the grazing permits that allowed the Monte Christo cattle property to operate, purchased the property itself and provided \$34.5million over 25 years for the management of the protected areas</p> <p>Queensland Trust for Nature is establishing partnerships with complementary organisations (such as Greening Australia and Earthtrade) to provide a biodiversity offsets service in Queensland.</p> <p>On behalf of clients, the Trust will identify and assess appropriate biodiversity offset sites, secure the relevant tenure, establish a vegetation management program and undertake long-term site management.</p> <p>For more see: http://www.qtn.org.au/biodiversity-</p>	<p>Environmental non-profits and NRM groups can reach out to partners in the mining sector proactively to develop adaptation partnerships. Examples include:</p> <ul style="list-style-type: none"> ✓ Bush Heritage Australia is using part of a \$2 million mining offset grant to better understand the long-term effects of climate change on cropping productivity and the environment in Western Australia's Mid West region, at its Charles Darwin reserve. See more here: http://www.abc.net.au/landline/content/2015/s4324690.htm ✓ Supported by its Western Australian Iron Ore Asset, BHP Billiton's 'Sowing the Seeds for Success' project has made a positive impact on re-establishment of biodiversity values through major advancements in knowledge in seed management practices. The project has delivered a step change in revegetation success with approximately 80 per cent of projects now tracking to completion. See more here: http://www.bhpbilliton.com/society/environment/sowing-the-seeds-for-success ✓ BHP Billiton, in partnership with the Tasmanian Land Conservancy and Conservation International, pledged A\$13.4 million for conservation and ongoing management of 11,000 hectares of land in Tasmania, Australia

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	<p>offsets</p> <p>Other examples of how biodiversity offsets can build the adaptive capacity of Queensland ecosystems are to the right.</p>	<p>in the Five Rivers Conservation Project. The land, near Cradle Mountain and Lake St Clair, incorporates areas that are covered by the Tasmanian World Heritage area including old growth forests, wild rivers, and alpine wetlands. See more here: http://www.bhpbilliton.com/society/communitynews/bhp-billiton-launches-five-rivers-conservation-project</p> <ul style="list-style-type: none"> ✓ Rio Tinto Earth Assist is a conservation program run by Conservation Volunteers Australia underpinned by an MOU between Conservation Volunteers, Rio Tinto, the WA Department of Environment and Conservation and the Department of Education and Training. The program is aimed at all WA secondary school students and teachers, and provides hands-on environmental volunteering opportunities in Western Australia's park, wetlands, bushland and coastal reserves. See more at: http://www.conservationvolunteers.com.au/about-us/our-partnerships/rio-tinto-earth-assist#sthash.ai6Cgk7V.dpuf ✓ Earthtrade, and partners Cockatoo Coal, BHP Billiton Mitsui and BHP Billiton Mitsubishi Alliance are partnering with Woorabinda Aboriginal Shire Council in the provision of 547ha of biodiversity offset areas on Woorabinda lands of Central Queensland. This will provide for the protection of species that rely on the Brigalow Belt's ecology, that includes the ornamental snake, the vulnerable squatter pigeon, vulnerable long-eared bat, endangered solanum species of plant and Brigalow ecological community. See: http://earthtrade.com.au/archives/359

4 Voluntary Collaboration Agreements

In order to advance the underlying ingredients of collective impact models identified in the section above, we draw on the South Australia Government's voluntary climate change "Sector Agreements" and "Regional Agreements" which can offer a model for advancing Queensland Q-CAS partnerships in a manner which is recognised by various levels of government and supported by partner co-investment.

4.1 About South Australia Voluntary Sector Agreements

Sector agreements are formal cooperative agreements between the state government and specific business entities, industry sectors, community groups and regions to help tackle climate change. The agreements typically encourage actions to reduce greenhouse emissions and adapt to climate change and may include commitments to:

- ✓ reducing emissions
- ✓ improving energy efficiency
- ✓ reducing energy consumption
- ✓ promoting the use of renewable energy
- ✓ research, development and innovation in technologies or practices
- ✓ member awareness raising and behaviour change programs
- ✓ Identifying opportunities to adapt to climate change.

SA Sector Agreements may relate to part or all of a business or entity's operations but may also be specific to an individual project or program. Addressing the challenge of climate change and seizing opportunities to develop cleaner technology requires a shared effort across the government, industry and the community.

The creation of voluntary sector agreements is encouraged under Section 16 of South Australia's climate change legislation.

Sector agreement partners may include:

- ✓ businesses and industry groupings
- ✓ non-government or not-for-profit organisations
- ✓ state and local government
- ✓ representatives of regional areas
- ✓ the environment and conservation sector
- ✓ the scientific and education community
- ✓ individuals and special interest groups of the general community.

The definition of sector is not limiting, so the State Government may enter into agreements with a particular person, entity or business group.

An example of the South Australia Barossa Region Sector Agreement is here:

<http://www.barossa.org.au/assets/Uploads/Envi-Sustainability/CC-Adaptation-Plan/Climate-Change-Sector-Agreement-signed.pdf>

APPENDIX - Why adaptation requires collaboration

Cross-sector interdependencies

Over recent years, there has been a growing appreciation of the linkages between sectors impacted by cascading effects of gradual climatic stresses and severe weather events. Understanding these interdependencies is vital if collaborative initiatives are to find traction across diverse sectors.

The Climate Institute explored this narrative in terms of infrastructure dependencies supported by KPMG and Manidis Roberts in the study 'Infrastructure Interdependencies and Business-Level Impacts A new approach to climate risk assessment'.

This study explored a Melbourne heat wave scenario examining flow on effects due to first order heat wave impacts, and examined costs associated with a hypothetical medium sized manufacturing firm. For example here is how one impact (heat effects on materials and structures) leads to flow on impacts.

This important study concluded that the following infrastructure, community and economic impacts resulted from a hypothetical scenario – there would also be considerable environmental impacts not examined in this instance.

Infrastructure impacts

Melbourne's electricity supply and transport (especially trains) are the infrastructure sectors most vulnerable to extreme heat. Power supply was impacted by direct failure of equipment such as insulators, instrumentation and power lines, that lead to rolling brown-outs and black-outs. Plant and infrastructure with narrow climatic operating bands are particularly vulnerable. Within transport, the direct impact of heat on the trains is exacerbated by vulnerability to electrical power failure.

Community impacts

The distribution of impacts across the city, types of businesses and community impacts may be very uneven. The most vulnerable communities include the north and west of the metropolitan area of Melbourne – also the most densely populated areas. Increases in hospitalisation, illness and death increase pressure on the health sector

Economic impacts

The cascade of consequences results in many economy-wide impacts: increased labour costs and/or loss of labour, increased health costs, production losses, revenue losses, business closure and inoperability, freight disruption and overloaded emergency services. The modelled cost of disruptions to labour supply alone resulting from the heat event on the hypothetical business is estimated to be \$1-5 million, or 0.2-1.1 per cent of total revenue.

These costs are significant. The predicted rise in the frequency and severity of extreme heat events could become unmanageable for many cities.

Find out more here:

http://www.climateinstitute.org.au/verve/resources/TCI_InfrastructureInterdependenciesReport_April2013.pdf