

# A Northern Perspective

## CRN Northern Australian Development Conference 2014

Leading researchers contribute to the debate about the future of Northern Australian Development and the research that will impact on future planning

Darwin (NT) 25 November | Canberra (ACT) 27 November

*A forum to share key research in understanding the challenges and approaches that impact on Northern Australian Development*



Australian Government  
Department of Education





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***Please note:*** All references have been removed from the papers contained within this booklet. They can be sourced by contacting the appropriate lead author directly. Sorry for any inconvenience this may have caused.

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## Acronyms

C	Author presenting at the Canberra Conference
D	Author presenting at the Darwin Conference

AIMS	The Australian Institute of Marine Science
ANU	Australian National University
CDU	Charles Darwin University
CRCREP	CRC for Remote Economic Participation
CSIRO	Commonwealth Scientific and Industrial Research Organisation
JCU	James Cook University
NCCTRC	National Critical Care and Trauma Response Centre
QUT	Queensland University of Technology
RMIT	RMIT University
Tangentyere	Tangentyere Council Inc
UTAS	University of Tasmania

## Useful links

### **The economic impact of the mining boom on Indigenous and non Indigenous Australians**

Boyd Hunter, Monica Howlett & Matthew Gray

[http://caepr.anu.edu.au/sites/default/files/Publications/WP/WP93\\_Hunter\\_Howlett\\_Gray\\_Mining.pdf](http://caepr.anu.edu.au/sites/default/files/Publications/WP/WP93_Hunter_Howlett_Gray_Mining.pdf)

### **A White Paper for Black Australia: Developing Whose Northern Australia, For Whom?**

Jon Altman

<https://newmatilda.com/2014/11/11/white-paper-black-australia-developing-whose-northern-australia-whom>

### **Northern Research Futures CRN Webpage**

[www.cdu.edu.au/northern-institute/collaborative-research-network-program](http://www.cdu.edu.au/northern-institute/collaborative-research-network-program)

### **Northern Research Futures CRN Facebook page**

[www.facebook.com/pages/Northern-Research-Futures-CRN/538312606256939](http://www.facebook.com/pages/Northern-Research-Futures-CRN/538312606256939)

# Welcome

**Professor Simon Maddocks**  
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Northern Australian Development is a nation-building exercise to benefit all of Australia. Unlocking the full potential of northern Australia will enhance Australia's prosperity - increasing exports and employment to ensure Australia's position among the world's top economies is protected. To make this happen, innovative and forward thinking is essential.

In 2011, Charles Darwin University (CDU) successfully led a collaborative partnership with the Australian National University (ANU), James Cook University (JCU) and Australian Institute of Marine Science (AIMS) to secure more than \$5 million for the Northern Research Futures Collaborative Research Network. The collaboration aimed to enhance CDU's research capacity as well as contribute to raising the quality and recognition of its research nationally and internationally, and to substantially increase the critical social and environmental research capacity in northern Australia. CDU's strong reputation for engagement and connections with Indigenous people in northern Australia, and its proficiency in Indigenous Knowledges and cross-cultural practices, makes CDU a valuable resource for northern development projects.

It is a multi-disciplinary collaboration, or alliance, that established the important research architecture essential to meet the national challenges associated with living sustainably in the remote tropic zone and the interfaces between community and environment.

The alliance has two main objectives. Firstly, that CDU is nationally recognised as a critical node in social and environmental research for the remote tropical north, working as part of a network of researchers from two of Australia's most research intensive universities (ANU and JCU), and a major science organisation (AIMS). Secondly, to enable ongoing and sustainable programs of multidisciplinary, collaborative, world-class research that is valued by end users for integration into policy and practice.

CDU, as the lead institution for the Northern Research Futures Collaborative Research Network, is very proud of what the alliance with Australian National University, James Cook University, and the Australian Institute of Marine Science has achieved in coordinating and strengthening the pursuit of northern R&D agendas over the years.

CDU has a strong tradition of successfully partnering with other institutions and centres to contribute to the development of leadership and governance in the region. CDU's expertise in leadership and governance capacity-building is based on high-quality, contextualised evidence. We recognise the importance of these partnerships that helps improve the capacity and capability of the region's education and research institutions to address critical issues for regional development.

# Human Services Sector Development in Northern Australia

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There is universal agreement that strong, resilient and healthy individuals, families and communities play a vital role in building the ongoing prosperity, wellbeing and economic development. It has been demonstrated that long term economic growth in the regions occurs through investment in human capital development. 'Inclusive growth' and broader notions of 'human security' are emerging, encompassing areas such as sustainable economic development; food security; health; and environmental, personal, community, political and cultural security.

This paper considers human service sector development issues in northern Australia. It visits key issues in human service delivery including the population profile and the link between spatial location and social disadvantage. There is a critical examination of service delivery models and their sustainability in the context of northern Australia. It is argued that that northern Australia's human service sector lags behind major cities and has a history of being underfunded. Insufficient past investment and governance problems has negatively impacted on the sector as a whole causing fragmentation, service gaps and workforce shortages. There is a significant gap in data and evidence base in relation to northern Australia and the human services sector, making policy and planning difficult.

Northern Australia will continue to gain significance for Australia as a whole for a range of economic, political, social and cultural reasons. A renewed focus in northern Australia will most likely not succeed if human capital and social issues are not addressed. A number of areas require priority attention.

Building an evidence base: Appropriate data needs to be collected about the nature of social issues; disaggregated data on welfare expenditure, social services sector and the workforce; and evaluation and research projects on current practice, where the service gaps are; and what service delivery models work best under what circumstances. There is a need to build capacity in northern Australia to undertake social impact assessment, needs analysis and social research by providing better support to the human services sector and the universities in northern Australia.

Integrated planning, service coordination and relevant policy development: A greater location and presence of State and Territory and Federal governments are needed in northern Australia. A 'one size' fits all approach of centralised funding and policy models is not effective. Therefore it is important to have a devolved and coordinated approach to service planning in northern Australia. This means progressing mechanisms for formal and informal, placed-based, cross-sectoral planning and delivery, driven by local stakeholders and local leadership. Moreover, it is critical that such devolved approaches are embedded in policy frameworks so that decision making is not driven from Canberra, Brisbane, Darwin or Perth. There needs to be effort put into developing appropriate governance mechanisms at the third sector level, clearly articulating connectivity, vision for the

sector and strategies to address capacity and social infrastructure constraints. There is a need for a northern Australia community services umbrella agency or council, rather than the State and Territory based ones trying to undertake outreach, to be an advocate to address sectoral issues.

Ongoing and secure funding models: There has been a chronic underinvestment in northern Australia per capita for health and human service delivery. While the fragmentation in the sector is well known, the service gaps, capacity and resource constraints and priority areas are not well documented at the sub-regional level. There is a need to develop on-going funding models which provide preventative, sustainable and outcomes based service delivery rather than the current ad-hoc, competitive and fragmented approaches that currently exist. Programmatic approaches to funding over a number of years are critical rather than one-off competitive models. The 'churning' of services and workforce due to poor funding models results in greater long term inefficiencies and wastage of precious public resources. While government will continue to be the main funder of health and human services, there is a need to diversify the funding base with strategies to enable support from the private sector and philanthropic organisations which require incentives to trial different partnership models across sectors.

Sector capacity building and workforce development: It is critical to document the nature of the workforce and skills needed for the human sector across northern Australia as there is a critical gap in our knowledge base. There is a need to address workforce loss of skills due to short term funding in the non-government sector. Regional, coordinated and cohesive efforts are needed to attract and retain employees in northern Australia addressing professional, personal and community issues. It is important to develop improved future career progression strategies in the social and community services industry by education, training and professional development initiatives.

While northern Australia continues to experience strong growth in the planning capacity of its economic and natural resource sectors, the social and human services sectors have not been supported at a strategic level. Building an environment conducive to strong, resilient and healthy communities requires multi-dimensional approaches and neglecting the human services sector will have serious long term consequences economically, socially and in other ways. Not investing in human services sector will have major detrimental impacts on creating livable communities, development of vibrant economies, opportunities for participation, sustainable places, inclusive cultural expression and social cohesion.





# Valuing the Idiosyncratic: A Case Based Discussion on the Disjuncture Between Federal Development Policy and Local Values in Northern Australia

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Northern Australians have seen wave after wave of politically fashionable, 'development' focused policy prescriptions thrust upon them by the Commonwealth and States over the preceding century. While some outcomes have in some respects been positive, a great number have failed to return expected outcomes; and some have, arguably, had negative effects on human communities and land and sea environments across the north.

A growing literature points to a number of factors that contribute to the failure of 'northern development'. These include: climatic, soil, and remoteness constraints on primary and secondary industry, agriculture and mining; paternalistic engagement, driven by a neoliberal governmentality, with Indigenous communities that occludes other ways of knowing and doing; and pro-environmental agendas driven by southern lobbyists that, knowingly or in ignorance, disregard northern land-and sea-management practises and livelihoods embedded in the north.

This chapter argues that, underlying the reasons outlined above, a mismatch between federal and state-level policy and local values and aspirations, driven by political ideology, contributes to chronic failure of federal visions of northern development. We argue, overcoming this mismatch, through embracing local values, aspirations and knowledge, will lead to a significant improvement in the development trajectory of the north. However, it will require a northern understanding of development, rather than one entrenched in federal political ideology that holds economic development preeminent to all other forms of development.

To argue our case we briefly review the current federal Green Paper on 'developing northern Australia, highlighting themes and agendas. We then present preliminary empirical data that reveals localised values in and around Darwin harbour which lies adjacent to Darwin, the capital city of the Northern Territory, from a survey of 80 households in the Darwin harbour catchment. This data is complimented with data on a recently released Regional Development Plan developed by the Northern Territory Planning Commission Contrasts and complementarities in values and underlying development ideology between these sources of data are explored. We end with a discussion on how localised values might better inform larger-scale policy processes that deliver long-term improvements to the quality of life for those living in the north, and Australians at-large.



# **Killing Two Birds with One Stone: Utilizing Natural Hazard Threats to Develop Competent and Thriving Communities, and Reduce the Risk of Disasters**

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There is a growing and urgent need to develop competent, adaptive and thriving communities in northern Australia and to do so in the context of increasingly rapid change, uncertainty, insecurity and 'wicked problems.' A significant challenge in this context derives from the Top End's unique hazard-scape. Bushfires in the region burn an area larger than Germany every year and contribute 50% of regional greenhouse emissions. Cyclones affect communities within 50km of the coast, and flooding disrupts lives and livelihoods in many communities for some ninety days per year. Climate change will amplify the risk from these hazards, add threats from sea-level rise, heat stress and vector-borne diseases, and create significant challenges to economic productivity, infrastructure, and human health and wellbeing.

Capabilities to manage natural hazards are restricted by poor infrastructure, extremes of climate and weather that make construction and maintenance difficult and expensive, low population densities, communities of varying degrees of remoteness, and differences in stakeholder views about how to define and manage risks. Thus infrastructure issues, population dynamics and distribution, and social capital issues create significant challenges for realizing both the kind of community disaster resilience anticipated by the National Strategy for Disaster Resilience and the ability of Darwin to maintain its strategically important national role as Australia's base for responding to major natural hazards, pandemics and terrorist attacks in Southeast Asia.

The typical view is that its natural hazard prone environment limits opportunities for development in northern Australia. However, the national risk management emphasis on community resilience provides a foundation for arguing for an approach that recognizes that people's capacity to deal with hazardous circumstances derives from social capital developed from everyday personal and social experiences, and not from specific risk management interventions. This tactic argues for the cost-effective integration of community development and risk management strategies. This creates a context in which strategies facilitate community development that focuses safeguarding and enhancing the lifestyle, amenities and resources that make the Top End an attractive place to live, work and play and adapting to circumstances when the environmental processes that create these amenities occasionally turn hazardous. We suggest that the unique social and environmental conditions in northern Australia are ideal for utilising natural hazards to facilitate the sustained development of adaptive, competent and thriving communities.

By focusing on developing community capacity to capitalize on social and environmental amenities, the emphasis is on community development, with risk management being a subset of activities subsumed within social and environmental capital building. This creates an opportunity to frame the Northern Territory hazardscape as a catalyst for holistic social change and community development. Because hazards affect all sectors and levels of society, this approach offers the potential (which can be developed over time) for whole-of-community efforts involving community, government, businesses, and researchers (including Indigenous researchers) collaborating across local, state, federal, and international scales. The sense of shared fate that can be engendered by integrating community development with disaster risk reduction provides a context for collaborative learning. Innovative education technologies and techniques (e.g., transformative education, collaborative learning, scenario planning) can be used to dissolve old ways of thinking that proved unproductive and create new ways of thinking. Transformative processes will capitalise on the catalysing role of community leaders and by facilitating people becoming psychologically and socially embedded in, and thus attached to, the Northern Territory.

Assigning key roles to developing sense of community and place attachment/identity provides a foundation for motivating shared responsibility between all sectors of society to support the social capital building activities organised around disaster risk reduction strategies and by developing strengths-based disaster recovery and rebuilding plans. Strategies that integrate risk management, community and economic development and poverty alleviation will play integral roles in fostering adaptation and transformation of at-risk communities.

This integrated, community-based risk reduction framework enhances the capacities of local communities and values local knowledge. For this participatory civil society-based approach to be successful, the human, financial, social and cultural resources of local communities need to be able to operate at a high level of competence. By empowering and linking the leadership, and the resources of these groups, the adaptive capacity and competence of communities can be enhanced manifold.

This approach creates disaster risk reduction as an ongoing process which improves quality of life in communities and which is built into the community's everyday activities rather than being an added task along with all the other tasks people and communities have to manage. Moreover, groups traditionally perceived as vulnerable, especially indigenous Australians, women, immigrants/refugee, and older people, are construed in the proposed framework as valuable resources whose knowledge (e.g., local and spiritual knowledge, knowledge from different countries), experiences, perspectives, and capabilities (e.g., available time, relationships) is an as yet underutilized resource. This participatory approach not only draws out, and on, the resources and capacities inherent in the local communities, but also creates socio-cultural, financial, health and environmental outcomes that create communities that attract and retain people.

Darwin and northern Australia's urban, rural, environmental, social and cultural diversity creates ideal contexts for participatory hazard and recovery research. Darwin's proximity to Asia makes it an

ideal location for researching cross cultural and humanitarian aid hazard research. Darwin's population turnover provides unrivalled opportunities to research social change processes.

Utilizing the natural hazard threat to motivate and implementing such a whole-of-community participatory community development approach would help us to kill two birds with one stone: we contribute to the development of adaptive, competent and thriving communities capable of utilizing the unique opportunities Australia's Top End offers, and we minimize the impact of disasters, adding valuable capabilities in the development of northern Australia.



# Learning the Lessons of Development with other Nation's Norths

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In response to a challenge to understand impacts of change in regional and sparsely populated areas of the world, this paper considers the pressures on the social, economic, demographic and cultural dimensions of policy and people's lives in areas experiencing rapid growth and pressures from extractive resource development and investment opportunities.

This paper will consider these issues and explore how remote settlements in other countries have met these challenges. It is based on the work of the demography and workforce development teams at the Northern Institute (CDU) and is underpinned by understanding how populations behave in remote areas, including Indigenous populations within their own centres and in relationship to other systems of economic and social interaction. The 8D's of Remote Demography have been identified by the demography team which is founded on the principle that most assumptions embedded in the analysis of population behaviours and change are predicated on demographic models which are difficult to defend in their application to remote places. We argue that in remote Australia we find fundamentally different types of population systems which need to be understood for effective policy to be forthcoming. The research undertaken about how remote places work brings together what we have learnt from studies in the NT, as well as comparing ourselves with other remote places in your jurisdictions. We call this theory "Beyond Periphery" and, not surprisingly, the role of migration (both short term and residential) in changing remote populations is emphasised.

In essence, the 8 D's of Remote Demography argues that remote populations beyond the periphery are very "D like" – different, distant, dependant, dynamic, diverse, detailed, delicate and dislocated. This applies not just to their populations but also to the ways in which populations influence resource, labour and capital flows to and from, as well as within remote jurisdictions. We propose that just small changes to such flows can manifest in big demographic change in future years. For example, the general consensus is that remote Indigenous communities are largely similar in their population compositions and diversity is simple a reflection of the extremes in population characteristics between Indigenous and other Territorians. We also emphasise there is great diversity between Indigenous settlements themselves. We see some are older and more mobile communities, some have a female dominated workforce, and so on.

The growth and changes of people living in remote regions has posed challenges for policy makers, the companies that operate in these areas and the people who make their homes there. Remoteness from services taken for granted in larger urban areas, high living costs, harsh environments, limited employment and education opportunities and difficulties in attracting private

sector investment create barriers for urban development in remote regions. These barriers create a difficult environment for the long term sustainability of viable urban settlements.

A way to understand the impact on policy and people's lives is the changes in employment practices in the mining and agricultural sectors which are often key in regional areas. In its submission to the Joint Select Committee on Northern Australia Inquiry into the Development of Northern Australia, the Northern Territory government (2014) noted that a 'sustainable workforce is dependent on sensible integrated policy to encourage population growth and a sustainable, quality lifestyle' and that 'Labour shortages, skilled and unskilled, are a currently a serious inhibitor to the development of Northern Australia'. The need to build Northern Australia's workforce and research capacity to respond to the challenges of future development is recognised in areas of regional development. Skills Australia (2010) observed Workforce development, as an emerging field of practice, has benefited from a period of creativity and innovation to generate and trial new approaches. Australia is building a presence as a leader in the field of workforce development.

In Northern Australia, as in other European centres, one response to change has been the rapid growth in FIFO employment in mining and other sectors. For Northern Australia, in the longer term factors such as climate change, the end of the mining boom and other potential disruptions such as the slowing of growth in Asia will pose a new group of challenges. The response of the public sector to these issues will have an enormous influence on the attractiveness or otherwise of life in remote areas and how urban settlement patterns evolve to meet these challenges.

To respond to the challenges of development in the agriculture sector, Agrifood Skills Australia (2013) noted to contribute to Australia's continued global competitiveness, and to build a world class, highly productive workforce, the agrifood industry needs a flexible, dynamic and responsive training system that guarantees the current and future skills requirements of our people. This requires a strong connection between VET providers, researchers and industry, with the overriding objective being to produce competent people with the capability to do the industry job they are trained for. The major challenges in the sector are an ageing workforce and ensuring the workforce can meet the challenges of changing practices and circumstances. In northern Australia this is exacerbated by the population base, proportions of low skilled, highly mobile people with low literacy levels, opportunities for advancement in northern Australia, skill base of managers to effectively engage and the high cost of living. As research identifies potential areas for development, workforce development and education needs to align its activities to support growth and investment.

There is also a need to identify the economic and social models of engagement between businesses entering or expanding in the region in co-benefit structures with Indigenous communities. Indigenous communities control significant proportions of land and sea resources in Northern Australia, as in other northern hemisphere countries. Co-benefit structures go beyond the royalties that are owed for accessing the resources owned by communities but are the arrangements that can support aligned aspirations of economic benefit, employment and shared commitments to social, cultural, economic and environmental sustainability across regional and remote areas. As one co-benefit structure will not meet the varying circumstances across the regions, there is significant value in not only

identifying the different models that have existed, their varying levels of success, the preconditions and resources required to ensure optimum outcomes and the processes that have supported negotiation and maintenance of agreements over time.

By bringing together the lessons learnt across similar areas and contexts, we aim to share potential areas of investment that support a better understanding of growth, opportunities and ways to manage the inevitable pitfalls of change in the region.



# Dry Thinking, Wet Places: Conceptualising Fluid States

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In the context of developing northern Australia's capabilities to exercise agency over major economic, social and environmental planning, this chapter urges the importance of establishing appropriate geographical and philosophical frameworks. These frameworks can or should underpin new approaches to placemaking and fragile environment management and development. The proposition is that the goals, settings and discourse of public policy illustrate a deeply ingrained habit of 'dry thinking,' which is ill-equipped to deal with the 'fluid states' of coastal and maritime environments and their communities. The geographical habit of presenting the oceans of the world as a blue void disguises the fact that they consist of interflowing internal regions, which not only have a determining impact on the global climate but leave their trace in the distribution, migrations and inter-relationship of human and non-human populations.

The Yolngu people in Arnhem Land, for example, understand that the vitality of places resides in their humid potential to interconnect, in their possessing a track that embodies their vitality, so that places come alive through the spirit that moves across and through them. These currents are forms of connectivity, not so much in-between places as stretches of vitality. They cannot be defined in terms of hard-and-fast boundaries: they cross salt- and fresh-water edges, walls with interiors like snakes. Moving inside themselves, the currents are the jointure of the sea, the darker colour suggesting muscular depth. The poetic geography of fluid states illustrated here is demonstrably similar to that found in other tidal communities around the Timor and Arafura Seas and across the Indian Ocean. It suggests that the distinctive 'region of care' that public policy across northern Australia's seaboard should address is archipelagic, extra-territorial and held in common.

Within this broad framework this chapter explores the relationship between an archipelagic geography and practices of place definition and maintenance. In an archipelagic model, for example, zones or regions that are largely invisible to a continentalist or 'dry' point of view emerge as sites of optimal habitation, production and exchange. The classic example of this is the coast. It has been said that the world's largest archipelagic state (Indonesia) exhibits a distinct 'cultural and spiritual plurality' - trading, migration and warfare have raged along their shores for centuries creating identities that are dynamically negotiated between the allegiance to local narratives and the need to adjust to foreign influences and invaders. Here, again, a tropical politics is indicated. That is, literally and figuratively, a habitual turning towards and away from the other. The imperial tour is replaced by the postcolonial detour. Instead of a new neo-nationalism - a fresh attempt to subordinate the archipelago to nationalist self-interests - a distributed self-government is advocated.

Place as passage, self as other or spirit double, orientation as authority and responsibility: these are perceptions of place integral to life in the archipelago. In practical terms, they focus attention on the coast, its conceptualization and inhabitation. an idea of place as a boundary ecology emerges, the



wet/dry boundary as a filtration system. The architecture of passage is characterised by knots where different story lines do not simply meet but entangle, hybridise or otherwise activate a principle of mere coincidence to improvise a riddling formation sifting coarse material. The act of sifting works here to preserve data that do not conform, which for this reason hold the potential to attract new associations or revive old, neglected ones. In design terms such forms serve as hinge works, mediating between different physical states, diverse story lines and cultures of settling. In the context of designating a boundary ecology poles have this function: stylised islands, mooring posts, palisades, sticklike figures, gills, nets ... they are twinned in this typology with hollows, bays, ears, shells and other sail-like receptacles materialising the history of passage.

It is evident that these signatures of passage localise, materialise and connect, but the sense of place they might incubate does not replicate the 'place-based perceptual ecology'. The capacity to inhabit passage, to recover the act of place-making – to make these interstitial activities constitutive in an environmental and creative sense - demarcates one function of art in the context of the eschatological language used to communicate the implications of climate change. It is not sufficient to use art instrumentally to show what environmental scientists seek to prove with numbers. The challenge is to articulate the common place these warnings are designed to defend. But the common place cannot be the flat plane of instrumental reason and its institutions. It must be composed differently - in the way sketched here as a region of gathered creative potential, analogous to a high pressure region in meteorology. The designer's task is to create the hinge mechanisms that render this boundary ecology inhabitable imaginatively, and by materialising the nexus between creativity and change to alter our position vis-a-vis our ethical responsibilities as citizens of a shared biosphere.



# Local Knowledge and the Challenge of Regional Governance

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The ability of local communities to act regionally is increasingly important in a time of globalised environmental resource exploitation. The paper discusses this issue in the context of developing regional governance strategies for Australia's northern coastlines. It argues that the power local communities have to influence national and international policy-making and industrial practices in their locality depends on possessing 'local knowledge'. However, the definition of this concept differs in at least three of the main discourses involved in land and sea management: planning, ecology and Indigenous place-based philosophy and practice. This paper discusses these differences in order to find common ground between the definitions that would enable local knowledge to be regionalized. It is original in framing the discussion in terms of design, that is, in the concrete forming situation of ongoing coastal development. The challenge of 'scaling up' local knowledge is not a spatial or areal one: it involves reconceptualising the local regionally. For example, the multisensory nature of place-based knowledge presupposes the structuring of places as networks. A key issue in this context is the mechanism of translation across the network and between one level of organization and another. When creative practitioners are invited to invest local knowledge with symbolic value, their work is not external to some essential sense of place: the symbolic economy they operate is an essential translator between different entities. The capacity to identify, maintain and sustain fragile environments that are constitutionally distributive, hybrid and temporally variable depends on recognizing the critical role symbolic forms play in the discovery, mediation and performance of common or convergent values.

Although local knowledge is considered important in a range of disciplines and practices associated with place-maintenance and place-making, it is easily presented as limited and limiting. A detailed familiarity with one locality produces a unique experience of place; it is the basis of asserting that a locality has a character that is special. The value of the local resides in its particularity. There can be endless debate about the physical limits of the local but the human claim is clear: this place matters because it is different from anywhere else. Evidently, this claim is two-edged: local knowledge may enjoy a privileged authority but if it cannot generate senses of place that are applicable elsewhere, it is defenceless against 'general knowledge,' whose principles (whether ecological, political, cultural or strategic) are deemed valid precisely because they *can* apply anywhere. Insider knowledge is powerless to prevent the imposition of outsider knowledge. A further challenge that advocates of local knowledge face is the variety of definitions. Local or traditional ecological knowledge, for example, is very different from what planners understand local knowledge to mean in the context of 'placemaking'; in the biosciences, local knowledge is something different again, being, approximately, a local demonstration of general principles.

In the context of the challenges to cultural and environmental biodiversity presented by development of all kinds, it is strategic that local knowledge makes common cause. When a large scale mining project and its associated coastal infrastructure will affect a ribbon of communities across many hundreds of kilometres, a *regional* response, where different local knowledge are coordinated and integrated, carries more political weight than submissions from individual communities that are likely to differ in detail and in priorities. In less immediately critical circumstances, regional development initiatives originating from central government already group local communities: the assumption is that their common interests outweigh their differences. While such an assumption may or may not benefit local communities, it arises outside the local community itself. Local knowledge may flesh out a regional plan. The plan itself is likely to pay lip service to regional diversity, describing a network of interlinked but diverse interests. However, whatever the policy, strategy or, indeed, broader cultural and epistemological framework brought to the challenge of regional organization, it will judge local knowledge as the weakest basis on which to construct images of future wellbeing and prosperity.

The object of this essay is to describe a different kind of local knowledge, one that can be translated horizontally between different communities, sector and disciplinary interests and vertically across different tiers of government administration and policy formation. In this context it is necessary to underline at the outset that the received definitions of local knowledge assume (or imply) an equivalence between knowledge and territorialisation. The geography of imperialism, colonialism and contemporary global geopolitics identifies power with spatial outreach. At a regional scale, within the nation state, the state is presumed to surround and include the local. Localities delegate political power to the centre which operates as the sole source of power. The contemporary nation state constitutes itself internally, where regions are administrative units governed from far away. In this hierarchical model of power relations – which also covers the instrumentalist discourses proper to the legitimation, organization and operationalization of power – the local is not only weak politically but intellectually, creatively and culturally. It is assumed that nothing new can come from it: the new rushes in from elsewhere (and because of local cultural or educational lag, is unhelpfully resisted). Local knowledge is characterized as resistant to change; in relation to the ongoing rationalization of society, it uses local craft techniques to deflect innovation; it cannot initiate a revolution of its own.

The first step in recuperating a local knowledge of wider value is to establish the foundations of local knowledge non-territorially. This may sound paradoxical but to agree that local knowledge is 'place-based' or localized is not to make a geographical statement: it is to hint at a different ontological foundation for knowing. Local knowledge in this reformulation has attributes of observational science but also owes much to mythopoeic logic. Local knowledge of this kind integrates scientific and artistic perspectives and focuses on change rather than stasis. Contradicting the stereotype of local knowledge as a resource for cultural preservation or environmental conservation agendas, its focus is on transformation. It looks to inscribe change with pattern.

When it is suggested that local knowledge can or should be 'scaled up' so that its principles can alter the way decisions are made at a regional level a head on struggle with state or federal

administrations is anticipated. However, the object of filtering different local knowledge for their common principles is not to create a case for greater powers being delegated to local or regional governments in their present form. The aim is to influence regional *governance*, redefining how regions are conceptualized; the change implied is not regulatory or fiscal, but constitutional. In Australia, regional government hardly exists. Establishing representative regional government is a legitimate aspiration; one central and local government's might share. But regional governance implies something more. The definition of "region" needs to change. Local communities dotted along a seaboard that is two thousand kilometres in length or more share interests that transcend the administrative divisions that currently treat them separately. Their region is not a jigsaw of territories but a continuously flowing amphibious world, which the sharp and largely mythical coastlines drawn on maps and inscribed in the country's political organization fail to represent. An amphibious region of this kind has no centre or edge; no obvious beginning or end. Good governance here depends on the sustainable stewardship of places where no one goes or lives. The relationship people negotiate with their living space changes with meaning. Such insights find little recognition in the statute books.



# Research into Indigenous Governance and Governmentalities

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Governance issues and practices are of concern to a wide range of research engagements in northern Australia, although, it appears the issues of governance in Indigenous communities has garnered the most interest and substantial amounts of funding. The problems associated with Indigenous governance arise with the acknowledgement that traditional forms of Aboriginal governance are still alive and well in northern Australia. Governments, Aboriginal people and researchers are working together to design a method of operating Aboriginal and Governmental governance practices together in a productive and sustainable way. Our aim is to explore the role and practice of research and researchers within the Contemporary Indigenous Knowledges and Governance group at the Northern Institute in the changing contexts of 'advanced liberal governmentality' in Northern Australia. We present several case studies from our research, each detailing situations where we found ourselves brokering between Aboriginal and Governmental governance practices and inquiring about the role of the academic expert emerging within this work.

Emerging within these case studies is a figure of an academic researcher who is involved in a wide range of projects in diverse remote places, drawing on a diverse repertoire of personal expertise. Sometimes by characterising this work as 'ground up', we have been recognised for working both western and Aboriginal knowledge and governance practices together, face to face, in very local contexts. This work entails starting with difference and negotiating ways of making connections. It involves resisting the role of 'judging observer', seeing ourselves as experts within the academy with particular and changing roles, and emerging from collective action.

However, these accounts have also shown we are now increasingly finding our role to be one of not just brokering and translating across differences and differing knowledge traditions, but also of grappling with how differences might remain visible and accounted for within the practices and processes of new governmentalities. Visibly holding this tension, some of these possibilities are emerging in this new and multi-implicated positioning that we have begun to explore.

## The Living Archive of Aboriginal Languages

Researchers in the Contemporary Indigenous Knowledge and Governance group at the Northern Institute are involved in designing and developing an archive of rare texts in over 30 endangered Aboriginal languages of the Northern Territory. It was produced in an era of significant government support for vernacular education and the training of Aboriginal teachers and language workers for bilingual education. We now find ourselves working in collaboration with other tertiary institutions and government and nongovernment departments to 'rescue' the literature, digitise and configure it

using web technologies, for the use of its owners and their new generations of youngsters, classroom teachers and students, and academic teaching and research nationally and globally.

We accept that, for the time being, current governments at all levels are withdrawing from active support of local languages in schools, so we need to rethink how a digital archive can respond to the changing regimes of funding, ownership and accountability, and to the new human and technical actors in the world of cultural and linguistic maintenance. This work involves a careful ongoing balance between the centralised top-down configurations for robust coding and sustainable and extensible development; and the dispersed localised reappropriation and enrichment of particular documents on country under the authority and for the benefit of their owners. This work finds us re-examining our role as experts and researchers in the changing worlds of government policies, education, and remote community sustainability.

### **The 'Tiwi Way'**

We have been working in the community of Wurrumiyanga on the Tiwi Islands as part of an Northern Territory Government funded project on Indigenous governance and leadership. There has been a clear request by people in the community that we help them articulate 'Tiwi Way' as sets of knowledge and governance practices which are important to strengthen and sustain. In articulating 'the Tiwi Way' through careful negotiation with appropriate people, we hope to contribute beneficially to development of instances of generative interactions with Tiwi organizations. In the beginning of this work, we found ourselves being cast as cultural brokers, brokering engagements between Indigenous and Western governance modes. Sometimes we seem to be working with others to articulate 'Tiwi Way' in relation to governmental governance focussed on streamlining information flow between tiers of government around the management of local issues. Other times, we seem to be working with others towards articulating 'Tiwi Way' as an active participant in governance focussed on complex competitive markets in which Indigenous lands and cultural practices may participate. We find ourselves participating in two 'moveable feasts' simultaneously, by trying to grapple with 'late liberal governmentality' at the same time as we do complex brokering work. This case study attempts to name some of the options on offer by this engagement.

### **Tangentyere Research Hub**

The Tangentyere Council Research hub was established in 2002 to enable the participation of Aboriginal people living in Town Camps to provide feedback about alcohol restrictions in Alice Springs. Since then the Research Hub has undertaken a range of research projects, always aiming to ensure the research 'makes a difference' in the lives of Town Camp residents. Town Campers see the strengthening of their own governance and knowledge making practices as important outcomes of participation in research work. This can (and does) provide challenges to organisations who want to partner with the Research Hub, but do not see research as political, in the sense that it operates to challenge the status quo in terms of who gets to define the terms of any research undertaken. Collaboration with the Northern Institute, exploring governance and governmentality, is allowing the Research Hub to articulate its research theories and practices, and, in so doing, place 'making a difference' at the centre of the research process.

## Remote Aquaculture

In early 2013, CDU researchers were invited to join the Fisheries Research and Development Corporation (FRDC) and NT Darwin Aquaculture Centre research team working with the Aboriginal community of Warruwi on Goulburn Island on the Warruwi Fisheries and Aquaculture Project. This team were responsible for examining the Indigenous enterprise and knowledge partnerships consultation with assisting the community to explore the feasibility of Arrakpi aquaculture enterprises (trepan, clams and oysters). The Warruwi Fisheries and Aquaculture Project (CDU and NT Fisheries) aim is to work with the Traditional Owner Authoritative (TOA) structures for Goulburn Island; the Yagbani Aboriginal Corporation (YAC) Executive; and members at Warruwi (Goulburn Island). The YAC was established to represent traditional owners and the Warruwi community. The project included the development of a governance model for that organisation as the representative legal body. The researchers will document the TOA and YAC's preferred governance structures, decision making and negotiation processes and develop a governance model for YAC as the representative legal body.

The Fisheries and Aquaculture Governance Project Team (CDU and NT Fisheries) aim to work with the Traditional Owner Authoritative (TOA) structures for Goulburn Island; the Yagbani Aboriginal Corporation (YAC) Executive; and members at Warruwi (Goulburn Island). The researchers will document the TOA and YAC's preferred governance structures, decision making and negotiation processes. The YAC was established to represent traditional owners and the Warruwi community and the project included development of a governance model for that organisation as the representative legal body. The TOA members of Goulburn Island agreed CDU researchers be engaged on the Warrui Fisheries Aquaculture Project on the traditional land and sea country and negotiated to identify the key research areas as a work in progress. This research is being delivered within the research grant time frame of the FRDC and NTG funding guidelines and will assist the -

1. Warruwi Fisheries and Aquaculture Project to develop a fisheries and aquaculture plan that draws on their knowledge systems, languages, cultural practices, heritage, beliefs, fisheries experiences and values
2. Warruwi Women's Healthy Tucker Program under development to support Indigenous women to establish a small enterprise in a remote community
3. The Indigenous governance model underpins the practice currently operating within YAC structures. It is utilised to consolidate the work and augment the process to draft a culturally appropriate governance model into a preferred Warruwi Women's healthy Tucker Program business plan for YAC to utilise as an extension to their operational Aquaculture and Fisheries Development Plan being developed by an external consultant team for trepan enterprise development

The negotiated Indigenous research methodology will be applied by the CDU researchers seeking instructions from the YAC, TOA, Arrakpi Elders and other Arrakpi parties about how to support them with developing the Warruwi Fisheries and Aquaculture Project. The Project will benefit by the

establishment of culturally appropriate local corporate governance structures and processes to support cross-cultural fisheries and aquaculture enterprises.

As governments, Aboriginal people and their places change, and as the work of a researcher 'expertise' changes, we try to understand and engage the changes as local, emergent, and mutually constitutive. We try to ensure our work is *generative* – rather than representing a world 'out there'; and to clarify how generative research emerges as the role of the expert is detached from the apparatuses of state rule, and is increasingly governed by the rationalities of 'competition, accountability and consumer demand'. Sensitive to some of the contingencies of this work in our case studies, we notice some means through which these rationalities emerge in the practices of our research and explore way to make performance visible in our practical work/academic writing.





# Building Regional Research Capacity: Northern Research Futures Collaborative Research Network

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The Northern Research Futures Collaborative Research Network (NRF-CRN) supports Research, Development and Extension (RD&E) directed towards the development of Northern Australia. This paper provides an account of the Collaborative Research Network (CRN) program as a public policy instrument, and explains the specific successes of NRF-CRN in relation to northern development. With the CRN program now fully operational, outcomes are becoming visible and the full spectrum of benefits of the program is revealed.

**Rationales for public funding of RD&E.** The Productivity Commission's 2007 Research Report on *Public Support for Science and Innovation* (the "Report") identified two rather unproblematic reasons for public support of RD&E. First is the need for the governments to fund the RD&E required by government itself as it discharges its functions. Within the context of NRF-CRN many examples can be found in the 2014 *Green Paper on Developing Northern Australia* – including: RD&E to explore better ways to use and plan infrastructure; improved information about land title and use; comprehensive water resource assessment; development of business-friendly policies; engagement with international development in the region; and formation of capable and sustainable local institutions. Second is the existence of spill-overs that at the margin reduce the incentive for private investment. The benefit is particularly evident in relation to basic and applied research undertaken by research universities such as Charles Darwin University (CDU). When RD&E is publicly funded in universities, the public policy challenge switches from: (1) satisfying the needs of private investors who intend to capture the full benefits and prevent others from doing so; to (2) maximising public benefits from public funding by ensuring the highest possible levels of spill-over. This requires efficient knowledge diffusion systems including those directed at business. Collaborative Research Networks are an effective and efficient way to promote spill-over from publicly funded RD&E.

**Benefits from RD&E.** Economy-wide productivity is linked with advances in RD&E. The Report presents a set of models suggesting a positive productivity return for public funding of RD&E of around 50% in terms of spill-over and around 5% in terms of the contribution to growth in GDP. The Report also points to benefits produced by public funding of RD&E that are beyond those found in the market economy. For example, RD&E relating to environmental matters may produce benefits to the environment as well as benefits in the market economy. Examples include RD&E on salinity, pesticide use, biosecurity, energy and water resource management, bushfires, Australian coasts and the urban fringes.

**Public funding and regional development.** The question of public investment to support growth in regions is often framed around typography of regions that characterise (1) current productivity and (2) recent growth creating four categories, "less/more developed" and "low/high growth." The 2012

Organisation for Economic Cooperation and Development (OECD) report, *Promoting Growth in all Regions* demonstrates that areas classified as “more developed, high growth” generally contribute the largest proportional growth component in the national aggregation. The most recently available ABS economic data on Australia’s regions reveals a number of “more developed, high growth” areas that accordingly warrant particular focus for public funding for regional development. These are located towards the centres of the major cities, the ACT, the central Queensland coast and the Darwin region. Returns to public funding for regional development are likely to be higher when public investments are made into these regions.

**Universities and regional development.** The OECD report also finds that regional growth tends to arise from the simultaneous action of a number of factors for growth, such as infrastructure, human capital and innovation. Human capital formation is generally important and innovation frequently important in regional growth. The findings point to investment in education (at all levels) and RD&E as important contributors to regional growth. It is clear that public funding in RD&E in a “more developed/high growth” region like Darwin should be directed towards basic and applied research with strong encouragement for spill-overs, and to research that answers questions of importance to government services. In a region such as Darwin, the potential returns on public expenditure are particularly high.

**Policy instruments to build RD&E for regional development.** The CRN program originally envisaged a “hubs and spokes” model of research cooperation between universities and other research agencies. Suspicions about ambivalent commitments by hubs and the realisation that the spokes’ disciplines were not underserved in relation to access to rare research infrastructure saw the program evolve away from “star-shaped” relationships towards “teaming up” relationships where the objective was to draw on the strengths of other institutions to assist less research intensive universities to develop and adjust to higher performance expectations.

The NRF-CRN teams with Charles Darwin University (CDU) as the lead institution, the Australian National University (ANU), James Cook University (JCU) and the Australian Institute of Marine Science (AIMS). Its activities include institutional capacity building in research management and administration, attraction and development of a cadre of excellent early career researchers who are linked to and supported by a group of experienced research leaders, and a research agenda that is intimately connected to the core societal challenges identified in the government’s *Green Paper on Developing Northern Australia*.

Among the many lessons learned in NRF-CRN has been the value of linking CDU’s social scientists situated in the midst of the societal challenges of northern development to the larger, internationally connected social science research groups of ANU. As is often noted, researchers in universities such as ANU are globally positioned and by connecting with them CDU researchers access vibrant, contemporary conceptualisations to support their investigations of the relevant societal concerns. At the same time the cooperative arrangements imply that the new theories are exposed to and tested against real-world circumstances.

NRF-CRN is making a significant difference to CDU's research capabilities, especially in the social sciences relevant to addressing societal challenges of northern development. There is a compelling and urgent requirement for funding by the Australian government for the NRF-CRN or a descendent of it to undertake, absorb and diffuse the RD&E required to inform and guide the development agendas.



# Governing the Community Based Natural Resource Management Domain in Northern Australia: Challenges and Opportunities

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As a nation, Australia has a well-established and a broad policy and program delivery framework aimed at improving natural resource outcomes through enhanced community-based involvement. Intellectually, the program would seem well suited to southern Australian conditions, but in the north of the country, a number of particular environmental, social and institutional conditions pose major challenges for the successful application of the model. This paper briefly outlines the broad nature of this national policy framework. It then details some of the major barriers to its effective operation in northern Australia; hence limiting the efficient achievement of natural resource outcomes at landscape scale. These challenges are quite daunting. As a predominantly Indigenous domain, northern Australia is culturally very different from more developed landscapes in the south. Climatically, the window for undertaking operational activities is seasonally constrained in a major way. The broader natural resources challenges also primarily need to focus on the protection of existing ecosystem functions compared to the major focus on rehabilitating landscape functionality in the south. Having explored these differences, we then offer some insights into the progression of the model to date in the north, enabling us to suggest some key continuous improvements needed for better landscape outcomes.



# Land Tenure and Development in Northern Australia

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Land tenure issues are often considered as one of the significant barriers to encouraging development and investment in northern Australia. While tenure plays an important part in development, it is a contributing rather than the driving factor leading to uncertainty for investors. Indeed, resolving land tenure issues often depends on the resolution of higher level policy and land use conflicts. This contribution, based substantively on the work of JCU and CSIRO, synthesises some of the most critical issues that have previously been identified by the northern Australian Ministerial Forum (NAMF) with respect to tenure and northern development issues.

While the general principles of land ownership (predominantly freehold) under “common law” have been relatively stable in large parts of southern Australia, in the north, there is limited freehold title, and it is often clustered around major centres. Across the wider north, concepts of ownership on lands previously held by the Crown have also changed significantly in the last 30 years, with pre-existing Indigenous rights (e.g., Native Title) now having been recognised in law, and new statutory forms of land rights having been established. A perhaps more contentious reality has been that, in recent times Commonwealth, State and Territory regulation has also placed increasing restrictions on many of the tenure-based rights which would otherwise have accrued with land and natural resource ownership. Debates about land tenure in the north have been increasingly driven by economic development, and in particular, control of important resources such as minerals, prime agricultural land and conservation assets.

The case for improving tenure arrangements in northern Australia is compelling, but the challenge in doing so is substantial, requiring significant cross-jurisdictional cooperation and national investment in research and development. It will not happen quickly. The report to the NAMF proposed that efforts to reduce impediments to investment and development in northern Australia might be pursued in three distinct ways. The first is attending to tenure complexity through administrative or legislative reform. This could involve supporting collaborative research and policy development partnerships on critical issues of investment and financing on Indigenous tenures; developing consistent principles to guide tenure reviews in the different jurisdictions; and, improving the quality and accessibility of tenure-related data for northern regions. The second main pathway involves improving the efficiency of development assessment and regulation, including: clarifying major project assessment responsibilities between jurisdictions; better resourced negotiation and streamlined administration of assessment processes; and, resources to assist with tenure-resolution processes that arise following project approval. The third main pathway could focus on actions to improve the effectiveness of land and resource planning so that broader ‘regional’ or ‘landscape’ level signals exist about the preferred infrastructure and resource use futures for different northern

regions. Such planning would provide the broader context in which local level conflicts over tenure can be resolved.

Tenure reform in the north, however, must essentially preserve the rights of, and create opportunities for the north's traditional owners. Tenure is implicated in the ongoing social and economic disadvantage suffered by Indigenous people. Indigenous-led tenure reform on Indigenous tenures, therefore, has a role to play in ameliorating this situation. Finding the means by which traditional owners can leverage their land assets to raise capital for social and economic development offers great national and local benefit. This needs, however, to be able to accommodate informed consent and the underlying inalienability of title. In considering these issues support is required to progress policy options which will have general applicability to traditional owners across northern Australia. Such work could focus on:

- Progressively resolving ongoing native title/land claim issues;
- Supporting and resourcing the capacity of traditional owners to develop country-based / land use planning across their estate, township-based land use planning, and wealth generation strategies;
- Exploring further the most appropriate tenure and financial mechanisms for facilitating investment leverage (within Indigenous land estates);
- Supporting traditional owners to explore new and innovative governance models for managing aspirational/country-based planning and “wealth funds” emerging from economic development;
- Exploring some form of northern Australian “guarantee or trust fund” to support traditional owners with sound business investment projects to secure commercial finance, funded either from amendment to existing or new government funds, private sector investment or innovative investment of local traditional owner-based sovereign wealth funds at local scale; and
- Pan-northern partnering with lending institutions to build investment confidence

Given the complexity and diversity that exists within land tenure arrangements in northern Australia it would be understandable to presume the goals of efficiency and consistency are paramount in the quest for improving opportunities for investment. However, many of the most significant gains in terms of improving investor certainty, and improving development outcomes for northern enterprises and communities, will come from engaging with this complexity in constructive and more informed ways that recognise the unique mix of land uses, resources, rights and interests in northern lands.



# Pulse and Pause: Researching the Economic Future of Northern and Remote Australia

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We need to position remote and northern Australia for a prosperous and sustainable future. That outcome requires understanding of past developments to inform future assumptions and what they portend for northern Australia. This future has two aspects, the likely erratic economic development of the region and the separate but continuing marginalisation and impoverishment of its Aboriginal population.

## Economic Development History

Economic development in northern Australia historically parallels the “pulse and pause” model ecologists use to describe the natural biological systems of the region. Development occurs rapidly (the “boom”) and then pauses into stasis – often for many years. The second half of the 19th Century saw a dramatic “pulse” as industries such as mining, pastoralism and pearling irrupted into northern Australia (as did agriculture, particularly sugar, on the Queensland coast). In the 1950s pearling disappeared, destroyed by the plastic button. That industry remains in a more sustainable form, represented by the cultured pearl industry a high tech industry aiming at the luxury consumer goods market and not the mass markets of the past. Miners, now so important, were also significant in the expanding frontier of the north in the 19th Century.

After the rapid expansion of pastoralism from the 1880s to World War 1, this industry mostly paused. There have been brief revivals – as in the 1960s with the Commonwealth beef road program and mechanisation and contractualisation to replace Aboriginal labour. More recently the industry has sustained itself by live exports, although it appears some companies are interested in developing a more sophisticated model – based on vertically integrated supply chains.

Apart from along the maritime littoral of Queensland, agriculture has not driven economic development in the north. The east coast of Queensland has managed intensive development, initially around sugar, and features a density of large towns and cities that portend self-sustaining development. This region exhibits economic dynamics (coal mining aside), that make it distinct from the rest of northern Australia.

In the rest of north large scale agriculture has not been successful. In the 1950s and sixties large schemes, such as Humpty Doo rice, failed and the Ord River project has never repaid its capital. Agricultural development is often the political driver of northern development, rarely has it been an economic driver. It seems that this is currently the case. There is a case for more intensive agriculture in the north but designed sustainably around small locally efficient production and not dependent upon Federal investment in dams for irrigated broad acre cropping. Horticulture and

specialist tropical crops appear to have the most environmentally and economically sustainable prospects.

### **Recent Economic Development: The so-called “two-speed” economy?**

The idea of Australia’s “two-speed” economy that is driven from northern was fuelled by a recent gigantic investment boom in the construction of new mines and natural gas projects. The two-speed hypothesis predicated on producing primary products to capitalise on rapid industrialisation in China is overstated. Since the 1960s, northern Australia’s burgeoning resource extraction industries have been linked with Asian industrialisation, starting with Japan. The 1960s and ‘seventies saw economic “pulses” in the north based on these industries. Because they saw the construction of new towns (mostly in the Pilbara), this initial phase had more impact on long-term northern development than the most recent boom/pulse.

The core features of Australia’s so-called “two speed” economy are: the concentration of a growth industry’s central management in a growth metropolis (i.e., Perth) with much of the value added in the mining industry being created there and the demand for labour at the resource-producing periphery. Although Western Australia only employs 36 per cent of mining, including oil and gas, industry workers (Queensland employs 27% and New South Wales 21%, mostly in coal mining), it garners over 48 per cent of the mining industry’s value-added. Perth has become the epicentre of a wide range of resource extraction services companies engaged in support logistics, mining construction and design services, IT, finance, explosives, etc. Some of these – such as Leighton Holdings, Orica, Worley Parsons and Incitec – are now very large companies servicing resource extraction enterprises world wide. This is arguably the most significant development in the Australian economy since the economic restructuring of the 1980s restored Australian competitiveness and a shift to service industries.

In effect, northern and remote Australia has become part of Perth’s economic hinterland. Queensland is a little more complex because coal mining is serviced from a number of larger coastal regional cities, like Mackay. Nonetheless, Brisbane is not establishing itself as an economic metropolis in the same way as Perth.

The problem for remote Australia is the poor multipliers into the region of this resource extraction industry. Remote central and northern Australia is probably going to be weakly coupled to the engine of Australian growth over the foreseeable future. All this will be t significant – socially politically, and economically if the “super-cycle” of resource demand principally created by the industrialisation of China (and soon India?) continues.

This pattern of economic development has features that impact on northern Australian governments. The resource extraction labour force is largely supplied by Fly-In/Fly-out (FIFO) workers commuting from large towns not in remote or northern Australia (Queensland has a variation of this Drive-In/Drive-Out workers commuting from coastal cities to the coal mines of the Bowen and Gallilee basins). Such arrangements are a consequence of how mining companies have developed new “greenfields” projects; i.e., no longer providing a town to house workers because of the front-end



costs and the associated exchange rate and interest rate risks. The provision of housing, education, health and other services for the workforce is left to the relevant State and Territory (or local) governments. The extra costs of running a mine with FIFO labour comes off the Commonwealth's company tax receipts. So FIFO makes eminent sense for mining companies; its only down-side (for mining companies) is in exacerbating labour turnover. Governments have to worry about services, maintaining viable towns and relevant infrastructure; so bear most of the social and fiscal costs of resource extraction. The high cost of labour in the northern resource extraction industries means that mining companies will increasingly automate their operations. Over the next two or three or so decades, mining output growth will not be matched by employment growth and FIFO will wane. The resource extraction industries will drive northern growth but not northern development. The services industries will supply most future labour market and population growth and economic development.

### **Indigenous aspects**

These economic developments will have minimal beneficial elements for the Aborigines of remote and northern Australia. Their relative poverty, poor education and disconnect with the development of the larger Australian economy will – assuming current policy settings – probably get worse. Directly that is because Aborigines in remote and northern Australia generally lack the skills or aptitudes that allow them to participate in the current economy.

Continuing Indigenous disadvantage will partly be because Aboriginal society and the larger Australian polity contain paradoxes about the way forward. That is, that which is valued is internally contradictory. However advocates and some policies value and privilege Aboriginal connection to and ownership of land, which currently has generally negative implications for access to mainstream economic opportunities. Some public policies – usually under-resourced relative to need (e.g., “growth” towns seek Aboriginal involvement in the mainstream economy. This paradox is replicated in Aboriginal society, where there is widespread recognition of poverty and that only “real” jobs can reduce that problem, while at the same time patterns of relatedness and demand-sharing are valued notwithstanding that they prevent the achievement of the individual advancement which is at the core of capitalist economic progress.

### **Implications**

Indigenous disadvantage, particularly in economic terms, will persist and become more scandalous. This requires research to develop new forms of economy – perhaps a “hybrid” economy – in which Aborigines can and will participate. Aboriginal advancement remains northern Australia's most “wicked” problem.

The major Queensland coastal cities will continue to grow and their hinterland towns to languish relatively. Like Darwin they have become “soak” cities. Other major northern centres such as Darwin will continue to grow, but the long term driver will not be resource extraction, rather new Commonwealth governmental expenditure on national security and biosecurity. In Western Australia, neither Karratha nor Port Hedland, notwithstanding Premier Barnett's stated intentions to make them cities of 50,000 persons each, is likely to match the growth of Darwin (or Mackay,

Gladstone, etc). The economics of agglomeration is against them. The continued growth of Darwin will exacerbate the problem of urban bias in the Northern Territory's public policy that leads to under-funded and under-performing services to Aboriginal communities.

There are core problems in northern Australia that merit serious research including:

- The environment: how to manage that to achieve sustainable economic growth and broadened economic opportunities
- The population: how to retain immigrants and educate them to produce a forward-looking labour market that can respond to new opportunities, especially in services industries and how to produce an economy for the Aboriginal population; and
- Infrastructure: how to create the infrastructure that makes northern Australia both a worthwhile place to live (education, health and cultural and recreational infrastructure) and economically efficient (physical infrastructure)

These are the issues that researchers and policy makers interested in the economic development of northern Australia must consider.



# Place Based Regional Planning and Development in Northern Australia

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Northern Australia is not a homogenous region. Rather it is a collection of regions north of the Tropic of Capricorn, each with their unique and different characteristics. Development should logically follow on from planning activities, however, there are varied and at times opposing views on development that obscure the realisation of community aspirations for the way in which their settlements are spatially arranged and economies are transformed. There is a high risk of the continuation of a bifurcated society in northern Australia between the 'haves' and 'have nots' from current policies and proposals to develop the north.

It is suggested that larger development projects in the north have fallen well short of their stated intentions and benefited a small but elite group of 'haves', while many of the local long term residents, including the Indigenous residents, are relegated to a group of 'have nots'. This chapter will explore these issues through two case studies of communities' to set a context for why new approaches to planning and development are required that are tailored to local and regional circumstances. The chapter concludes that a place based planning and development model (endogenous and community based) is warranted given the failure of past approaches across most parts of northern Australia.

Land use planning is about how communities make decisions about the spatial allocation of resources and prioritise action strategies to meet predetermined objectives and outcomes. There are suggestions that planning implies an ethical commitment to the future, to make a difference in the world, or is a persuasive storytelling about the future. Regional planning theory and practice has not yet been subjected to the same level of scrutiny and theorising as urban planning. Regional planning appears to have two dimensions, one being to gain economic efficiencies through the spatial organisation of a region, and the other, to address problems associated with backward regions in industrially advanced nations.

It is also suggested that there is a tendency to interchange the words 'development' and 'growth' each with connotations of very different concepts. Development is generally associated with production and wealth creation, but it can also connote improvements in social well-being, living standards and opportunities. Often the real social and cultural costs of development are borne by the poorest and least powerful.

There is still significant disjuncture between regional development and regional planning. Moreover there is no literature to describe the relationship between development, planning and the circumstances that some communities face in northern Australia.

Our case studies will compare and contrast the characteristics of the 'haves' and 'have nots' in two remote communities in northern Australia. A case study review of communities in the Dampier Peninsula in Western Australia describes what the *Have Nots* (Aboriginal people) think about the policy that the *Haves* (government) created on their behalf to reduce income inequality, create jobs and stimulate local economic development. The other case study uses data collected from Long Distance Commuters working in the mining sector in the Cloncurry Shire and from the youth attending the three schools in the Shire regarding social infrastructure and service provision. The data is compared to highlight the differences between the *Haves* (commuting miners) and the *Have Nots* (youth in Cloncurry Shire).

We will conclude that place-based approaches to planning have the potential to be more successful than externally driven top-down processes. It is our contention that working with local communities to understand their demographic characteristics, needs, aspirations and values is vital to creating workable solutions to improving their well-being. Social infrastructure and services are critical to the future development of northern Australia. Identifying the spatial unit that communities self-identify with and can relate to are key to setting the context, and these are often different to the jurisdictional boundaries that government policies and programs work within. Remote communities do not stop at politically defined boundaries.

Place-based approaches to planning are not well understood in the literature or in planning practice, yet remain the preferred approach to addressing the economic and social woes of remote regions. This chapter will provide a framework for future research that creates linkages between planning and development activities in rural and remote communities in northern Australia to reduce the disparity between the *Haves* and the *Have Nots*.



# Unseen Changes: A Brief History of Climate Variability in Northern Australia

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This chapter addresses climate and climatic variability: the vital context in which all living in the north takes place.

People have studied the skies above northern Australia for millennia. The first students were the first peoples, and their watching linked land, sea and sky. When the British invaded they did not seek to learn about the region's atmospheric dynamics from people who had long been here. They imported their own understandings. For well over a century Western, scientific knowledge forced Indigenous knowledge into a parallel epistemological universe.

British observation of Australia's northern skies was diligent and meticulous. Efforts of later Australian meteorological networks were even more so. Across north Australia newcomers have recorded millions of observations. Volumes of rain, fluxes of temperature and atmospheric pressure, percentages of relative humidity, and rates of evaporation have been measured and enumerated. Their efforts have bequeathed an ocean of data. Yet we still have little grasp of a hallmark of the region's climates – its variability. Variability is so little understood that the Australian Academy of Science (AAS) identified this deficiency as a serious challenge to plans to develop northern Australia in its response to the Federal Government's Green Paper. This chapter is a first, lucid, step to address this.

However, climate across northern Australia has long been misunderstood. It remains largely misunderstood by policy makers, the media and the wider public in Australia's south. Australia's tropical north is seen as monolithic, experiencing seasonal binaries of six months of rain and six of drought each. In contrast, indigenous people across the north recognise six distinct seasons. The north is understood to have a clockwork climate of a Wet/Dry dyad flipping regularly at the same times each year. Underlying this is the same powerful notion underlying Western study of seasons and climate: that climate works to a mechanical precision and regularity. Statistical instruments such as means have reinforced this - seeing averages as approximating reality and standard deviations as aberration and error. To illuminate these issues this chapter will provide a brief history of ideas relating to tropical climate; particularly, how they were understood and how they were used in northern Australia. Crucially this history will show how variability became virtually invisible in meteorology and climatology for most of the past 130 years and how it is still not appreciated fully. This history will also show how these ideas have made perfect sense and how they were useful for so long, a fascinating conundrum given that farmers, pastoralists and poets across Australia have

long been aware of its climate variability through more experiential knowledge. Inherent in this history is a challenge to recognise blind-spots in the present.

We will also reflect on the concept of variability itself. Now firmly in the era of anthropogenic climate change, it is crucial to distinguish variability from climate change and to think about how excess levels of CO<sub>2</sub> might change climate variability itself. So, what exactly does variability mean? Has this meaning changed? How has it been used? How can it be used more effectively? Answers to these questions will, in part, come through historical examples. Through a detailed and analytical historical narrative this chapter reveals that northern Australia has a far more variable climate than is widely supposed: variable across time as well as space. It examines meteorological data from Cairns, Darwin, Daly Waters and Broome dating from as far back as the 1870s. The focus is mainly on rainfall. Historical narrative enables an examination on the timing of rain and of temporal patterns at the time scale of the day, something that calculations of variability based on volumes from one year to another cannot capture.

Our narrative also captures variability on much larger time scales. Inter-annual variability is associated with El Niño and La Niña years, but in some locations, even longer inter-decadal variability at a scale of 50-100 years is evident. This latter trend suggests alternating drying and wetting periods that are demarcated by tipping points when a change occurs over a very short period of time. These patterns, regardless of temporal scale, are reflected in stream flow variability; higher flows occur during wet periods and lower or no flows during dry periods. In combination, rainfall and stream flow define landscape responses and condition, but also impact on human activities including water use, with implications for policy planning and development. In this chapter, the relationship between rainfall and stream flow is explored for the Daly River and Elizabeth River catchments, in the Northern Territory. These catchments vary significantly in area and hydrology, with the Daly River flowing throughout the year, whilst Elizabeth River is an ephemeral system with no freshwater flows during the dry season.

This chapter brings an important and unrecognised climate phenomenon out of the shadows. Rainfall histories indicate that the middle months of the year are reliably dry, and intense rainfall can be expected at some stage during the early months of the year, as is widely known. But rainfall gradients can be steep, and most of the Wet Season rainfall occurs closer to the coast. In addition timing is far more complex and variable than understood by policy makers, and plays out on a variety of time scales, large and small. In the broader environmental context we should also bear in mind that even in Darwin, evaporation exceeds rainfall in most years. Best available information suggests that climate change is driving longer, drier dry seasons, and shorter but wetter wet seasons, with an increasing probability of experiencing extremely intense tropical cyclones. Coupled with one of the highest rates of sea level rise on the planet (18cm over the last 20 years around Darwin), these trends are problematic for infrastructure, coastal settlements, agriculture, energy generation and living in the far north. To address issues of human habitation and development and to make the most of any emerging opportunities we must understand all aspects of this vast region's climatic complexities.

# Heat Stress, the Labour Intensive Workforce and Social Wellbeing in the 'Top End' of Northern Australia

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Exposure to heat has killed more people in Australia than any other natural hazard. As the climate warms, temperatures are projected to rise substantially, increasing the heat health burden. Yet heat is a 'silent killer:' its morbidity and mortality effects are difficult to distinguish from other causes. Indeed, the vast majority of responses and presentations are for cardiovascular and respiratory health issues as opposed to the direct effects of heat exposure that manifest as severe dehydration and/or heat stroke. However, surges in the overall number of daily paramedic responses and emergency department presentations correspond with heatwave events indicating the widespread impact of heat on human health in Australia.

While substantial research has been conducted for other Australian states, a significant knowledge gap remains regarding the current impact of heat stress on the population of the Northern Territory. For all other states and territories, the majority of their populations live in regions where heatwaves occur as short spells of particularly hot and dry weather. By contrast, the majority of the NT population live in the monsoonal north, which experiences prolonged periods in which temperatures range between 32 and 40 degrees in combination with high humidity. These conditions reduce the effectiveness of human thermoregulation as environmental moisture prevents sweat from evaporating and dissipating bodily heat, which has negative impacts on human health in the form of heat stress.

The monsoonal north region of the Northern Territory (NT), the 'Top End', is well known for these conditions, which occur on a daily basis during the Wet Season and are most severe during the 'Build-up' months of October and November. Heat illness incidents have caused permanent disability or death in the 'Top End' of the Northern Territory. Such tragic outcomes, in combination with severe environmental conditions, indicate that heat stress is likely to be a pervasive problem in the region. Yet there is currently an absence of data for total heat-related morbidity and mortality in the region, or indeed the NT as a whole. As such, there is a need to identify the current impact of heat stress as a basis for the development and implementation of effective health and social policies, such as those relating to preventive health measures and the development of a prosperous economy.

Heat stress is not caused solely by environmental heat. Apart from in the elderly and infants, heat stress is usually the result of environmental conditions in combination with endogenous heat production due to physical work. This means that the labour-intensive workforce, operating in un-cooled and/or outdoor environments is most at risk. Recent research by the National Critical Care

and Trauma Response Centre shows that emergency response personnel in the Top End demonstrate high levels of physiological strain, with many exceeding occupational guidelines for body heat storage. Anecdotal reports of heat stress are common in the Top End labour-intensive workforce, indicative of widespread experience of heat stress. Such reports also connect protracted heat stress with increased alcohol consumption as workers seek to escape physical fatigue. Interestingly, alcohol consumption tends to increase dehydration thereby reducing resilience to heat stress and desensitizes individuals to heat stress symptoms, undermining effective management.

At present, there is no research into a connection between alcohol use and heat stress in the Top End. However, the Northern Territory has the highest alcohol consumption of any state/territory jurisdiction in Australia. In 2013, the Northern Territory Government reported that the estimated per capita pure alcohol consumption (PCAC) was 12.84 litres per person for the 2012-13 financial year, which is substantially higher than the national PCAC average of 9.88 litres per person for 2012-13 as reported by the Australian Bureau of Statistics. Since there is no data regarding the wider health impacts of heat stress, there is currently no capacity to identify whether any correlation exists between per capita alcohol consumption and heat stress levels. The importance of understanding this connection is two-fold given recent policy commitments by the Northern Territory Government to build a prosperous economy through a focus on labour-intensive industries, including mining, agriculture, construction and infrastructure.

Heat stress is likely to have a wide range of negative health, psycho-social and economic implications for the Top End. If a relationship between heat stress and alcohol use is found, these implications are even more profound. Both heat stress and alcohol use can affect individual health and wellbeing, while the symptoms of heat stress and alcohol use can also negatively affect family and community wellbeing. Recent research by the NCCTRC demonstrated that there is evidence of hot and humid weather impacting upon the psycho-social resilience of the Top End population: in the six months from October to March, assault related deaths were 3.3 times, and intentional self-harm related deaths were 1.8 times, more likely to occur than during the cooler months from April to September, respectively.

These impacts may influence economic participation in the Top End, including through workforce attraction and retention. International studies demonstrate a clear, negative relationship between environmental heat and productivity in the workplace. To understand the interactions of heat stress, alcohol use, economic participation and wellbeing, there is a need to consider whether the following effects are present:

- Decline in productivity due to physical discomfort and exhaustion
- Reduction of individual, family and wider community wellbeing due to heat stress symptoms including fatigue, irritability and aggression
- Increased alcohol consumption as workers seek to escape physical fatigue, resulting in decreased physical and psycho-social resilience with negative effects on family and community wellbeing



- Reduction of workplace retention as workers leave to seek more tolerable conditions, and/or are physically or psychologically unable to work in Top End conditions
- Reduction of desirability of living and working in the Top End as it becomes known as 'difficult to work in', impacting workforce attraction and retention

With such an array of potential heat stress effects, there is a need to formally quantify the impact of heat stress on the Top End population, particularly the labour-intensive workforce. Given the complex relationship between heat, work, wellbeing and alcohol use, there is also a need to explore in detail what levels of heat stress are experienced by those most exposed through outdoor work and intensive physical labour, with a view to identifying where public health policy and practice can contribute to improved wellbeing and economic participation. This chapter will explore an appropriate methodology to identify heat stress related morbidity and mortality in the Top End, and how this will be integrated into qualitative research that explores the relationship between heat stress, alcohol use and social wellbeing.



# Issues in Future Development of Tourism in Northern Australia

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An analysis of visitor trends in northern Australia over the period 2000 to 2013 paints a picture of a tourism sector that has stagnated in many areas while in a state of decline in others. The situation looks even worse when compared to the growth of tourism globally over the corresponding period. At face value, indicators of stagnation or decline point to market failure and the need to make decisions related to the role of tourism as an economic sector in the future. Decision making in circumstances of this nature requires an understanding of several issues. These include: the destination's comparative and competitive advantages; its level of competitiveness; a realistic assessment of tourist push factors (supply side characteristics) in existing and potential markets; a realistic assessment of the drawing power of the region's pull factors (demand side perspectives); the involvement of the local community; and an in-depth understanding of the structure of the current and possible future markets. This paper examines a range of issues related to market failure and the search for a way forward.

In 2013, the combined domestic and international arrivals for Darwin were 9% (or 524,000) less than arrivals in 2000 (574,000). In Broome, combined domestic and international arrivals in 2013 were 30% (300,000) less than arrivals in 2000 (426,000). In Cairns, total visitor numbers in 2013 mirrors those of 2000. The extent of the study region's failure to match arrival figures in 2000 is magnified when compared to the 68% growth of global international arrivals over the same period.

These statistics raise a number of issues that need to be addressed by the tourism sector, the public sector and the host communities who rely on tourism for employment. In economic terms, the basic issues revolve around supply and demand and on a broader scale, relate to the long term ecological and in some cases cultural sustainability of tourism in the region as well as the desire of the region's communities to continue to promote tourism as an economic sector.

Stagnation or decline in destinations generally indicates that previously popular experiences are either no longer in demand or have not been refreshed in a manner that continues to attract consumer interest. In the former case, where demand has declined, the most effective response is to develop new tourism experiences to replace the inventory of unpopular experiences. In the latter case the most appropriate response is to rejuvenate experiences to bring them into line with contemporary market expectations. Other factors apart from the type of experiences offered may contribute to the decline, including changes in exchange rates, political uncertainties and changes by airlines in their service levels. Each of these factors has had an adverse impact on the region in the past.

Previous research has highlighted the centrality of nature to the tourism experiences marketed by the tourism sector in northern Australia. This being the case, the region faces either a situation where its natural experiences have become less appealing than in the past or the manner in which nature is presented is dated and needs to be refreshed. In the case of northern Australia there is evidence that suggests both trends are occurring. Recent research in Cairns suggests that the popularity of the Wet Tropics World Heritage Rainforest is falling over time and that the total numbers of visitors to the Great Barrier Reef is declining.

In the Northern Territory, the decline in interest in nature based experiences is demonstrated in Kakadu National Park where visitation has been steadily declining since the financial crisis in 2008. The tourism industries' marketing of Kakadu overwhelmingly exploits natural and cultural values to draw international and domestic tourists to the Northern Territory. It is clear however that the Kakadu experience portrayed by Tourism NT through dramatic photos of landscapes and cultural artefacts is not succeeding. One criticism has been that marketing does not promote Kakadu as Aboriginal land despite clear statements to this effect in the Kakadu Plan of Management. As a consequence the need to balance tourism and potential conflicts with environmental, social and cultural meanings of 'place' has yet to be resolved.

The demand for desert experiences is also declining as demonstrated by the fall in visitor numbers to Alice Springs, Uluru and surrounds. Between the period 2002 and 2013, combined domestic and international arrivals fell from 693,000 to 502,000. While natural experiences are still the major motivation for tourist visitation to this region, Indigenous cultural tourism is also important. Unfortunately, tourist expectations of Indigenous arts and culture are not always met, leading to a reduced level of tourist satisfaction. To remedy this situation, a change in focus from artefacts to Indigenous cultural tours and interactive activities that integrate cultural perspectives into the specific landscapes or locations has been suggested. A change of this nature has the potential to provide "value-added" and "authentic" products for tourist consumption as well as providing improved livelihoods to Indigenous communities.

Revitalising northern Australia's tourism sector will not be a simple task because the tourism sector has yet to accept the need for rejuvenation; and the public sector has failed to recognise that the appeal of nature no longer resonates to tourists the way it did in the past. Fundamental to any strategies initiated by the public or private sectors is the need to understand the contemporary visitor and provide them with experiences they desire. This is not an easy task particularly as visitor tastes are constantly changing. In 2014, it appears that the region in general has both failed to recognise that its customer base has changed and that it needs to change in parallel with its customers. Rectifying this situation will require funding of new research into tourism demand; building of a visitor monitoring systems that enables early detection of changes in demand; and encouragement of the supply side to respond to changes in tourism demand by changing their product offering.



# Attracting and Retaining Migrants: Developing the Northern Australia Workforce

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Small and dispersed populations, difficulties in attracting and retaining people and high turnover, hinder economic and social development. The Northern Territory has the highest rates of residential mobility (immigration, emigration and total population turnover) in Australia. Despite a relatively large inflow of population from other parts of Australia the Northern Territory continues to experience labour shortages. This paper considers issues in attracting and retaining international migrants in the Northern Territory.

Australia has always relied up on immigration to grow its population and immigration is a policy lever to accelerate population increase in the north. Nevertheless, only 1% of total immigrants to Australia come to the Northern Territory every year. Between 2001 and 2006, 6,000 international and over 30,000 interstate migrants moved to the Northern Territory. There is considerable potential for targeted migration programs to be better used to develop the northern labour force e.g. the State-Specific Regional Migration program offers reductions in assessment requirements for those settling in designated regional areas. Refugees and other humanitarian settlers in the past have settled disproportionately in Australia's capital cities however recently, many have been re-settled in regional towns. They are playing an important role in meeting labour shortages in these areas and can likely play a significant role in increasing the northern labour force. Northern population growth could be facilitated by attracting and retaining some other classes of migrants, particularly international students who can apply for permanent residence and also add to the skill pool. Education is one of Australia's largest export industries and over half of the increase in skilled migration in Australia has come from the on- and offshore international student pool. There is evidence that international students who study in regional universities are much more likely to work regionally post-graduation. Attracting international students to regional areas and encouraging them to stay through internships and work opportunities after graduation should be a priority.

Despite labour shortages the potential contribution of immigrants is underutilised. While immigrants have higher employment rates than the Australian-born population, many immigrants are underemployed. A decade ago 47.3% of permanent visa holders in the NT held overseas qualifications suitable for professional-level jobs, but only 28.3% of the immigrants performed those jobs, while 42% were employed in lower and unskilled occupations. Almost 25% of immigrants to the NT were born in Asian countries, the majority from the Philippines and Indian subcontinent. They form the backbone of the health and human services workforce in regional Australia. In comparison

to Australia as a whole, the NT received a higher proportion of recently arrived, young overseas-born nursing professionals. This proportion has been growing and at the 2006 Census they represented 27.4% of the nursing workforce in the Territory. If they gain the necessary experience and stay in the NT, they could provide continuity of service frequently lacking amongst Australian-born migrants. In a major study it was found that the main reasons overseas-born nurses stay is a sense of professional independence and responsibility, income, and lifestyle, whilst Australian-qualified nurses cited family and social networks elsewhere as the main reason for leaving the NT.

Immigrants from increasingly diverse origins will be accompanied by equally diverse education, training and work experience backgrounds. Their needs for skills recognition, further education and training and appropriate support to successfully undertake desired and/or required training needs informed consideration. The immigrant-born are also well-represented in the early childhood education and care (ECEC) sector in the NT. This is an industry of choice for many immigrant-born women. At the 2011 Census, 27.5% of the ECEC workforce was immigrant-born, a greater proportion than employed nationally in the sector (24.8%). Key issues in their attraction, training and retention in the NT will be discussed based upon recent research on the early childhood education and care workforce in the NT. immigrant workforce.

Under-utilization of skills gained in countries of origin can be addressed by bridging programs that enable overseas-qualified professionals to work independently soon after arrival. Employment barriers include lacking knowledge of Australian-specific aspects of the job market, processes professional bodies put in place for gaining recognition of qualifications and employer and workplace attitudes. Employment integration facilitates the benefits of immigrants' "social capital", their transnational networks and shared knowledge of home and host society's norms as well as enhancing commercial opportunities and cultural benefits for Northern Australia.

Migration entails substantial mental, emotional and financial investment. Not mastering the emotional and physical preparation and integration processes can cause mental health problems, problems in personal relationships, underperformance at work, financial hardship and ultimately antagonism towards locals and local culture. These outcomes can lead to migrants leaving. Population loss through return migration can be reduced by assisting immigrants to successfully integrate in their new environment.

Successful integration is critically determined by the mindset and capabilities of people migrating, and by contextual factors in the locations of origin and destination. The composition of the immigrant population and achieving critical mass of immigrants is important in attraction and retention particularly of non-Anglophone migrants as social networks provide critical information and support. Employers and host societies critically contribute to both attracting migrants and to migrants leaving. Strategies to encourage retention are identified in the paper.



# Critical Systems Thinking as a Framework for Systemic Governance Analysis: An Approach to the Governance Challenges of Northern Australia

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Northern Australia's diversity, complex history and the resurgence of interest in its natural resources and strategic location have provoked a rethinking of how the development of the region will be governed. The social complexity of Australia's north creates both a richness and vulnerability of its populations as attempts are made to make governance systems within the north more comprehensive. This complexity presents liberal governance and neo-liberalism a new frontier for exploration and expansion. At the same time, however, the north is a place of unruly ecological and cultural 'otherness'; a place full of systemic differences that do not behave or respond to more centralized governmental interventions as expected. This disjuncture is both a source of opportunity and threat to the effective governance as those with a new interest in the region seek to (re)order its cultures, ecologies and economies.

In previous work, the Northern Research Futures Collaborative Research Network identified three thematic tensions in the governance of northern Australia. These are 'big development,' 'big conservation,' and the pursuit of 'indigenous wellbeing'. We have previously noted that these tensions have occurred because of the failure of southern powers to engage in deep, informed and sustained dialogue embedded in and responsive to the people and places through which change or development is actualized. To respond to this governance failure, we argue for a more systemic approach to governance that recognizes the ontological and epistemic multiplicity and incommensurability of the worldviews and values of northern Australian societies.

To deal with these problems, we develop a more systemic approach to the analysis governance through the exploration of Critical Systems Thinking (CST) as a framework for engaging this multiplicity in a way that enables open engagement with difference with the aim of generating governance systems that are both ethical and effective. We then identify Systemic Interventions (SI) within CST as a particular mode for enabling active regional engagement in any national discussion about the reforms of northern governance systems; making these systems more encompassing of difference and responsive to regional context. Finally, as a particular and practical method for engaging with governance systems through SI, we develop a modified version of a new tool called Governance Systems Analysis (GSA). The application of GSA aims to improve the governance of social and ecological systems by analysing the health of the governance system itself, and supporting key system players to negotiate systemic reform.

**What is Critical Systems Thinking and Systemic Intervention?**

Critical Systems Thinking (CST) is a theoretical approach to understanding complex systems that does not assume a universal objective truth. This allows for and values ontological and epistemic multiplicity, and tolerates the presence of incommensurable paradigms and the non-linear emergence of social system. Methodologically, the application CST covers a range of approaches but is united by a common set of principles focused on the essential role of critique, emancipation, and pluralism in analyzing and intervening in systems, including some six core commitments:

- *Systems thinking* accounts for the way in which the whole emerges from the contingent interaction of its parts, and is a discipline for considering complexity and change
- *Critical awareness* is enabled through an ontological engagement with the underlying assumptions of any system explicit and open to questioning
- *Theoretical complementarity* avoids assuming an exclusive ontology and epistemology to enable context-driven open engagement with multiple theoretical approaches
- *Social awareness* is a commitment to identify the normalizing effects of power in society, and the role of social conventions in (de)legitimizing particular knowledges or practices
- *Methodological complementarity* is a commitment to allow every 'problem' to generate its own range of methodological approaches and solutions
- *Human emancipation* expresses a commitment to enabling, insofar as possible, the ability of individuals and collectivities to self-order their knowledges, practices and identities

Systemic Intervention (SI) is a non-linear approach to managing complex problems. Rather than identifying a particular outcome at the outset, it seeks to generate new understandings from the existing capacities and characteristics of the system. In doing so, SI relies on boundary critique to enable the six core commitments to be met in practice. *Boundary critique* entails a focus on the process of knowledge production, which enables second-order, reflexive judgments that place that knowledge within a paradigm of multiplicity and incommensurability. Therefore, making boundary judgments becomes a deliberate practice of identifying knowledges and their agents as participants and interventionists in a contingent space of knowledge production.

Boundary critique relies on foregrounding the role of power relations in order to enable, in practical terms, a meta-critique that encourages all paradigms to be explicitly and equally considered as legitimate in the process of identifying and intervening in a system. This practice seeks to consciously identify which elements, influences and identities are included or excluded from analysis and who benefits and who suffers as a result. This also allows alternative, even incommensurate, paradigms to engage with each other in the 'localised' practice that can itself generate new knowledge and practice. Hence, as a deliberative and emancipatory practice, SI enables agents to form a strong commitment to the policies and programs that they produce.

### **Governance Systems Analysis**

While Governance Systems Analysis (GSA) has previously been linked to structural functionalism, it takes seriously the critique that structural-functionalism is overly concerned with maintaining societal

equilibrium, and utilizes its principles to explore transformation. In doing so, the careful application of GSA moves systemic analysis towards the two fundamental ideas behind systems thinking; inter-relatedness and emergence. GSA clearly references concerns with agency and participatory processes to achieve a more ethical and efficacious outcome by involving multiple stakeholders in addressing complex problem. This nascent concern with *social awareness* and *human emancipation* has prompted this rearticulation of GSA in terms of CST.

Through strengthening these critical commitments, GSA can be used as a boundary critique tool during SI. With a CST foundation GSA becomes consistent with the second core commitment of CST: raising *critical awareness*. Critical awareness enables *theoretical* and *methodological pluralism* which invites systemic agents to communicate across a range of value and ontological positions, and to draw on and purposefully mix methods from several methodologies, enabling deeper engagement from a greater number of actors. Its application provides a flexible and responsive approach than might be possible with a more limited set of tools. In this way, GSA can aid in generating more meaningful engagement with the fundamental values, rationalities and technologies through which systemic components communicate and organize.

As a practical method of informing and guiding intervention, GSA analyses governance systems through a matrix made up of five commonly identified and normative steps of policy-making, which are: *vision and objective setting*; *research and assessment*; *strategy development*; *implementation*; *monitoring, evaluation and review*. These are evaluated against three more functional characteristics of healthy systems, which are: *knowledge use*; *connectivity*; and *decision-making capacity*. In the full version of this chapter, this matrix will be re-developed in systemic terms to give GSA more traction on the effects of power relations and the role of knowledge and communication. This provides a clearer identification of the reformative feedback loops needed to support the healthy operation of governance systems and their ability to respond to change. Such a practice of systemic governance analysis supports the governance system of northern Australia to become more effective by building the strong relationships and trust necessary for making development visions, strategies and implementation genuinely effective.





# The Demography of Northern Australia: Implications for Development

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Understanding the past, contemporary and likely future demographic makeup of northern Australia is central to notions of further developing the region. Demographic research builds understanding on the directions, causes and consequences of population change and the relationship of these to the economy and society. While a range of literature on northern populations in Australia is available, almost all have been spatially (e.g., State, local, regional) or cohort (e.g., Indigenous people only, international migrants only) specific. As a consequence, substantive work analysing, theorising and building knowledge on key population issues for the region have been scarce; particularly for addressing the key issue of, what makes the north different and why such differences matter?

Nevertheless, theories on 'what matters up north' for understanding the causes and consequences of population change have begun to emerge from international cross-comparative studies to northern parts of developed nations elsewhere. One theory proposes that the systems of human interaction (demography, economics, social systems, health systems etc.) are different in sparsely populated or remote areas like northern Australia when compared with urban or rural ones. The differences can be conveniently described using eight words that start with the letter 'D' – detailed, diverse, discontinuous, dynamic, dependent, delicate, distant, and disconnected. Under this lens, populations in such regions can be understood by the engagement of alternative techniques and methods to formal demographic techniques for demographic study in other, more urban, settings. These techniques encourage interplay between social, economic and demographic research for understanding how and why populations are changing.

Central to the issue of what makes northern populations different (and the other D's) is an understanding of the sorts of people present in the population at a point in time in the past and present, who comes and goes as residents, and who comes and goes as non-residents (tourists, non-resident workers, mobile internal residents and so on). This is because, while natural increase (the excess of births over deaths) underpins consistent population growth, rates of growth across successive time periods (for example quarters or years) and significant changes to the makeup and distribution of the population are invariably a result of changes to past migration patterns for residents or non-residents. Having been settled some time before Australia's north, there are benefits from learning about northern issues from northern regions in other countries like Canada, the USA, Greenland, Russia and the Nordic nations. Literature is extensive across a gamut of issues including why Indigenous women leave small remote settlements; how and why non-resident workers influence population growth and change for residents; how 'southern' economic fortunes influence (or not influence) northern economies; and, why northern regions continue to attract sporadic policy attention as a 'project'. These studies advocate for a systemic approach to

demographic research; and this deviates from the very specific nature of demographic research elsewhere.

For northern Australia, a broad view of who comes, who leaves and who stays has not recently been presented. Using analysis of these issues as a basis would update us on the issues which might help or hinder northern development. In addition, such knowledge is key to projecting what might eventuate in terms of population size, composition and distribution for the region into the short to medium future. Census data permits the flows of residents and non-residents to and from northern Australia to be understood according to key variables like age, gender, income, employment status, family types, occupations, industries of employment and housing situations. It also enables a picture of the main sending and receiving areas elsewhere in the nation to be determined; again a key factor if the pursuit of attracting more people to the north is thought to be important from a policy perspective.

In this study, presentation and chapter, we analyse the flows of residents and non-residents to northern Australia (as it is spatially described in the current White Paper) and use this as a basis for population projections for the immediate future. The research is based on two questions in the Census.

1. Asked people what their usual address was one and five years prior to the Census (for resident flows in and out of the region or for looking at who stayed); and
2. Asked people whether they were located at their place of usual residence on Census night (to look at both non-resident workers and other non-residents in the north at the time of the Census, as well as the locations of northern residents outside of the region on Census night)

The population projections use two methodologies. Firstly, a naïve projection is made based on growth rates for the period 2001 to 2011. Some evidence has recently emerged indicating that naïve projections for sparsely populated areas (SPAs) can provide relatively accurate projections (a critical issue given the co-released information of high rates of projection errors for SPAs). The second method is a stochastic approach under which random settings within a range (upper and lower) of the key components of population change (e.g., fertility rates, migration rates) are selected by the model for each of several hundred runs, with the average, high and low results produced to indicate the potential ranges in population size into the future.

As well as highlighting the key issues for northern Development, this work will flag the existing gaps in knowledge and research which are fundamental to targeting policy and investments for northern development. From this, a proposed research agenda will emerge and should form the basis for the next stage of work to implement the northern Australian development agenda.



# Place-Based Agricultural Development: A New Way of Thinking about an Old Idea in Northern Australia

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A northern food bowl continues to be a central theme in discussions about the development of northern Australia. This is despite over a century of failed attempts to develop broad scale cropping in the north, beyond coastal north Queensland. The cycle of publically expressed expectation for northern Australia to produce food and fibre through broad-acre cropping is discussed as a 'circular conundrum'. This circular conundrum begins with high expectations, moves to cropping attempts, then usually to failure, and back around to high expectations.

This paper argues that we must learn from these past mistakes and embrace new models of agriculture if we are to move beyond this cycle of failure to ways that enable agriculture to contribute to regional development in northern Australia. Models grounded in place-based approaches that expand our vision beyond traditional agri-industrial approaches to agricultural production supplying bulk commodity markets. These new models include post-productivist and rural development models of agriculture. Post productivist agriculture provides an opportunity to leverage northern Australia's unique environmental values through ecosystems services; while rural development approaches to agriculture development support diversification, value adding and the development of regional supply chains for agricultural products.

These new models rooted in regional competitive advantage provide a new lens for considering agricultural development in northern Australia. They are incorporated within a place-based agriculture development framework recently developed in north Queensland. This place-based agriculture development framework provides a tool for policy makers, industries and communities to explore the different contributions agriculture can make. Encouraging new narratives and visions for northern agriculture grounded not on old myths but on a deeper understanding of place and the diversity of northern Australia.

Learning from the many experiences over the last 150 years, it becomes clear that contrary to first appearances, there are little of the necessary capitals for broad-scale cropping in the north, whether natural, social, human, physical or financial.

The final relationship in the cycle is between failure and continuing high expectations - the mystery of the continuing circular conundrum. These reflect our society's slow intermittent journey in developing Australian landscape literacy, and our even slower journey to develop complex systems literacy, including a capacity to deal with variability and complexity.

Place-based approaches encourage collaboration between a range of different actors including industry, community, businesses and government to tackle complex social, economic and

environmental problems within a defined geographic location. They provide a new way of looking at agriculture in northern Australia through participative and deliberative untangling of the systems variability and complexity.

They have been adopted as a framework for natural resource management in Australia and form part of the Australian Government's Indigenous Advancement Strategy. Internationally they have been identified as providing an alternative approach to tackling entrenched agriculture and rural community decline as a result of globalisation and economic reforms by supporting regions to leverage their innate competitive advantages.

In Far North Queensland a place-based agriculture development framework has been developed to identify and support the emergence of new agriculture markets, supply chains and farming systems. The place based agricultural development framework combines three models agri-industrial, post-productivist and rural development with eight critical factors important to maximizing agriculture's contribution to regional development. The three models provide different lenses to explore how agriculture can contribute to regional development. The eight factors include five assets (social capital, human capital, natural resources, infrastructure / technology and environment / amenity) that provide the foundation for agricultural development and three factors (balancing needs, strong regionalism and governance and institutions) that influence whether the different opportunities presented by the models are realised.

The framework's combination of models provides opportunities to build on establish agri-industrial agriculture and consider alternative post-productivist and rural development models. Models that leverage additional value from agriculture through value adding, niche marketing and diversification not only within agriculture but across sectors including tourism, manufacturing and emerging ecosystem services markets.

In Tropical North Queensland, the Regional Food Network is an example of a rural development approach to agriculture. The network is made up of mostly family-owned businesses that have set themselves apart through value adding, niche marketing and diversification. The network has developed its own Taste Paradise brand, making the most of tropical north Queensland's clean green image and its tourism industry to generate additional value for farm products.

In the Northern Territory, carbon farming is an example of how post-productivist approaches could be applied to the rangelands of northern Australia to generate new income and employment through carbon credits. The Tipperary Group of Stations was issued over 26,000 credits in 2013 for early season burning under the savanna burning carbon farming methodology. If we are to break out of the 'circular conundrum' we need to learn from the past and take a new look at the ways that agriculture can contribute to regional development in northern Australia. The place-based agriculture development framework provides a tool for policy makers, industries and communities to explore the different contributions agriculture can make. Encouraging new narratives and visions for northern agriculture grounded not in old myths but in a deeper understanding of place and the diversity of northern Australia.

# Indigenous Perceptions about Climate Change Impacts and Adaptation – Case Studies from Northern Australia

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The impact of climate change is one of the most significant environmental challenges facing humans. In central and northern Australia climate change is likely to exacerbate the natural hazards within the Century. These hazards include cyclones, associated storm surges, flooding, heat waves, coastal erosion, bushfires and drought. In this chapter we focus on the Northern Territory (NT), the jurisdiction with the highest share of Indigenous people (nearly 30% of its population) and northern Queensland (QLD), an area prone to extreme weather events. The strong dependence of Indigenous Australians on their traditional country for food health (and culture) reduces the resilience of these communities' to climate hazards. Indigenous communities are likely to feel the consequences of climate change in terms of maintaining their health and well-being, and outdoor living and housing comfort. Ensuring that the impacts of climate change are anticipated, and that decision-making about adaptation strategies involves the community is an immense challenge for remote Indigenous communities, in Australia and elsewhere.

There is a growing body of literature on how Indigenous communities perceive and adapt to climate change. Recent findings highlight an emerging realisation that adaptation is a dynamic, longterm, transitory and transitional process that involves repeated decisions, better described as adaptation pathways. To inform Indigenous peoples' pathways to adaptation, there is a need for understanding how climate change and extreme events lead to impacts and possible adaptation responses.

Here we present results of four cases studies on climate change adaptation research from northern Australia. Three case studies are from the NT: (1) Lajamaanu at the northern end of the Tanami Desert, (2) town camps of Alice Springs, and (3) Yirrkala in East Arnhem Land. In all of these three case studies, in-depth interviews, focus group discussions and workshops were conducted with community members, using a range of participatory methods in collaboration with local Indigenous researchers. The fourth case study is from QLD and presents a Human Development Index (HDI) and adaptation implication analysis for people in the Torres Strait region.

In Yirrkala (population: ~800), research participants talked about climate change impacts in relation to non-climate (social) issues and observed landscape changes have almost always been attributed to of a combination of climate change and mining (Yirrkala and surrounding communities are very close to a bauxite mine) and development (e.g., increasing tourism). When discussing possible ways to adapt, people in Yirrkala also invariably linked climate change to current wider problems. However, many people said that their current problems will worsen as the negative effects of climate

increased. Regarding climate change adaptation, Indigenous people in Yirrkala stressed the importance of dealing with it in a culturally acceptable ways and not under a top-down approach but by fostering self-sufficiency, independence and empowerment. Some people also stressed the importance of observing and knowing the environment (their traditional country) in enabling people to adapt to stresses caused by all kind of changes.

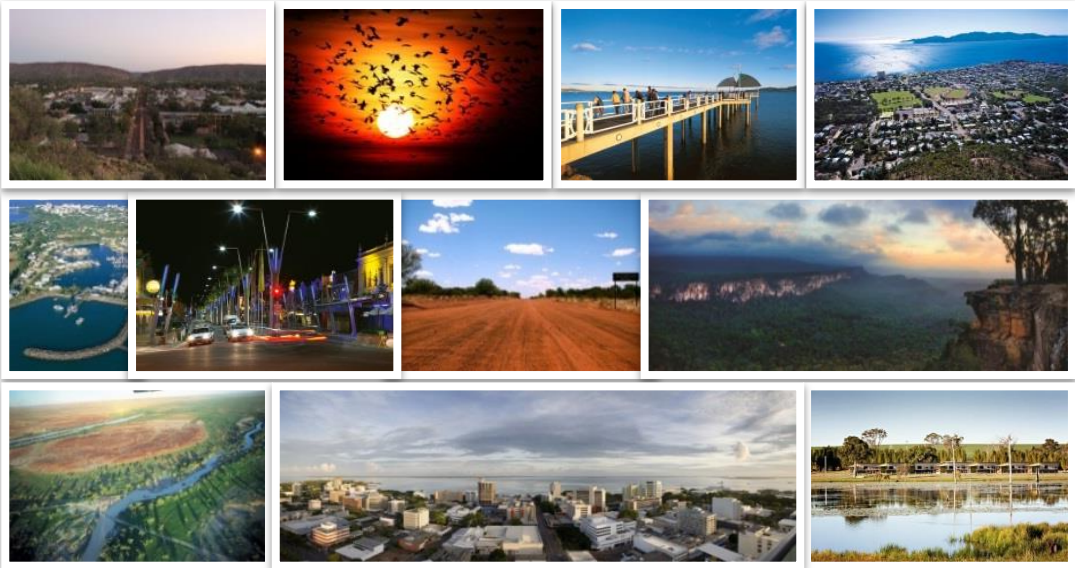
In Lajamanu (population: ~650) participants indicated that most people are deeply aware of the short-term weather and the long-term trends of the climate where they live. The surrounding natural environment remains an important indicator of trends in the local climate, even when the environment is in various stages of alteration (e.g., dams used to trap and store surface water, thereby affecting creeks and waterholes) and degradation (e.g., overgrazing by feral animals, prevalence of weeds). Not surprisingly, people who spend more time living and working outside (e.g., people hunting and gathering wild food in the surrounding country, people employed as rangers to manage the surrounding natural resources) reported more detailed experiences and insights about the climate and changes to their country, possibly because of their rich and deeply embedded traditional ecological knowledge.

Participants in the case study of Alice Springs town camps also mentioned observed changes to the climate (e.g., hotter and longer summers, variable rainfall) and natural surroundings (e.g., more weeds and less bush food). They indicated more satisfaction in their current measures of adaptation in comparison to what was available in the past. Their adaptive strategies were mainly focussed on: i) energy intensive measures to moderate building temperatures at comfortable levels; ii) housing as a buffer against extreme weather and iii) movement to communal buildings such as shopping places or art centres to escape the harsh climates. There was an increased reliance on modern technology to adapt to climate change and some respondents acknowledged the importance of combining traditional ways with modern ways of environment management.

The aim of the study in the Torres Straits region, stretching from the tip of Cape York to the south-western coast of Papua New Guinea (population: ~7, 489), was to better understand the current socio-economic state and disadvantage of the Indigenous people in this region to assess their vulnerability to climate change impacts. The results were similar to that of the Yirrkala case study, indicating that Torres Straits Islanders face multiple immediate socio economic issues which have to be solved as they might impede on their potential to adapt to climate change.

The results from the presented studies indicate that the social capital of the communities is commonly undervalued, thereby misleading efforts to build the adaptive capacity of communities in the face of climate change. We argue that a stronger understanding of the cultural and social capital within remote Indigenous communities, particularly those still strongly framed by traditional culture, can enhance the support for effective climate adaptation. In all three communities, Indigenous people have pointed out the need for integrating climate change policies into other mainstream policies. Climate change policies should not be implemented in isolation from other policies that they wish the government to pursue to alleviate other, more urgent problems in their communities such as lack of education, jobs and housing, violence and medical problems.





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