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Preparing Australia for a potential surge in environmental migration

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ABSTRACT

Projections for the number of people displaced by climate change globally are startling and vary from 100 million to 1 billion; however, a widely repeated prediction is for 200 million by the mid-twenty-first century. Although difficult to estimate, some proportion of these people will cross borders and end up in Global North countries. This paper offers a provocation on the implications for Australian cities. It reviews Australia's significant strategic planning policies in light of a possible mid-future surge in environmental migrants and considers how such policies could better prepare Australian cities. The paper concludes that a National Urban Policy could strengthen strategic preparedness for environmental migration.

Introduction

Climate change and migration interconnect in many ways (Hugo 2013). The increasing manifestations of climate change – including sea-level rise, drought, heat stress, fire, floods, and cyclones – particularly in the world's poorer countries – will result in a sizeable, affected population in decades to come (IPCC 2021, 2022). According to a report to the European Parliament, Global South countries are most vulnerable to climate change (Kraler, Cernei, and Noak 2011), as increasing climate risks are projected to exacerbate existing vulnerabilities and social inequalities and inequities (IPCC 2022). This situation could also lead to 'large-scale and disruptive population movements' (Stern 2007). In fact the Intergovernmental Panel on Climate Change (IPCC) echoes sentiments that the 'greatest single impact of climate change could be on human migration' (In International Organization for Migration 2008, 9).

Climate change will displace affected people within their own countries, while others will cross borders through informal migrations or internationally coordinated programs. Planned migration will not happen quickly or without overcoming substantial political challenges. How well the Global North responds to the predicted human displacement impacts of the climate crisis will dictate how 'we can sustain ourselves in what we call civilised human society' (Wennersten and Robbins 2017, 32).

So, how should the Global North, in general, respond to the challenges posed by this humanitarian by-product of worsening global impacts of climate change? Experts have recognised the 'climate refugee'

problem since the 1990s (Myers 1993), with legal definitional debates subsequently comprising a significant fraction of the literature (For example International Organization for Migration 2008). Australian attention has focused on the regional implications and responsibilities of the inundation of low-lying Pacific Island states (Koser 2012). There is an acknowledgement of the challenges emerging for cities regarding the costs of direct and destructive impacts and thus 'pressures on urban infrastructure arising from domestic and international climate-related migration and refugee flows' (AEGN 2020). Managing immigration more broadly is linked indelibly to better urban planning: 'If we cannot make our cities work with extra people, from diverse backgrounds, public support for immigration will evaporate' (O'Neil and Watts 2015, 146).

The importance of preparation for population change on a national scale currently lies in the evolution of the National Population and Planning Framework. This proposal emerged in 2019 from the Council of Australian Governments with a vision to improve quality of life, support economic growth, encourage community cohesion, and ensure sustainable urban and regional growth (Coalition of Australian Governments 2019). The former Morrison Coalition Government accepted, in principle, the importance and timeliness of developing 'a national plan of settlement, providing a national vision for our cities and regions across the next fifty years' (Australian Government 2020, 4). The new Albanese Labor Government elected in May 2022 has pledged Commonwealth involvement in urban development issues.

The Planning Institute of Australia (PIA) has been an influential lobbyist behind Federal Government intervention in recognising that the multiplicity of current planning strategies and policies from the three tiers of government lacks a robust integrative and cohesive framework to deliver the vision – and resilience to accommodate downstream shocks (Planning Institute of Australia 2018).

This paper links climate change, migration, and the urban environment to examine as a critical provocation the likely global nature and scale of the challenge for strategic planning in Australia. In particular, we examine Australia's preparedness for substantial environmental migration in the light of its immigration and planning policies. The central research question is: do Australia's federal and state government strategic planning policies allow for a possible surge in environmental migrants projected mid-century? Subsequently, we discuss how strategic planners could better prepare Australian cities and towns for a potential surge in environmental migration in this century. Finally, we argue that the case for increasing Australia's humanitarian intake to absorb environmental migrants has a moral and certainly environmental justice dimension (Ahmed 2018).

Background

Drivers of environmental migration

The connection between environmental change and migration is not straightforward – the nature and scale of the environmental impact matter. For example, short-term, more localised events associated with the growing intensity of natural disasters such as tropical cyclones, heavy rains, and floods may lead only to internal migration (Koser 2012). However, slow-onset mega-events such as warming and drought (which will trigger heat stress and affect agricultural productivity and freshwater access), sea-level rise (which renders coastal areas and islands uninhabitable), and consequential struggles for natural resources (as sources of conflict) may be long term drivers of international environmental migration (Rigaud et al. 2018).

In terms of heat stress, recent research has begun to identify regional hotspots where climate change will have severe consequences for human health and well-being (Pal and Eltahir 2016). Indeed, chronic heat stress could potentially call the viability of some regions into question, particularly in the tropics and parts of the mid-latitudes (Coffel, Horton, and De Sherbinin 2017). Such regions include the Middle East (Bolleter et al. "Wet-Bulb Temperature," 2021; Pal and Eltahir 2016), northern South America, Central and Eastern Africa, and South-East Asia. Moreover, these regions are some of the world's most

heavily populated (Coffel, Horton, and De Sherbinin 2017). The effects of possible lethal heatwaves are due to elevated temperatures and humidity. High heat combined with high humidity weakens the human body's ability to control its temperature by sweating (Steadman 1979). Urban areas are also known to exacerbate the impacts of extreme heat events through the Urban Heat Island (UHI) phenomenon (Gardes et al. 2020). The further concentration of population in urban areas, which may also be subject to climate change-related heat stress through their morphology, poses significant challenges from an adaptation planning perspective (Anderson et al. 2018; Füssel 2007).

Sea-level rise presents significant threats to coastal areas – through erosion, flooding, permanent inundation, higher storm surges, and saltwater intrusion. At the same time, demographers project coastal populations and economies to increase in the following decades (Hurlimann et al. 2014), compounding the implications of this situation. Recent projections from the Intergovernmental Panel on Climate Change (IPCC) are that by 2100 Global Mean Sea Level (GMSL) could rise by 0.5–0.9 m under current plausible global greenhouse gas emissions trajectories. However, rises to 1.75 m (due to ice-sheet uncertainties) are possible (IPCC 2021). Regardless, given historic greenhouse gas emissions, seas will continue to rise for centuries. The consequences are alarming. At least 10% of the global population lives at an elevation within 10 m of existing sea level, with scarce resources in many Global South countries constraining adaptation (Hindsley and Yoskowitz 2020). Already vulnerable and marginalised groups will directly experience the impact of environmental change because they are more exposed to hazards through low housing quality, lack hazard-mitigating infrastructure such as effective drainage and have minimal access to government assistance (Koser 2012).

Climate-induced migration

The issues of heat stress and sea-level rise, amongst others, will induce substantial population displacement globally, resulting in flows of what the International Organization for Migration terms 'environmental migrants'. This term refers to

persons, who, for compelling reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or chose to do so, either temporarily or permanently, and who move either within their country or abroad. (International Organization for Migration 2008, 14)

In addition, climate-induced migration is a significant component of a broader spectrum of population

displacement driven by various forms of environmental degradation and natural disasters.

Experts contest the projected scale of movement (Black et al. 2008; Internal Displacement Monitoring Centre 2022; Wennersten and Robbins 2017). Many are understandably nervous about estimating the scale of environmental migration (Koser 2012). Estimates of future emissions are not robust enough to make solid predictions about the scale of climate change and data on contemporary migration are too inaccurate to use for forecasting (Koser 2012). Climate change can compound threats and worsen inequalities, diminish livelihoods, or intensify conflict, making it difficult to discern environmental factors in independently prompting migration (Koser 2012).

Nonetheless, the indicative numbers are troubling. One authoritative tabulation estimates that 25.3 million people are already made homeless annually through various direct weather-related natural disasters (Internal Displacement Monitoring Centre 2022). Another estimate of global citizens already classifiable as environmental migrants is as high as 25 million (Wennersten and Robbins 2017). Estimates of the surge in this figure in aggregate by 2050 include projections of 100 million by the Worlds Peoples Conference (In Bettini 2013); 150 million (1993) and then 200 million (2005) by Norman Myers; 200 million by the International Organization for Migration (2008); 309 million by the University of Sussex (In Black et al. 2008); and 750 million by Peter Singer (In McAdam and Blocher 2016). Christian Aid claims in its widely cited projection ‘that, unless strong preventative action is taken, between now and 2050, climate change will push the number of displaced people globally to at least 1 billion’ (2007).

Myers’ initial (1993) prediction of 150 million environmental migrants successfully drew attention to the possible scale of the problem but drew criticism as being alarmist. Nevertheless, the most widely repeated prediction is as high as 200 million (Biermann and Boas 2010). This figure is also the International Organization for Migration projection for a planet which continues to be ‘overwhelmingly sourced from fossil-fuel supplies without any substantial emission reductions or serious attempts at adaptation’ (International Organization for Migration 2008).

Global projections overlook particular areas of vulnerability. For example, a comprehensive recent analysis of climate-induced migration by the World Bank Group for Sub-Saharan Africa, South Asia and Latin America concludes that climate change may force up to 140 million people to become displaced within these regions by mid-century and accelerate after that if climate change is not mitigated (Rigaud et al. 2018). According to the Asian Development Bank, almost all island nations in the Pacific are considered ‘hotspots’ of environmental impact (Koser

Table 1. Environmental migrant projections to 2050.

Source	Year	Refugee projection (2050)
World Peoples Conference	2010	100,000,000
International Organization for Migration	2008	200,000,000
Norman Myers	2005	200,000,000
University of Sussex	2008	309,000,000
Peter Singer	2016	750,000,000
Christian Aid	2007	1,000,000,000

2012). In one study, estimates for the number of people predicted to be displaced in and from Pacific Island countries due to environmental change by 2050 range from 665,000 to 1,725,000 (Koser 2012).

Table 1 summarises these global predictions for environmental migrant numbers to mid-century. Given historic greenhouse gas emissions alone, it is important to note that the climate will continue to change for centuries (IPCC 2021). Therefore, global population distributions must adapt as this situation plays out across centuries, let alone decades. Projections for an extraordinary number of environmental migrants will likely occur; the main uncertainty is when.

The IPCC has released even more worrying data on climate change which suggests climate change is ‘widespread, rapid, and intensifying’ (IPCC 2021). So it is plausible that despite initial scepticism, the projection by Myers (2005) of 200 million could even be an underestimate.

According to the World Bank, climate change will displace most people in their countries (Rigaud et al. 2018). For example, in the past few decades, much of the internal environmental migration in Pacific Island countries has moved people from rural areas to cities (Koser 2012). However, there are reasons to question how many displaced persons will remain in-country. First, ‘stepwise’ migration, where rural-urban migration heralds an increase in international migration, is a widely observed phenomenon (Koser 2012). Second, climate change may force internal displacement on people lacking the means to make cross-border moves (Wiegel 2017). Third, and depending on the geography of the affected countries, the health impacts of severe levels of heat stress could mean that internal displacement is often not a solution because extreme heat stress may occur across entire countries or even regions (Pal and Eltahir 2016). Fourth, the ability of the source country to cope economically will constrain the refugee numbers that governments can deal with internally. Moreover, and fifthly, other factors such as violence and warfare in competition for resources can compound the situation.

The larger the numbers, the greater the global pressure. This situation will lead to increasing extra-national departures and expectations for countries of

the Global North to contribute resources to the accommodation of internal displacement and to receive their fair shares of international environmental migrants.

Undoubtedly, the existing populations in the Global North will resist this pressure for various reasons, including xenophobia. Moreover, that resistance is likely to grow in proportion to the numbers. This situation may contribute to many displaced people being trapped in third countries which themselves struggle to cope but cannot or will not repel them putting displaced people at risk of 'significant impacts on physical and mental health' (Australian Human Rights Commission 2014). This situation will further pressure the Global North to accept environmental migrants, but that will take time and remain politically fractious.

As conditions worsen over the coming century, people will undoubtedly cross borders informally or through relocations planned by the international community. The migration stream is likely to be incremental, negotiated and managed rather than tsunami-like (Rossi 2017). Given the uncertainties of future climate and the complexity of the underlying dynamics, it is impossible to know how many people will become environmental migrants. Nonetheless, it is safe to assume that a proportion will arrive, formally or informally, at the borders of prosperous Western nations. As a wealthy country with a large landmass, Australia will be one of the countries facing pressure to accept climate-induced environmental migrants. Below we speculate on possible impacts and preparedness in the case of Australia.

Migration in the Australian context

Together with Canada, the United States and New Zealand, Australia is a 'traditional' immigration country. These countries have an established record of planned immigration, extending over 200 years with a remarkable upsurge in immigration post World War Two (Hugo 2014). Indeed, Australia has a long history of welcoming migrants, and successive waves of migrants helped fuel the growth of Australia's cities and suburbs (Davison 2010). As a result, Australia is one of the most successful multicultural societies in the world. Australia's immigration soared through pro-active nation-building recruitment in the post-World War Two period. In three decades, some three million migrants and refugees arrived. Many were from areas experiencing or recovering from political turmoil or war, such as Eastern Europe, Chile, Cyprus, Vietnam and Timor. Since the mid-1990s, migration policy has changed to increase the focus on skilled migrants to bolster the 'national stock of human capital and enhance national productivity and competitiveness' (Hugo 2014, 875).

Despite the relative success of immigration policies, 'border protection' issues have become highly politicised. For example, during the 2001 federal election, a tough border protection stance consolidated the victory of the Liberal-National Coalition and saw the rise of 'anti-immigration' parties, such as One Nation (Bilodeau and Fadol 2011). The issue of refugee resettlement has been particularly contentious. Indeed, people seeking asylum by boat are now described in Australian legislation as 'illegal' maritime arrivals even though everyone has the right to seek asylum under international law. Moreover, they are depicted by all federal governments as posing a significant threat to border security, even though most research has found refugees in need of protection (McAdam and Chong 2019, 50). Nonetheless, successive governments have used the claim of 'stopping the boats' to boost electoral fortunes (McAdam and Chong 2019, 2). Indeed, on the day of the recent federal election then Prime Minister Scott Morrison instructed the Australian Border Force to publicise an interception of a suspected asylum seeker boat presumably to boost votes (Greene 2022). Partisan political discourses drawing links between asylum seekers and terrorism also turned public opinion against humanitarian migrants from Muslim countries (Schech 2014).

Nevertheless, Australia's relative geographic isolation, combined with sophisticated border surveillance systems, has resulted in one of the world's most tightly managed migration systems (Hugo 2014). The total permanent Migration Program outcome for 2018–2019, prior to the Covid-19 pandemic, was 160,323 places with 18,762 resettlement visas in the humanitarian program (Department of Home Affairs 2019).

A distinctive pattern of 'metropolitan dominance' defines Australia's population distribution (Freestone 2013, 236), with two out of every three people residing in the state capital cities of Sydney, Melbourne, Adelaide, Perth, Brisbane, and Hobart (Centre for Population 2022). Building on precedents elsewhere (Schech 2014), since the mid-1990s, the federal government has also aimed to direct immigrants to settle outside of the major capital cities in smaller cities and towns. Indeed, policy makers have developed a collection of state-specific and Regional Migration Schemes to facilitate growth in struggling areas and address regional-skilled labour shortages (Hugo 2014; Ng and Metz 2015). Regional dispersion of migrants can occur through regional Designated Area Migration Agreements, regional provisional visas, and Destination Australia Scholarships for international students studying at regional universities (Australian Government 2019). More generally, if indirectly, there is a tacit endorsement of population decentralisation from the major capitals through investments in

improved rail and road infrastructure connecting capital cities and regional centres (Australian Government 2019).

Community sentiment

Despite the substantial contributions of migrants to Australian society, some Australians regard population growth, mainly through immigration, as problematic. Polling frequently reveals that a clear majority regards immigration levels as too high (Murphy 2018). An authoritative recent poll found that over two-thirds of adults do not think Australia ‘needs more people’, a substantial increase since 2010 (Biddle 2019). Furthermore, research consistently identifies that negative attitudes among Australians towards migrants are becoming more prevalent (Fozdar, Spittles, and Hartley 2015).

Negative opinions partly stem from entrenched immigration destinations. Nearly 90% of immigrants live in major cities, particularly Sydney and Melbourne, compared to around 66% of the Australian born (Button and Rizvi 2018). Indeed, the populations of these two most significant metropolitan areas were growing by over 100,000 each year prior to the Covid-19 pandemic (Birrell and Healy 2018). As a result, residents feel significant impacts of rising housing unaffordability, infrastructure provision, and road congestion (Benson and Brown 2018; Kelly and Donegan 2015; Seamer 2019). However, these issues partly result from other factors, such as a relative lack of investment in public transport and speculative property investment spurred by negative gearing policy. Nonetheless, in a recent Australian National University poll, nearly nine out of ten people agreed or strongly agreed that ‘the cost of housing is too high’ as a reason for not increasing the population, alongside 85% per cent who agreed or strongly agreed that ‘our cities are too crowded and there is too much traffic’ (Biddle 2019). If a surge of environmental migration occurs and the necessary planning is not in place, such negative sentiment would likely be compounded.

Environmental migration

An increased number of environmental migrants will likely arrive in Australia during the subsequent decades due to environmental change in Pacific Island countries and south-east Asia. For instance, a relatively modest sea-level rise may threaten the very existence of Tuvalu and Kiribati. In addition, Pacific island countries are also highly vulnerable to destructive and unpredictable disasters (Lee and Zhang 2022). Due to the combination of these factors, significant displacement and migration prompted by environmental change effects in such areas seems a near

certainty. Moreover, as the regional economic and political leader (China aside), and the hub of significant established migration networks with many affected countries, Australia is bound to become a target destination for many environmental migrants (Koser 2012). Australia, due to its bloated per capita greenhouse gas emissions (Ahmed 2018) and comparatively low vulnerability to climate change (Figure 1) (IPCC 2021), will have a moral obligation to absorb substantial environmental migration.

Methodology

So, we return to our central research question: Do Australia’s federal and state government strategic planning policies allow for a possible surge in environmental migrants projected mid-century? Adopting a descriptive research strategy (Swaffield and Deming 2010), we conducted a literature review of current Australian federal, state, and metropolitan strategic planning policies. The criteria for inclusion were that they were authored by relevant State or Federal Government departments and broadly related to population/ settlement pattern planning. This largely qualitative literature review benchmarked policies against two primary considerations.

Firstly, presuming Australia’s humanitarian migration is expanded in the future (through choice or necessity), we analysed whether policies anticipated accommodation of disruptive surges in population growth, particularly through humanitarian migration. This assessment was conducted by assessing whether the planning for future population exceeded the related Australian Bureau of Statistics (ABS) series B (median) population projections (Australian Bureau of Statistics 2017). These projections are contingent on assumptions made about future levels of fertility, mortality, overseas migration and internal migration applied to a base population and *do not* allow for non-demographic factors (such as government policy decisions, climate change-induced migration, catastrophes, wars, and epidemics) (Australian Bureau of Statistics 2017). As such, policies which did not plan for populations higher than these ABS projections were unlikely to have the capacity to absorb additional populations. However, we have resisted basing our analysis on a specific projection of environmental migrants given the complexities introduced by lack of firm baseline demographic data and uncertainty about the evolution of climate change (International Organization for Migration 2008). However, we did examine whether the policies made any references to environmental migration or incorporated appropriate explorative scenario planning methods (Goodspeed 2020), which could countenance future shifts in migration patterns. Secondly, we considered whether the policies contained strategies to facilitate and

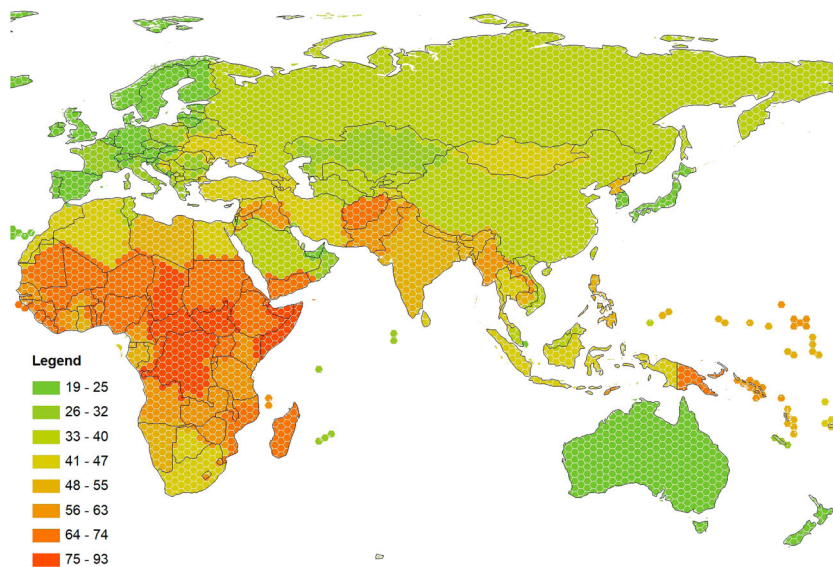


Figure 1. Observed human vulnerability to climate change. Australia has a comparatively low vulnerability to climate change compared to Pacific Island and Asian nations in the region. Data from the IPCC.

cultivate cultural diversity through urban planning. A belief that facilitating a successful model of cultural diversity requires specific planning actions (Talen 2012) predicated this analysis.

The explicit focus on capital city policies acknowledges that these cities receive the vast bulk of immigration (Tuli 2019), despite policies for the regional dispersion of migrants (Australian Government 2019). We note the limitations of our approach. First, our high-level focus omitted important work by Australian Local Governments who have adopted various policies for fostering multicultural communities through various strategies (For example Welcoming Cities 2019). These are worthy efforts; however, they generally do not include a substantial spatial dimension (Community Relations Commission & DLG 2000; Welcoming Cities 2019), and because of the necessary brevity of this paper, we have been unable to embody these efforts fully. Secondly, we did not extend our policy analysis to include regional cities, reflecting that the majority of immigration is occurring in the capital cities (Tuli 2019). Nonetheless we recognise that regional cities also have a potentially critical role to play. Finally, our approach also omitted substantial analysis of the environmental migration potentially generated by climate change within Australia; however, this has been discussed at length elsewhere (Bolleter et al. “Projected Extreme Heat Stress,” 2021).

Results

Planned versus projected populations and allowances for disruption

In total, we reviewed 13 strategic planning policies for the nation, states and metropolitan areas (Table 2). This table shows the policies reviewed, the future

planned population in the policy and the related ABS Series B population projection for the planning horizon – noting the Series B population projections do not allow for disruptive events like climate change.

Ironically, the previous Federal Government planning strategy, ‘Planning for Australia’s Future Population’, provides no future population projections despite the report’s claiming to address this ‘big issue’ (Australian Government 2019, 5). Moreover, Australia’s forward strategic planning for urban population growth is inconsistent at the state level, and only Western Australia, Queensland and New South Wales have state planning strategies which comprehensively address issues of population and settlement pattern planning (noting the Australian Capital Territory has a territory plan).

Elsewhere there is a reliance on an amalgam of sectoral planning policies or devolution to a composite of regional strategies. With respect to the state planning strategies, the NSW strategy (Infrastructure New South Wales 2018) plans for a population well below that projected by the ABS while the Western Australian strategy plans for a population much higher which indicates a capacity to absorb population surges (Western Australian Planning Commission 2014).

Concerning the metropolitan policies, the future populations planned for, in many cases, are less than what the ABS project for the same timeframe. This situation is evident in planning for Greater Sydney (Greater Sydney Commission 2018), Melbourne (Victorian State Government 2017) and to a lesser degree Canberra (ACT Government 2018). This situation indicates that current planning may not cater for existing demographic trends, let alone significant disruption brought about by climate change.

None of the policies consider any exploratory scenarios to address the uncertainty of future events,

Table 2. Selected national, state and metropolitan planning strategies. Data was unavailable for cells marked n/a.

Planning document	Existing population at time of planning	Planning agency projected population for planning horizon	ABS projected population for the planning horizon	Planning horizon	Population capacity in planning (approximate)
<i>Federal planning strategies</i>					
Planning for Australia's Future Population (2019)	25,000,000	n/a	n/a	n/a	n/a
White paper for developing northern Australia (2015b)	1,300,000	5,000,000	n/a	2060	n/a
<i>State planning strategies</i>					
WA State Planning Strategy 2050 (2014)	2,500,000	5,600,000	4,023,264	2050	1,500,000
QLD The Queensland Plan: a 30-year vision for Queensland (2014)	4,700,000	n/a	7,036,715	2044	n/a
NSW Building momentum: State Infrastructure Strategy 2018–2038 (2018)	7,700,000	9,900,000	10,338,213	2038	-440,000
<i>Metropolitan planning strategies</i>					
Our Greater Sydney 2056: A Metropolis of three cities (2018)	4,700,000	8,000,000	8,830,847	2056	-830,000
Plan Melbourne 2017–2050 (2017)	4,500,000	7,900,000	8,493,534	2050	-590,000
Shaping SEQ: South East Queensland Regional Plan (2017)	3,462,400	5,349,000	n/a	2041	n/a
Perth and Peel@3.5 million (2018)	2,000,000	3,500,000	3,358,567	2050	140,000
The 30 year plan for Greater Adelaide (2017)	1,430,000	1,970,000	1,668,075	2045	300,000
ACT Planning Strategy (2018)	412,000	589,000	623,242	2045	-34,000
30-Year Greater Hobart Plan (2022)	200,570	260,570	268,053	2050	-1500
Greater Darwin Plan (2012)	127,254	188,951	169,016	2025	20,000

including surges in environmental migration. Instead, they are expressions of existing assumptions with limited or no recognition of 'black swan' events which may challenge existing assumptions.

Moreover, some reports do not even refer to climate change, such as the previous Federal Government's 'Planning for Australia's Future Population' (Australian Government 2019). This omission is noteworthy given the subject of this paper and contradicts the previous Federal Government's own 'National Climate Resilience and Adaptation Strategy' which states: 'Climate change does not stop at country borders. The effects of climate change are being felt in Asia and the Pacific, with implications for Australia's trade, migration, development and national security' (Australian Government 2015a, 71).

Like the 'Planning for Australia's Future Population' report, the White Paper 'Our North, Our Future' for developing northern Australia makes only scant reference to climate change and then principally as a threat to biodiversity. Although it does refer to northern Australia's role in providing humanitarian assistance to neighbouring countries, it says nothing about the prospect of accommodating climate change-induced immigration in the north itself (Australian Government 2015b).

Of the federal, state, and metropolitan plans, only Western Australia's state planning strategy makes any reference to possible surges in environmental migration in advocating for infrastructure that can 'allow greater logistics access for humanitarian or military purposes' in the case of refugees arriving on Western Australia's north coast (Western Australian Planning Commission 2014, 30). In summary, while the 'greatest single impact of climate change could be on human migration' (In International Organization for Migration 2008, 9), little or no mention of this looming situation is made in the strategic planning for the nation and its system of cities. This situation is concerning as the planning horizon for these policies extends to mid-century (Sydney's plan 2056, Melbourne and Perth's plans 2050, and Adelaide's plan 2047), a period in which widespread environmental migration will likely be occurring.

Strategies to facilitate and cultivate cultural diversity through urban planning

Here we consider the degree to which the policies seek to cultivate successful cultural diversity through urban planning – something that expanded environmental immigration would demand. Notably, almost all the policies praise Australia's cultural diversity. For example, the previous Federal Government's report 'Planning for Australia's Future Population' (Australian Government 2019, 7) celebrates Australia as a 'diverse harmonious nation' and advocates for an

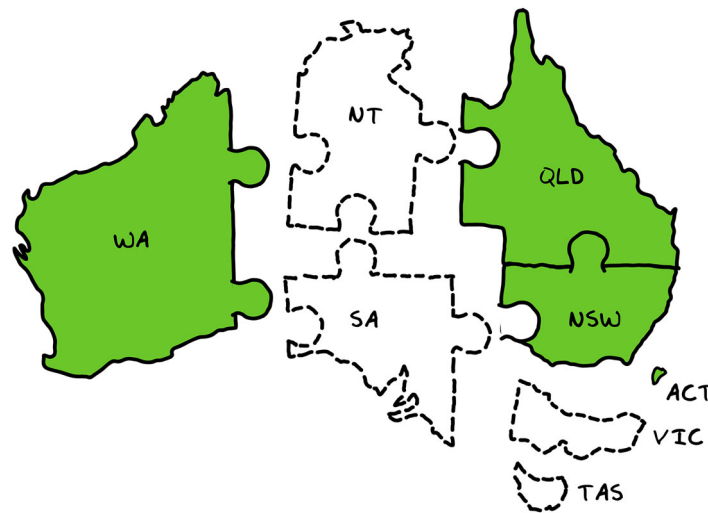


Figure 2. Only Western Australia, Queensland and New South Wales have state planning strategies which comprehensively address issues of population and settlement pattern planning. The result is a jigsaw of state strategies.

‘Australia that welcomes new migrants’ (while simultaneously documenting a freeze in immigration levels and a cap on refugee places) (Australian Government 2019, 5). Nonetheless, while celebrating cultural diversity, it attributes issues such as unaffordable housing, traffic congestion, ‘overcrowded public transport’, and a lack of ‘shared values and ideals’ to excessive levels of immigration.

The Western Australian and Queensland plans both celebrate diversity (State of Queensland 2014; Western Australian Planning Commission 2014). Moreover, one of the anticipated ‘outcomes’ of the Western Australian State Planning Strategy is that ‘diversity is displayed in all settlement structures’. This outcome is predicated on ‘aspirations’ that ‘the demographic make-up of a community displays a mix of cultures, age cohorts, skills and qualifications’, ‘there is a range of opportunities for local cultural expression’, and finally, that there is ‘variation in the built form and a range of suitable spaces and places available for cultural activity’. Moreover, the strategy calls for ‘public spaces and places to encourage participation, social cohesion and a sense of place’ (Western Australian Planning Commission 2014, 92).

The various metropolitan plans (ACT Government 2018; Department of Planning 2017; Department of Planning Lands and Heritage 2018; Greater Sydney Commission 2018) are also consistent in celebrating cultural diversity. For example, the South East Queensland plan declares that the community’s ‘diversity and character is a strength that has – and undoubtedly will continue to – underpin the sustainability and ultimate success of the region’ (Department of Infrastructure, Local Government and Planning 2017, 22). Melbourne’s planning report enthuses: ‘Melbourne’s cultural diversity adds to the city’s vitality and creates economic and cultural

benefits as well as a stronger understanding of the world’ (Victorian State Government 2017, 79). Despite the apparent enthusiasm for multiculturalism, the ‘Plan Melbourne’ also introduces a cautionary note: ‘Melbourne will benefit from population growth – if plans are made, and actions are taken. Without adequate planning, the city will become less affordable and liveable – risking social cohesion and economic growth’ (Victorian State Government 2017, 45).

In summary, despite enthusiastically endorsing Australia’s multicultural society, the metropolitan plans are generally mute about how planners might spatially organise cities and neighbourhoods to support increased immigration and multiculturalism and maintain social cohesion in the face of future surges in migration.

Discussion

Our analysis reveals that Australia’s planning strategies for capital cities, states, and the nation often do not have substantial capacity for accommodating surges in environmental migration and are generally not factoring in climate change disruption to any significant degree – if at all. Moreover, they offer little guidance to planners regarding how they should reconcile increasing multiculturalism with spatial planning. As to the former, this is understandable because projections for environmental migration are both politicised and uncertain (Koser 2012). However, there are considerable risks to perpetuating such models.

So, how could Federal and State Government urban planning policies better prepare Australian cities and towns for a surge in environmental migration projected by mid-century? Key literature suggests that ‘forward-looking’ National Urban Policies (NUPs)

can help cities and nations be more resilient by responding to a crisis and preventing or preparing for future crises (OECD, UN Habitat, & UNOPS 2021a). Indeed, there is growing recognition of the potential of NUPs to advance the UN Sustainable Development Goals, particularly Goal 11 devoted to 'Cities and Communities' and Goal 13, 'Climate Action'. There are now 162 countries with NUPs, although in different forms, at different development stages and with varying thematic foci (OECD, UN Habitat, & UNOPS 2021b).

Towards a national urban policy for Australia

Our policy review revealed that Australia's planning is uncoordinated and jurisdictionally fragmented. As the PIA correctly identifies, 'Australian states, territories, and local governments all have different views about our common future' (Figure 2). The result is that our collective coverage of plans looks like an incomplete jigsaw (Planning Institute of Australia 2018). Furthermore, planning frameworks are not well coordinated between the various planning scales, such as national to state and state to city level planning. This situation is understandable because strategic planners do not comprehensively review strategies at set intervals but rather according to their jurisdictions' different political and economic cycles. As a result, different policy documents work to different timeframes and projections.

While Australia has managed to deliver comparatively liveable cities across such complex governance, it is likely inadequate if confronted with the full effects of climate change-induced migration. If this occurs at a significant level – as Australia has some moral obligation to address (Ahmed 2018) – it will test the capacity of Australian cities and their planning. The lack of preparedness of the Australian planning system for such aspirational targets is not unique. Until recently, the international community has generally concentrated on mitigating climate change by devising emissions targets instead of planning to adapt to the myriad impacts of climate change.

Nonetheless, if Australian cities cannot absorb such population increases in a planned manner, we could expect them to have detrimental effects on the cohesiveness of Australian society. On the ground, this could result in a collapse of the multicultural ideal of the 'melting pot', resulting in socio-cultural segregation – one example being the 'doughnut' planning technique in French towns that concentrates migrants on the edges of the cities or in 'ghettos' in 'parallel' societies (Murray 2017, 114) (Figure 3). While the 'melting pot' model of multiculturalism has served Australia well, it has its limits – mainly if substantial surges and geographic concentrations of migration

occur over a short period and the required planning is not in place.

Moreover, the literature on climate change-induced migration is often alarmist and can employ inflammatory language depicting intimidating hordes of 'climate refugees' in a climate change-induced disaster. Commentators widely use words like 'catastrophe', 'threat' and 'urgency' (In Hulme 2007). The problem is that fuelling such fears can lead to 'denial, paralysis, apathy or even perverse reactive behaviour' (Hulme 2007). Moreover, a less than creative engagement with such issues is unlikely to succeed because people won't discard a flawed paradigm, despite many signs of its deficiencies, until a better model can be found (Kuhn 1996). So, what would a better planning paradigm be? Here we briefly sketch what this could be at the national scale.

There is an urgent need for a National Urban Policy (NUP) for Australia's cities and regions for many reasons. From the viewpoint discussed in this paper, this planning could emerge from the suggested National Population and Planning Framework, albeit with a greater focus on planning rather than purely demographic considerations (Coalition of Australian Governments 2019). The Planning Institute of Australia also promotes the need for such a NUP. The scale of planning would rely on a resurgence of federal government interest in urban issues (Oakley 2004). Indeed, such planning requires coordination between national, state, and territory governments to devise a bipartisan urban strategy to direct urbanisation. The Commonwealth-established national 'Centre for Population' (Coalition of Australian Governments 2019) could, in part, develop this in conjunction with a national policy framework on environmental migration (Koser 2012).

A NUP would seek to distribute a future Australian population (including that through environmental migration) to areas with the highest carrying capacity and existing residents who welcome population growth. For many of their more established residents, the major cities are already disturbingly large. Allowing them to expand further is 'nonsensical and unacceptable' for such residents and is resisted (Angel 2012, 4). Therefore, newcomers – immigrants from overseas or migrants from other parts of the country – are not welcome and are seen as 'nuisances rather than as assets' (Angel 2012, 4). This mindset could partly explain the unpopularity of models concentrating population growth in large capital cities and the popularity of schemes that disperse population growth to regional areas (Bolleter et al. "Long-Term settlement Scenarios," 2021; Bolleter et al. 2022) (Figure 4). A future Australian NUP would need to build on these preferences.

While current Federal Government policies targeting regional population decentralisation make much

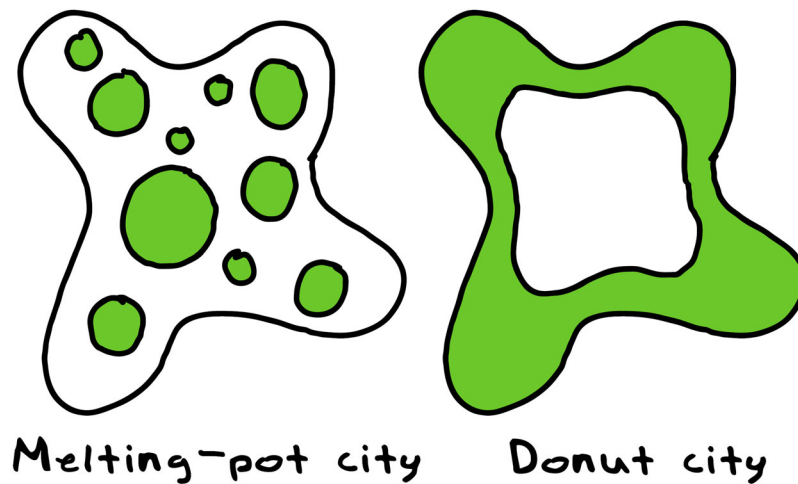


Figure 3. A collapse of the multicultural ideal of the ‘melting pot’, can result in socio-cultural segregation where migrants are concentrated on the edges of the cities.

sense (Australian Government 2019), the lack of a coordinating national scale plan means that initiatives lack systematic integration. A comprehensive suitability analysis of Australia considering economic, environmental, climatic and infrastructural factors provides a potentially instructive model (Bolleter et al. “Informing Future Australian Settlement,” 2021).

Strategic planners should predicate a future NUP for Australia on exploratory scenario planning methods. Scenario planning is a method of long-range strategic planning that develops representations of multiple, possible futures of a system to develop deeper insights into emerging trends and issues or inform specific decisions through multiple scenarios (Goodspeed 2020). Scholars of climate adaptation planning have concluded that this requires curtailing ‘the deeply embedded practice of planning for one

future’ (Woodruff 2016, 445), and they argue that exploratory scenario planning holds unrealised promise to incorporate climate uncertainty into plans (Goodspeed 2020). By evaluating a plausible range of futures and related policies, planners acquire a ready repertoire of responses to inform subsequent decision-making if future climate conditions ‘veer off’ from the assumed course’ (Goodspeed 2020, xix).

Towards a strategic planning policy for facilitating cultural diversity

It is clear from the literature that successfully addressing diversity (cultural or otherwise) requires (among other things) proactive spatial planning at the metropolitan and neighbourhood scales for both capital cities and regional centres (Maginn and Hamnett

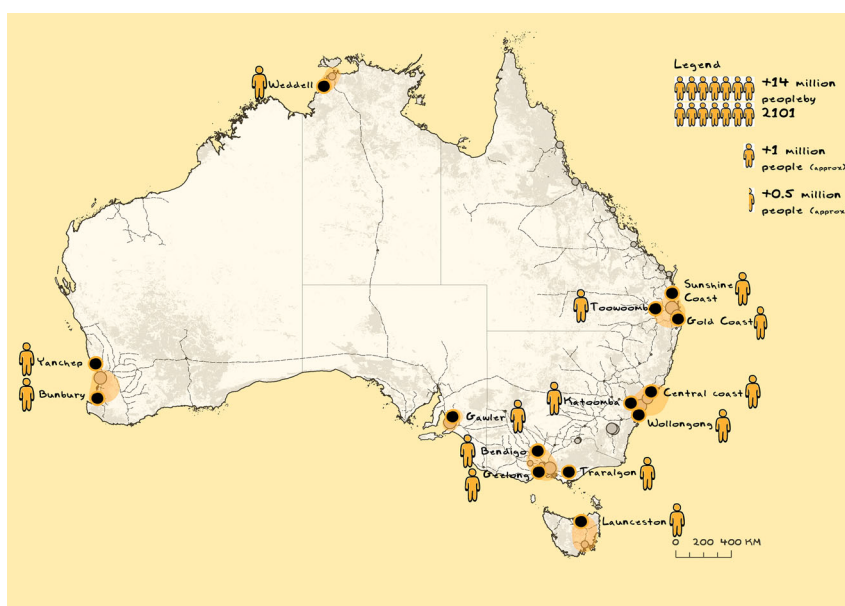


Figure 4. Recent survey research by the authors indicates substantial support for population decentralisation away from large (capital) cities to satellite cities. A future NUP could seek to facilitate such well-supported decentralisation.

2016). Moreover, successful cultural diversity planning and design aspects are essential because markets are unlikely to deliver this alone (Talen 2012).

Australia's planning for its major cities celebrates cultural diversity yet is mainly mute on how diversity should find expression in strategic planning (Maginn and Hamnett 2016), a need which is increasingly recognised by government (Partridge 2022). As such urban planners would benefit from more spatial guidance, ideally provided at the Federal Government level, about planning for diverse communities. Such planning should recognise that 'diversity is a positive force in a global society' (Talen 2012, 32) enabling, rather than speaking for, diverse communities (Sandercock 1998).

What spatial principles could underpin such planning? While a comprehensive exploration is beyond the scope of this necessarily concise paper, we briefly sketch out some approaches in terms of neighbourhood design below. Under a 'separation' approach to neighbourhood structure, minority group members can seek to preserve their own cultures and reject adopting the host country's culture. Interaction between immigrants and host country nationals is limited, and the existence of ethnic enclaves results (Ng and Metz 2015, 256). Conversely, under an 'assimilation' approach, members of the minority group abandon their culture and adopt the host country's culture (Ng and Metz 2015). In this model, planners tend to subsume difference into a homogenous whole under the guise of 'democratic majority rule' (In Thompson 2003, 277). Weaving between separation or assimilation approaches, neighbourhood design should recognise cultural groups naturally coalesce in particular neighbourhoods but maximise interaction with surrounding areas through maintaining permeable edges and developing shared facilities between the neighbourhoods. This approach could ensure 'both dominant and minority group members adopt and adapt to each other's cultures' (Ng and Metz 2015, 256).

At a finer scale cultural diversity can also be facilitated by reconsidering single-use zoning, repetition of similar building types, minimum lot sizes, and car-dominated landscapes (Talen 2012). For instance, many new dwellings (e.g., apartments) do not cater for extended family living, a priority for many non-English speaking groups (Thompson 2003). In contrast, diverse building types, affordability levels, uses, tenures, sizes, and ages helps ensure a mix of rents and prices for both owners and renters (Talen 2012) and different family groupings (Talen 2012). Greater flexibility is needed in land use zoning of land use to allow for offices, workshops, and shops in suburban areas. These areas could then facilitate start-up entrepreneurs conducting small businesses in resilient, small, flexible units, the kinds of small businesses essential to maintaining a diverse neighbourhood (Talen 2012).

Public space also provides an ideal opportunity for divergent populations to 'encounter' each other (Fincher et al. 2014). The ability of public space to facilitate everyday interactions is crucial for reconciling and overcoming ethnic and cultural differences (Amin 2002), countering the distrust or fear residents might be harbouring about people unlike themselves (Talen 2012), and nurturing a sense of cultural belonging (Sandercock 1998). Urban spaces that are flexible, adaptable and open to constant change; which encourage the emergence of informal, spontaneous and unplanned uses of the public realm; which stimulate cultural expression; and which create an atmosphere of tolerance toward difference and the unknown through the construction of common places assist in this process (Sennett and Sendra 2020).

Conclusion

Migration is just one possible adjustment to climate change (Hugo 2012). However, without action by Global North nations to assist adaptation efforts in vulnerable countries to proactively plan for the possibility of large-scale immigration, a likely outcome is that most displaced people will end up in camps or fringe habitations in their own country. Alternatively, they will be trapped in other countries that struggle to accommodate their presence but cannot prevent their arrival for one reason or another.

We have written this paper with its underpinnings in the hypothetical realm to highlight a set of inter-related issues requiring policy attention, guided by available indicative data and without the certainty of hard numbers. The talk of millions of environmental migrants may or may not be an over exaggeration, but in relative terms, both moral and practical challenges lie ahead. Australia's planning system is ill-equipped to deal with environmental migration at a scale commensurate with the nation's contribution to climate change and capacity to absorb immigrants. Indeed it has yet to respond to the growing evidence of, and prospect for, internal discretionary migration within Australia already driven partly by climatic factors, especially excessive heat (Johnston 2018; Pandey 2020). Across the world, 'bold speeches and elaborate commitments to the pursuit of noble goals like refugee rights, environmental protection and sustainable development typically fall prey to narrow geopolitical interests when the time for action comes' (International Organization for Migration 2008, 36).

Nonetheless, Australia has a positive record of immigration and refugee resettlement, and current Australian strategic planners should proactively respond at the national, state and metropolitan scale through a NUP twinned with a policy on environmental migration (Koser 2012) and supported

by a spatial guide to facilitating successful multiculturalism.

There are significant benefits to preparing a NUP framework before significant environmental migration rather than during or after the event (Koser 2012). Indeed, the often hysterical debate over unofficial boat arrivals in Australia demonstrates how even a relatively small number of irregular migrants can destabilise public confidence in the ability of the Government to manage migration (Koser 2012).

The time for such proactive planning as part of a national settlement vision is now. As Gleeson reminds us about climate change: ‘We have a chance of surviving and even living well. However, for that to be possible, we have to make our lifeboats seaworthy now’. Where are the lifeboats? They are surely the cities, the few cities, in which most of our population resides’ (Gleeson 2010, 65). In the spirit of shifting to the ideal of cities embodying notions of climate justice (Steele et al. 2012), cities and towns can be ‘lifeboats’ which we share with some of the environmental migrants who, in greater or lesser numbers, will likely be forced to relocate around the globe by mid-century and beyond.

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References

- ACT Government. 2018. *ACT Planning Strategy 2018: Future Directions for a Sustainable, Competitive and Equitable City*. <https://www.planning.act.gov.au/act-planning-strategy/home>.
- AEGN. 2020. *How Will Climate Change Affect Australia?* <https://www.aegn.org.au/grantmakers/the-issues/climate-change/how-will-climate-change-affect-australia/>.
- Ahmed, B. 2018. “Who Takes Responsibility for the Climate Refugees?” *International Journal of Climate Change Strategies and Management* 10 (1): 5–26.
- Amin, A. 2002. “Ethnicity and the Multicultural City: Living With Diversity.” *Environment and Planning A: Economy and Space* 34 (6): 959–980.
- Anderson, G. B., K. W. Oleson, B. Jones, and R. D. Peng. 2018. “Projected Trends in High-Mortality Heatwaves Under Different Scenarios of Climate, Population, and Adaptation in 82 US Communities.” *Climatic Change* 146 (3): 455–470.
- Angel, S. 2012. *Planet of Cities*. Cambridge: Lincoln Institute of Land Policy.
- Australian Bureau of Statistics. 2017. 3222.0 – *Population Projections, Australia, 2017 (Base) – 2066*. [https://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3222.0Main+Features12017%20\(base\)%20-%202066?OpenDocument](https://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3222.0Main+Features12017%20(base)%20-%202066?OpenDocument).
- Australian Government. 2015a. *National Climate Resilience and Adaptation Strategy*. <https://www.environment.gov.au/climate-change/adaptation/strategy>.
- Australian Government. 2015b. *Our North, Our Future: White Paper on Developing Northern Australia*. <https://www.industry.gov.au/sites/g/files/net3906/f/June%202018/document/pdf/nawp-fullreport.pdf>.
- Australian Government. 2019. *Planning for Australia’s Future Population*. Canberra. <https://www.pmc.gov.au/sites/default/files/publications/planning-for-australia%27s-future-population.pdf>.
- Australian Government. 2020. *Australian Government response to the House of Representatives Standing Committee on Infrastructure, Transport and Cities report: Building Up and Moving Out. Inquiry Into the Australian Government’s Role in the Development of Cities*. https://www.infrastructure.gov.au/departments/ips/government_responses/government-response-hor-building-up-moving-out-may-2020.aspx.
- Australian Human Rights Commission. 2014. *Transfer of Asylum Seekers to Third Countries*. <https://humanrights.gov.au/our-work/asylum-seekers-and-refugees/projects/transfer-asylum-seekers-third-countries>.
- Benson, S., and G. Brown. 2018. *Cities Fix: PM’s Plan to Send Migrants to Regions for Five Years*. <https://www.theaustralian.com.au/national-affairs/cities-fix-pms-plan-to-...2>.
- Bettini, G. 2013. “Climate Barbarians at the Gate? A Critique of Apocalyptic Narratives on ‘Climate Refugees’.” *Geoforum; Journal of Physical, Human, and Regional Geosciences* 45: 63–72.
- Biddle, N. 2019. *Big Australia, Small Australia, Diverse Australia: Australia’s Views on Population*. <https://csrcm.cass.anu.edu.au/sites/default/files/docs/2019/1/ANUpoll-28-population.pdf>.
- Biermann, F., and I. Boas. 2010. “Preparing for a Warmer World: Towards a Global Governance System to Protect Climate Refugees.” *Global Environmental Politics* 10 (1): 60–88.
- Bilodeau, A., and N. Fadol. 2011. “The Roots of Contemporary Attitudes Toward Immigration in Australia: Contextual and Individual-Level Influences?” *Ethnic and Racial Studies* 34 (6): 1088–1109.
- Birrell, B., and E. Healy. 2018. *Immigration and the Housing Affordability Crisis in Sydney and Melbourne*. <https://tapri.org.au/wp-content/uploads/2016/04/immigration-and-housing-affordability-crisis-july-2018.pdf>.
- Black, R., D. Kniveton, R. Skeldon, D. Coppard, A. Murata, and K. Schmidt-Verkerk. 2008. “Demographics and Climate Change: Future Trends and Their Policy Implications for Migration.” In *Development Research Centre on Migration, Globalisation and Poverty*, 1–83. Brighton: University of Sussex.
- Bolleter, J., N. Edwards, R. Freestone, D. Nichols, and P. Hooper. 2022. “Evaluating Scenarios for Twenty-First-Century Australian Settlement Planning: A Delphi Study With Planning Experts.” *International Planning Studies*. doi:10.1080/13563475.2022.2042213.
- Bolleter, J., N. Edwards, R. Freestone, D. Nichols, G. Oliver, and P. Hooper. 2021. “Long-Term Settlement Scenarios for Australia: A Survey and Evaluation of Community Opinions.” *Urban Policy and Research*. doi:10.1080/08111146.2021.2006175.

- Bolleter, J., B. Grace, S. Foster, A. Duckworth, and P. Hooper. 2021. "Projected Extreme Heat Stress in Northern Australia and the Implications for Development Policy." *Planning Practice & Research*. doi:10.1080/02697459.2021.2001733.
- Bolleter, J., B. Grace, S. Foster, and P. Hooper. 2021. "Wet-Bulb Temperature and Sea-Level Rise in the United Arab Emirates – Planning Responses." *Planning Practice & Research*. doi:10.1080/02697459.2020.1859199.
- Bolleter, J., B. Grace, R. Freestone, and P. Hooper. 2021. "Informing Future Australian Settlement Planning Through a National-Scale Suitability Analysis." *International Planning Studies*, 1–26. doi:10.1080/13563475.2021.1899903.
- Button, J., and A. Rizvi. 2018. "The Great Transformation: Hooked on Migration." *Griffith Review* 61: 11.
- Centre for Population. 2022. *Australia's Population Story*. <https://population.gov.au/population-topics/topic-population>.
- Christian Aid. 2007. *Human Tide: The Real Migration Crisis*. https://reliefweb.int/sites/reliefweb.int/files/resources/47F1DFB5696BEE43C12572DB0035D16A-Full_Report.pdf.
- Coalition of Australian Governments. 2019. *National Population and Planning Framework*. <https://www.coag.gov.au/sites/default/files/communique/national-population-planning-framework.pdf>.
- Coffel, E., R. M. Horton, and A. M. De Sherbinin. 2017. "Temperature and Humidity Based Projections of a Rapid Rise in Global Heat Stress Exposure During the 21st Century." *Environmental Research* 13 (014001): 3–9. doi:10.1088/1748-9326/aaa00e.
- Community Relations Commission, & DLG. 2000. *Implementing the Principles of Multiculturalism Locally: A Planning Framework for Councils*. https://www.omi.wa.gov.au/docs/librariesprovider2/resources/implementing-the-principles-of-multiculturalism-locally.pdf?sfvrsn=a6a49e1d_1.
- Davison, G. 2010. "The Past & Future of the Australian Suburb." *Australian Planner* 31 (2): 63–69.
- Department of Home Affairs. 2019. *2018–19 Migration Program Report: Program Year to 30 June 2019*. <https://www.homeaffairs.gov.au/research-and-statistics/statistics/visa-statistics/live/migration-program>.
- Department of Infrastructure, Local Government and Planning. 2017. *ShapingSEQ: South East Queensland Regional Plan 2017*. <https://dilgpprd.blob.core.windows.net/general/shapingseq.pdf>.
- Department of Planning Lands and Heritage. 2018. *Perth and Peel @3.5 Million*. <https://www.dplh.wa.gov.au/perth-and-peel-@-3-5-million>.
- Department of Planning, T. A. I. 2017. *The 30-Year Plan for Greater Adelaide: 2017 Update*. Adelaide. <https://livingadelaide.sa.gov.au/>.
- Fincher, R., K. Iveson, H. Leitner, and V. Preston. 2014. "Planning in the Multicultural City: Celebrating Diversity or Reinforcing Difference?" *Progress in Planning* 92: 1–55.
- Fozdar, F., B. Spittles, and L. K. Hartley. 2015. "Australia Day, Flags on Cars and Australian Nationalism." *Journal of Sociology* 51 (2): 317–336.
- Freestone, R. 2013. "Back to the Future." In *Made in Australia: The Future of Australian Cities*, edited by J. Bolleter and R. Weller, 236–243. Perth: University of Western Australia Press.
- Füssel, H.-M. 2007. "Vulnerability: A Generally Applicable Conceptual Framework for Climate Change Research." *Global Environmental Change* 17 (2): 155–167.
- Gardes, T., R. Schoetter, J. Hidalgo, N. Long, E. Marquès, and V. Masson. 2020. "Statistical Prediction of the Nocturnal Urban Heat Island Intensity Based on Urban Morphology and Geographical Factors – An Investigation Based on Numerical Model Results for a Large Ensemble of French Cities." *Science of the Total Environment* 737: 139253.
- Gleeson, B. 2010. "The Greatest Spoiler: Salvation in the Cities." In *Griffith Review 29: Prosper or Perish*, edited by J. Schultz, 57–66. Brisbane: Griffith University.
- Goodspeed, R. 2020. *Scenario Planning for Cities and Regions. Managing and Envisioning Uncertain Futures*. Cambridge: Lincoln Institute of Land Policy.
- Greater Hobart Committee. 2022. *30-Year Greater Hobart Plan*. <https://yoursay.hobartcity.com.au/greater-hobart-plan>
- Greater Sydney Commission. 2018. *Greater Sydney Region Plan: A Metropolis of Three Cities*. Sydney. <https://www.greater.sydney/metropolis-of-three-cities>.
- Greene, A. 2022. *Scott Morrison Instructed Border Force to Reveal Election Day Asylum Boat Arrival*. <https://www.abc.net.au/news/2022-05-27/scott-morrison-instructed-border-force-election-day-boat/101101464>.
- Hindsley, P., and D. Yoskowitz. 2020. "Global Change—Local Values: Assessing Tradeoffs for Coastal Ecosystem Services in the Face of Sea Level Rise." *Global Environmental Change* 61: 102039.
- Hugo, G. 2012. Population Distribution, Migration and Climate Change in Australia: An Exploration. Urban Management." *Australian Climate Change Adaptation Research Network for Settlements and Infrastructure*, 1–101.
- Hugo, G. 2013. *Migration and Climate Change*. Cheltenham: Edward Elgar.
- Hugo, G. 2014. "Change and Continuity in Australian International Migration Policy." *International Migration Review* 48 (3): 868–890.
- Hulme, M. 2007. "Newspaper Scare Headlines Can Be Counter-Productive." *Nature* 445 (22): 818–818.
- Hurlimann, A., J. Barnett, R. Fincher, N. Osbaldiston, C. Mortreux, and S. Graham. 2014. "Urban Planning and Sustainable Adaptation to Sea-Level Rise." *Landscape and Urban Planning* 126: 84–93.
- Infrastructure New South Wales. 2018. *Building Momentum: State Infrastructure Strategy 2018–2038*. https://insw-sis.visualise.today/documents/INSW_2018SIS_BuildingMomentum.pdf.
- Internal Displacement Monitoring Centre. 2022. *Disasters and Climate Change*. <https://www.internal-displacement.org/disasters-and-climate-change>.
- International Organization for Migration. 2008. *Migration and Climate Change*. <https://publications.iom.int/books/mrs-ndeg31-migration-and-climate-change>.
- IPCC. 2021. *Climate Change 2021: The Physical Science Basis: Summary for Policymakers*. <https://www.ipcc.ch/report/ar6/wg1/>.
- IPCC. 2022. *IPCC Working Group II Sixth Assessment Report*. <https://www.ipcc.ch/report/ar6/wg2/>.
- Johnston, P. 2018. *Is the First Wave of Climate Migrants Landing in Hobart?* <https://www.thefifthestate.com.au/urbanism/climate-change-news/climate-migrants-landing-hobart/>.
- Kelly, J.-F., and P. Donegan. 2015. *City Limits: Why Australian Cities are Broken and How We Can Fix Them*. Melbourne: Melbourne University Press.
- Koser, K. 2012. *Environmental Change and Migration: Implications for Australia*. <https://www.lowyinstitute.org/publications/environmental-change-and-migration->

- implications-australia#:~:text=Even%20where%20environmental%20migration%20does,and%20development%20interests%20are%20significant.
- Kraler, A., T. Cernei, and M. Noak. 2011. "Climate Refugees". *Legal and Policy Responses to Environmentally Induced Migration*. Brussels: European Parliament. <http://www.europarl.europa.eu/activities/committees/studies.do?language=EN>.
- Kuhn, T. 1996. *The Structure of Scientific Revolutions*. 3rd ed. Chicago: University of Chicago Press.
- Lee, D., and H. Zhang. 2022. "The Economic Impact of Disasters in Pacific Island Countries: Estimation and Application to Economic Planning." *Climate and Development*, 1–17.
- Maginn, P. J., and S. Hamnett. 2016. "Multiculturalism and Metropolitan Australia: Demographic Change and Implications for Strategic Planning." *Built Environment* 42 (1): 120–144.
- McAdam, J., and J. Blocher. 2016. *FactCheck Q&A: As the Climate Changes, Are 750 Million Refugees Predicted to Move Away from Flooding?* <https://theconversation.com/factcheck-qanda-as-the-climate-changes-are-750-million-refugees-predicted-to-move-away-from-flooding-63400#:~:text=Ethnicist%20Peter%20Singer%20told%20Q%26A,moving%20away%20from%20that%20flooding%E2%80%9D.&text=That%20said%2C%20we%20can%20check,that%20exist%20on%20this%20question>.
- McAdam, J., and F. Chong. 2019. *Refugee Rights and Policy Wrongs: A Frank, Up-to-Date Guide by Experts*. Sydney: NewSouth Publishing.
- Murphy, K. 2018. *Australians Growing More Concerned Over Immigration – Guardian Essential Poll*. <https://www.theguardian.com/australia-news/2018/apr/24/australians-growing-more-concerned-over-immigration-guardian-essential-poll>.
- Murray, D. 2017. *The Strange Death of Europe: Immigration, Identity, Islam*. London: Bloomsbury Publishing.
- Myers, N. 1993. "Environmental Refugees in a Globally Warmed World." *Bioscience* 43 (11): 752–761.
- Myers, N. 2005. "Environmental Refugees: An Emergent Security Issue." *Paper Presented at the 13th Economic Forum*, Prague. http://www.osce.org/documents/eea/2005/05/14488_en.pdf.
- Ng, E. S., and I. Metz. 2015. "Multiculturalism as a Strategy for National Competitiveness: The Case for Canada and Australia." *Journal of Business Ethics* 128 (2): 253–266.
- Northern Territory Department of Lands and Planning. 2012. *Greater Darwin Plan*. https://planinc.org.au/images/stories/pdfs/Greater_Darwin_Plan_Full_1.3.2012.pdf.
- Oakley, S. 2004. "Politics of Recollection: Examining the Rise and Fall of DURD and Better Cities Through Narrative." *Urban Policy and Research* 22 (3): 299–314.
- OECD, UN Habitat, & UNOPS. 2021a. *Global State of National Urban Policy 2021*. https://www.oecd-ilibrary.org/urban-rural-and-regional-development/global-state-of-national-urban-policy-2021_96eee083-en.
- OECD, UN Habitat, & UNOPS. 2021b. *Global State of National Urban Policy 2021: Synthesis Brochure*. https://unhabitat.org/sites/default/files/2021/06/nup_brochure.pdf.
- O'Neil, C., and T. Watts. 2015. *Two Futures: Australia at a Critical Moment*. Melbourne: Text Publishing.
- Pal, J. S., and E. A. B. Eltahir. 2016. "Future Temperature in Southwest Asia Projected to Exceed a Threshold for Human Adaptability." *Nature Climate Change* 6 (2): 197–200.
- Pandey, S. 2020. *Hot and Dry Australia Could Join the Ranks of 'climate Refugees'*. <https://www.reuters.com/article/us-australia-bushfires-climatechange/hot-and-dry-australia-could-join-the-ranks-of-climate-refugees-idUSKBN1ZD2RU>.
- Partridge, J. 2022. *Proposed Housing Diversity SEPP*. https://lgns.wa.gov.au/Public/Public/Policy/Planning/Proposed_Housing_Diversity_SEPP.aspx.
- Planning Institute of Australia. 2018. *Through the Lens: The Tipping Point*. Canberra. <https://www.planning.org.au/documents/item/9431>.
- Rigaud, K., A. D. Sherbinin, B. Jones, J. Bergmann, V. Clement, K. Ober, J. Schewe, et al. 2018. *Groundswell: Preparing for Internal Climate Change Migration*. <https://www.worldbank.org/en/news/infographic/2018/03/19/groundswell-preparing-for-internal-climate-migration>.
- Rossi, C. 2017. "The Nomos of Climate Change and the Sociological Refugee in a Sinking Century." *The George Washington International Law Review* 50 (3): 613–652.
- Sandercock, L. 1998. *Towards Cosmopolis: Planning for Multicultural Cities*. Chichester: Wiley.
- Schech, S. 2014. "Silent Bargain or Rural Cosmopolitanism? Refugee Settlement in Regional Australia." *Journal of Ethnic and Migration Studies* 40 (4): 601–618.
- Seamer, P. 2019. *Breaking Point: The Future of Australian Cities*. Melbourne: Nero.
- Sennett, R., and P. Sendra. 2020. *Designing Disorder: Experiments and Disruptions in the City*. London: Verso Books.
- State of Queensland. 2014. *The Queensland Plan: Queenslanders' 30-Year Vision*. <https://www.queenslandplan.qld.gov.au/>.
- Steadman, R. G. 1979. "The Assessment of Sultriness. Part I: A Temperature-Humidity Index Based on Human Physiology and Clothing Science." *Journal of Applied Meteorology* 18 (7): 861–873.
- Steele, W., D. MacCallum, J. Byrne, and D. Houston. 2012. "Planning the Climate-Just City." *International Planning Studies* 17 (1): 67–83.
- Stern, N. 2007. *The Economics of Climate Change: The Stern Review*. Cambridge: Cambridge University Press.
- Swaffield, S., and E. Deming. 2010. *Landscape Architecture Research*. Hoboken: Wiley.
- Talen, E. 2012. *Design for Diversity*. Oxon: Routledge.
- Thompson, S. 2003. "Planning and Multiculturalism: A Reflection on Australian Local Practice." *Planning Theory and Practice* 4 (3): 275–286.
- Tuli, S. 2019. *Migrants Want to Live in the Big Cities, Just Like the Rest of Us*. <http://theconversation.com/migrants-want-to-live-in-the-big-cities-just-like-the-rest-of-us-113911>.
- Victorian State Government. 2017. *Plan Melbourne 2017–2050*. Melbourne. <https://www.planning.vic.gov.au/policy-and-strategy/planning-for-melbourne/plan-melbourne>.
- Welcoming Cities. 2019. *The Welcoming Cities Standard*. <https://welcomingcities.org.au/the-standard/>.
- Wennersten, J. R., and D. Robbins. 2017. *Rising Tides: Climate Refugees in the Twenty-First Century*. Bloomington: Indiana University Press.
- Western Australian Planning Commission. 2014. *State Planning Strategy 2050: Planning for Sustained Prosperity*. http://www.planning.wa.gov.au/dop_pub_pdf/State_PlanningStrategy2.pdf.
- Wiegel, H. 2017. "Refugees of rising seas." *Science* 357 (5346): 41.
- Woodruff, S. C. 2016. "Planning for an Unknowable Future: Uncertainty in Climate Change Adaptation Planning." *Climatic Change* 139 (3): 445–459.