

AUSTRALIA



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1. NATIONAL PROFILE

1.1 General¹

The Australian island, which is also the smallest continent but sixth largest nation in the world, is located at 27 00 S, 133 00 E between the Indian and the South Pacific Oceans. Generally considered part of Oceania, Australia is surrounded by Indonesia, Papua New Guinea, and East Timor to the north; the Solomon Islands, Vanuatu, and New Caledonia to the northeast; and New Zealand to the southeast. It is comprised of the Australian continent, Tasmania Island, Cocos Islands, Norfolk Island, and other numerous islands. It is the sixth largest country in the world with a total area of 741,220 sq. km (including Lord Howe Island and Macquarie Island), making it slightly smaller than the 48 states of the contiguous United States and 31.5 times larger than the United Kingdom.

Australia is the driest inhabited continent on earth, making it particularly vulnerable to the challenges of climate change. Australia is home to 10 per cent of the world's biodiversity, and a great number of its flora and fauna exist nowhere else in the world. In January 2013.

Australia has become an internationally competitive, advanced market economy due in large part to economic reforms adopted in the 1980s and its location in one of the fastest growing regions of the world economy. Long-term concerns include aging of the population, pressure on infrastructure, and environmental issues such as floods, droughts, and bushfires.

1.2 Physiography²

Australia has the largest area of ocean jurisdiction of any country on earth. It has no land borders. The northernmost points of the country are the Cape York Peninsula of Queensland and the Top End of the Northern Territory. The western half of Australia consists of the Western Plateau, which rises to mountain heights near the west coast and falls to lower elevations near the continental centre. The Western Plateau region is generally flat, though broken by various mountain ranges such as the Hamersley Range, the MacDonnell Ranges, and the Musgrave Range. Surface water is generally lacking in the Western Plateau, although there

are several larger rivers in the west and north, such as the Murchison, Ashburton, and Victoria River.

The Eastern Highlands, or Great Dividing Range, lie near the eastern coast of Australia, separating the relatively narrow eastern coastal plain from the rest of the continent. These Eastern Australian temperate forests have the greatest relief, the most rainfall, the most abundant and varied flora and fauna, and the densest human settlement.

Between the Eastern Highlands and the Western Plateau, lie the Central Lowlands, which are made up of the Great Artesian Basin and Australia's largest river systems, Murray-Darling Basin and Lake Eyre Basin.

Off the eastern coast of Australia is the world's largest coral reef complex, the Great Barrier Reef. The State of Tasmania, a large and mountainous island, resides in the south-eastern corner of Australia.

1.3 Climate²

The Climate of Australia varies widely. The northern part of the country has a tropical climate, the southern part has a temperate climate, the central and west part has a dry climate.

By far the largest part of Australia is arid or semi-arid. A total of 18% of Australia's mainland consists of named deserts, while additional areas are considered to have a desert climate based on low rainfall and high temperature. Only the south-east and south-west corners have a temperate climate and moderately fertile soil. The northern part of the country has a tropical climate: part is tropical rainforests, part grasslands, and part desert.

Rainfall is highly variable, with frequent droughts lasting several seasons thought to be caused in part by the El Niño-Southern Oscillation. Occasionally a dust storm will blanket a region or even several states and there are reports of the occasional large tornado. Rising levels of salinity and desertification in some areas is ravaging the landscape.

Australia's tropical/subtropical location and cold waters off the western coast make most of western Australia a hot desert with aridity, a marked feature of the greater part of the continent. These cold waters produce little moisture needed on the mainland.

1.4 Socio-economic Profile^{3,4}

Socio-economic Indicators

GDP: Gross domestic product (million current US\$)	2011	1515468
GDP per capita (current US\$)	2011	67039.0
GNI: Gross national income per capita (current US\$)	2011	64936.0
Population (million)	2014	23.34
Urban (% of population)	2014	89.5
Sex ratio (males per 100 females)	2012	99.5
Life expectancy at birth (females/males, years)	2010-2015	84.3/79.9
Adult literacy rate (% ages 15 and older)	2014	99
Expenditure on education (% of GDP)	2014	5.12

1.5 Administrative Setup^{5,6}

Australia consists of six states, two major mainland territories, and other minor territories. The states are New South Wales, Queensland, South Australia, Tasmania, Victoria and Western Australia. The two major mainland territories are the Northern Territory and the Australian Capital Territory. Western Australia is the largest state covering just under one third of the Australian landmass, followed by Queensland and New South Wales.

Australia also has several minor territories; the federal government administers a separate area within New South Wales, the Jervis Bay Territory, as a naval base and sea port for the national capital. In addition Australia has the following, inhabited, external territories: Norfolk Island, Christmas Island, Cocos (Keeling) Islands, and several largely uninhabited external territories: Ashmore and Cartier

Islands, Coral Sea Islands, Heard Island and McDonald Islands and the Australian Antarctic Territory.

States and Territories of Australia

State/Territory name	Capital (or largest settlement)
Ashmore and Cartier Islands	
Australian Antarctic Territory	(Mawson Station)
Australian Capital Territory	Canberra
Christmas Island	Flying Fish Cove
Cocos (Keeling) Islands	West Island
Coral Sea Islands	(Willis Island)
Heard Island and McDonald Islands	(Atlas Cove)
Jervis Bay Territory	(Jervis Bay Village)
New South Wales	Sydney
Norfolk Island	Kingston
Northern Territory	Darwin
Queensland	Brisbane
South Australia	Adelaide
Tasmania	Hobart
Victoria	Melbourne
Western Australia	Perth

2. DISASTER RISK PROFILE

2.1 Natural disasters in Australia⁷

Australia experiences a range of 'natural disasters' including bushfires, floods, severe storms, earthquakes and landslides. These events cause great financial hardship for individuals and communities, and can result in loss of life, which has become part of Australian folklore.

Fire can often follow drought, and drought can be followed by flood. Severe fires followed by drought can also contribute to soil erosion.

I. Drought

Australia is the driest of all inhabited continents, with its climates varying markedly over time and space. At any given moment, large parts of the country may be in drought.

II. Fire

Bushfires are different from controlled burning. Indigenous communities have used fire as a hunting and farming tool to assist with regeneration. Indigenous Australians used controlled burning and fire management to encourage the growth of new plants and to prevent the growth of long grass which contributes to the tinder or fuel for bushfires.

Fire management also allowed animals to escape, although some were lost to hunters. Eucalypts, for example, require occasional burns to regenerate. Fire stick farming used over tens of thousands of years created the fertile grazing plains west of the Blue Mountains. Long periods of dry, hot weather and natural vegetation that burns easily make Australia particularly vulnerable to bushfire.

Australian bushfires can be particularly severe as eucalyptus trees contain large amounts of oil which can burn very fast and very hot. Other human management factors which have contributed to the severity of bushfires include high fuel loads, a change from fire prevention to fire fighting measures and not building adequate buffer zones to protect built assets. As Australians learn to understand more about bushfires, bushfire prevention strategies are being adopted.

III. Heat Waves

Heat waves are the most underrated of the natural disasters, as the bushfires that accompany many heat waves tend to get most of the attention, and in Australia they have caused the greatest loss of life on any natural hazard (except disease).

Unlike bushfires, there is generally no escaping a heat wave. While the 1939 'Black Friday' bushfires in Victoria killed 71 people and are written into our history, the accompanying heat wave - which triggered the blazes - claimed 438 lives and yet remains largely unacknowledged.

IV. Floods

Floods in Australia range from localized flash flooding as a result of thunderstorms, to more widespread flooding following heavy rain over the catchment areas of river systems. Flooding is also a regular seasonal phenomenon in Northern Australia. Australian towns were built on floodplains despite warnings from local Aborigines. Nyngan (meaning flood in its local Aboriginal language) was severely flooded on 23 April 1990.

Gundagai was rebuilt on a new site after a flood in 1852 wiped out 71 buildings, and 89 of the town's 250 inhabitants died. More people would have perished were it not for the heroism of local Aborigine Yarri of the Wiradjuri people and his mate Jackie, who saved more than 40 people using a simple bark canoe.

Recently, town councils and shires have started mapping the 100-year flood areas so that the extent of the flood plain can be mapped for town planning, building regulations and zoning for land use to avoid building on flood-prone areas. Regional flood mitigation programs have been initiated by the Australian Government to work with state and territory governments.

V. Cyclones

A cyclone is an area of low pressure around which the winds flow clockwise in the Southern Hemisphere and counterclockwise in the Northern Hemisphere. If the sustained winds around the centre reach 119 km/h (with wind gusts in excess of 170 km/h), then the system is called a severe tropical cyclone. In other countries severe tropical cyclones are called hurricanes or typhoons. The Tropical Cyclone Season in Australia extends from November to April.

Top 10 Natural Disaster in Australia (1900-2014) Sorted by Numbers of Killed⁸

Disaster	Date	No Killed
Drought	1967	600
Extreme temperature	27/Jan/2009	347
Wildfire	02/Feb/2009	180
Wildfire	16/Feb/1983	75
Wildfire	1939	71
Flood	Feb/1955	70
Storm	25/Dec/1974	65
Wildfire	07/Feb/1967	62
Wildfire	1944	49
Flood	09/Nov/1984	36

Top 10 Natural Disaster in Australia (1900-2014) Sorted by Numbers of Total Affected People⁸

Disaster	Date	No Total Affected
Drought	Dec/1992	7000000
Extreme temperature	Feb/1993	3000500
Storm	Jul/11/1994	2500104
Extreme temperature	Dec/1994	1000034
Extreme temperature	Nov/1995	500100
Storm	31/Aug/1996	450220
Storm	Dec/1995	400045
Storm	25/May/1994	240220
Flood	25/Dec/2010	175000
Storm	Nov/1994	120090

Top 10 Natural Disaster in Australia (1900-2014) Sorted by Economic Damage Cost⁸

Disaster	Date	Damage (000 US\$)
Flood	25/Dec/2010	7300000
Drought	1981	6000000
Storm	02/Feb/2011	2500000
Drought	Apr/1902	2000000
Storm	23/Jan/2013	2000000
Drought	Dec/1992	1500000
Storm	14/Apr/1999	1500000
Storm	22/Mar/2010	1390000
Storm	06/Mar/2010	1330000
Flood	08/Jun/2007	1300000

Summarized Table of Natural Disasters in Australia from 1900 to 2014⁸

		No. of Events	Killed	Total Affected	Damage 000 US\$)
Drought	Drought	10	600	7,080,000	10,573,000
	ave. per event		60	708,000	1,057,300
Earthquake (seismic activity)	Earthquake (ground shaking)	4	12	11,430	1,009,675
	ave. per event		3	2,858	252,419
Epidemic	Viral Infectious Diseases	1	-	6	-
	ave. per event		-	6	-
Extreme temperature	Heat wave	5	370	4,602,784	-
	ave. per event		74	920,557	-
Flood	Unspecified	16	131	22,330	508,321
	ave. per event		8	1,396	31,770

	Flash flood	9	54	29,386	1,513,600
	ave. per event		6	3,265	168,178
	General flood	31	117	261,178	11,444,279
	ave. per event		4	8,425	369,170
	Storm surge/coastal flood	4	10	2,045	252,500
	ave. per event		3	511	63,125
Insect infestation	Locust	2	-	-	120,000
	ave. per event		-	-	60,000
Mass movement wet	Landslide	2	28	101	-
	ave. per event		14	51	-
Storm	Unspecified	33	19	3,530,044	1,111,472
	ave. per event		1	106,971	33,681
	Local storm	30	37	426,014	6,071,228
	ave. per event		1	14,201	202,374
	Tropical cyclone	36	167	86,629	9,435,604
	ave. per event		5	2,406	262,100
Wildfire	Unspecified	1	-	-	-
	ave. per event		-	-	-
	Bush/Brush fire	3	182	11,064	1,622,000
	ave. per event		61	3,688	540,667
	Forest fire	4	24	3,011	437,000
	ave. per event		6	753	109,250
	Scrub/grassland fire	24	293	75,495	952,194
	ave. per event		12	3,146	39,675

3. INSTITUTIONAL SETUP

3.1 Evolution of Emergency Management in Australia

Even though Australia is noted for many natural disasters, there is no legislative mandate at the federal level for hazards mitigation, planning, preparedness, rescue and recovery. The Australian Constitution specifies that the protection of citizens' life and property rests primarily with states and territories. The Australian emergency management sector is therefore one of the most decentralized aspects of government in the country. The Australian emergency management sector could further be described as bottom-up as opposed to the stronger federal government approach in the United States.

Under Australia's unique constitutional arrangement, state and territory governments have responsibility for emergency management within their jurisdiction and have the laws, funding mechanisms and organizational arrangements in place to deal with disasters. In conjunction with this decentralization, the local governments also have significant roles and responsibilities for disaster mitigation and management through arrangements that vary according to state and territory laws, practice and agreements (Commonwealth of Australia 2009).

Since states and territories are constitutionally saddled with the responsibility of protecting their citizens' lives and property, each state has passed laws within their jurisdiction.

Emergency management in Australia includes the principles, structure and procedures that support national all-hazard coordination of emergency management in Australia and its offshore territories (Commonwealth of Australia 2009). This emergency management arrangement creates partnerships between the Commonwealth, state, territory and local governments, business and industry, and the community which are based unique approach to the management of emergencies and disasters (Commonwealth of Australia 2009). This strategy is therefore said to be:

- Comprehensive, encompassing all hazards and recognizing that dealing with the risks to community safety requires a range of activities to prevent, prepare for, respond to and recover from any emergency; and
- Integrated, ensuring the involvement of governments, all relevant organizations and agencies, private sector and the community.

The purpose of the Australian Emergency Management Arrangement is to provide the Australia public with a high level overview of how Australia addresses the risks and impacts of hazards through a collaborative approach to the prevention of, preparedness for, response to and recovery from emergency.

During World War II, Australia started a nationwide air-raid protection program, later known as civil defense. However, air-raid protection of the civil population was the responsibility of each state; they developed their own volunteer civil defense or air-raid precaution organizations (Jones 2007). The volunteer civil defense organizations became largely inactive after World War II. However, over the course of post-war period, most of the states and territories witnessed a variety of natural disasters such as floods, bushfires, droughts and cyclones as well as man-made crises such as transportation accidents. As a result of these disasters, communities suffered loss of life, injuries and economic costs. Thus, as trained and organized community “public safety assets,” the volunteer civil defense units were increasingly called on to respond to these events. These developments were not seen as a national policy since the Australian Constitution places responsibility for the protection and preservation of civilian life and property with the states. However, the Black Tuesday fires of Tasmania in February 1967 were the turning point for Australian national emergency management sector that resulted in significant disaster policy change at the national level. It initiated a call for the establishment of a national disaster fund and a national disaster organization in the Federal Parliament. The attempt at the federal level to develop an initial national approach to emergency management led to the creation of NDO in 1974. The NDO was originally placed within the Department of Defense in Northbourne House, Canberra, and it had a small staff (Jones 2007). The agency’s earlier priorities, according to Jones (2007), were the development of coordination and liaison arrangements with the states and territories, and in particular, with their new emergency services organizations. Within the NDO, a National Emergency Operations Center (NEOC) was created with appropriate communications facilities

that were manned by a mixture of NDO staff, members of the Australian Defense Force, staff from the Department of Defense, and others recruited from interested civilian volunteers (Jones 2007). The NDO underwent a significant transformation as the Cold War subsided.

Later the **national disaster organization (NDO)** was replaced by an agency named **Emergency Management Australia (EMA)**. The EMA is now part of the National Security and Criminal Justice Group within the Attorney-General's Department. However, the federal approach to emergency management is consistent with the country's National Security Statement 2008, which takes an all-hazards policy approach to national security (Australian Government, Attorney-General's Department 2010). The placement of EMA in the Attorney-General's Department recognizes that many hazards and circumstances can give rise to the need for an emergency response, whether it is due to bushfires, a terrorist attack or a pandemic (Australian Government, Attorney-General's Department 2009). EMA is the agency currently responsible for planning and coordinating Commonwealth physical assistance to the states and territories under the Commonwealth Government Disaster Response Plan (COMDISPLAN).

3.2 Emergency Management Australia

There are several tiers of government and organizations (e.g., federal, state groups, district groups and local groups) involved in the emergency management sector in Australia. Recognizing these numerous tiers and jurisdictional roles, the Australian government has organized itself to improve its authority, planning and coordination with the states and territories in order to have a unified approach to disaster operations via EMA. In order to develop and maintain communities which are ready to deal with disasters, EMA is guided by four policy pillars. These are:

- All hazards approach;
- Comprehensive approach (including all disaster phases);
- All agencies (or integrated) approach; and
- Prepared community approach

(Emergency Management Australia, Manual 03 1998, p. ix).

Surprisingly, there is no national law that directs and legally mandates the activities of the EMA. The EMA is instead guided by a realization at all levels of

government that the impact of some emergencies could be particularly severe or widespread and exceed the capability of a single state or territory. The nation's emergency management arrangements bring together the efforts of all governments and private and volunteer agencies to deliver coordinated emergency management across all hazards. These arrangements dependent upon a high level of trust and cooperation between the central government, states, community and emergency managers which develops as a result of common experiences in dealing with disasters.

In terms of structure, EMA is headed by a Director-General and includes four divisions: policy and planning, community development initiatives, emergency management liaison, and knowledge management and business (Australian Government, Attorney-General's Department 2006). Each division is headed by a director to carry out specific goals of the EMA.

Though EMA is charged with disaster management policy development at the national level, it is worth repeating that there is no federal emergency management legislation. In addition, the EMA is not authorized to dictate the course of emergency management within the states and territories (Emergency Management Australia 2000). However, as a national agency, EMA has designated responsibility to support the states in developing emergency management capabilities (Australian Government, Attorney-General's Department 2009). Further, the EMA seeks to facilitate the development of a national approach to emergency management through maintaining a constructive dialogue between the states and territories on emergency management issues of national importance (Emergency Management Australia 2000). Further, EMA works with AusAID to coordinate the Australian government response to disaster overseas.

In Australia, in event of an incident or disaster, all modes of emergency operations are utilized including the mobilization of air ambulances. This approach is critical in Australia as the country is sparsely populated in many areas and because there may not be specialized burn centers in the remote locations to attend to critically injured patients. One of Australia's air ambulances is the Royal Flying Doctor Service of Australia. It has 53 aircraft operating from 21 bases located across the country (Royal Flying Doctor Service 2010). The Royal Flying Doctor Service of Australia is one of the largest and most comprehensive aero-medical organizations

in the world. This non-profit organization is supported by the Commonwealth, state and territory governments, but it also relies heavily on fundraising and donations from the community to purchase and medically-equip its aircraft, and to finance other major capital initiatives (Royal Flying Doctor Service 2010).

As Australia strives to increase its internal expertise in disaster response and management, the EMA has entered into agreements with the United States to strengthen cooperation during bushfires, major storms and other severe natural disasters (Attorney-General Office, Media Release 2010). The agreement between EMA and Federal Emergency Management Agency (FEMA) will create a framework to facilitate greater cooperation and coordination during significant disaster and emergencies (Attorney-General Office, Media Release 2010). This agreement includes, among other things:

- Exchanging technical experts and specialists in emergency management between countries;
- Sharing information on emergency management frameworks and public awareness programs relating to preparedness for natural disasters;
- Undertaking professional development for emergency management personnel; and
- Exchanging “lessons learned” experiences from natural disaster events (Attorney-General Office, Media Release 2010, p.1).

3.3 Organization⁹

I. Ministerial Council for Police and Emergency Management (MCPEM)

The Ministerial Council for Police and Emergency Management established in 2006 oversees national disaster management, seeking to develop effective collaboration and coordination of federal, state, territory and local government action. The Council guides the strategic direction of emergency management in Australia and meets once a year.

II. Australian Emergency Management Committee (AEMC)

The Australian Emergency Management Committee is the Australia’s peak

consultative emergency management forum. This committee comprises chairpersons and executive officers of State and Territory emergency management committees, the Director General of Emergency Management Australia, representatives of the Australian Local Government Association and the New Zealand Director of Civil Defence and Emergency Management.

III. Emergency Management Australia (EMA)

Emergency Management Australia (EMA) is the agency which is part of the Attorney General's Department and provides the secretariat for MCPEM and AEMC. EMA has responsibility to build key relationships within the national and international emergency management arena and work in partnership with all levels of government, the private sector, and non-government organizations to mitigate the impact of emergency and disaster events.

4. INITIATIVES

4.1 Disaster Management Act 2003¹⁰

During 2002-03 the Department of Emergency Services reviewed the State Counter Disaster Organization Act 1975 in consultation with a wide range of stakeholders. The review resulted in the development of the Disaster Management Act 2003 (DM Act).

The recommendations were endorsed by Government and the DMA with amendments from the Disaster Management and Other Legislation Amendment Bill 2010 were implemented in late 2010.

[Disaster Management Act 2003](#)

4.2 Natural Disaster Mitigation Program⁹

The Natural Disaster Mitigation Program (NDMP) was established in 2003-04 and aims to create safer, sustainable communities better able to withstand the effects of floods, storms, bush fires and other rapid onset natural disasters.

4.3 Australian Government Emergency Management Plans¹¹

Emergency Management Australia (EMA) is responsible for the management of a number of Australian Government emergency management plans.

I. Australian Emergency Management Arrangements

These arrangements provide an overview of how federal, state, territory and local governments collectively approach the management of emergencies, including catastrophic disaster events.

[Australian Emergency Management Arrangements \[PDF 2.1MB\]](#)

II. Australian Government Disaster Response Plan (COMDISPLAN)

The aim of COMDISPLAN is to describe the coordination arrangements for the provision of Australian Government non-financial assistance to states or territories or offshore territories in the event of a disaster. The plan can be activated for any disaster regardless of the cause. The Director General EMA is authorised to activate COMDISPLAN.

[COMDISPLAN 2014 \[PDF 177KB\]](#)

III. Australian Government Plan for the Reception of Australian Citizens and Approved Foreign Nationals Evacuated from Overseas (COMRECEPLAN)

The aim of COMRECEPLAN is to outline the arrangements for the reception into Australia of Australian citizens, permanent residents, and their immediate dependents and approved foreign nationals evacuated from overseas.

IV. Australian Government Aviation Disaster Response Plan (AUSAVPLAN)

The aim of AUSAVPLAN is to outline how the Australian Government would assist states and territories in the event of a state or territory activating its applicable response plan to deal with a major aircraft accident. It also describes how the Australian Government would coordinate the response to a major aircraft accident outside a state or territory such as at sea, or on an Australian offshore territory or in its vicinity.

V. Australian Government Maritime Radiological Response Plan (COMARRPLAN)

COMARRPLAN is prepared and maintained by EMA as a contingency plan for the provision of Australian Government assistance in the event of a radiological incident involving ships carrying radiological material.

The aim of COMARRPLAN is to detail the arrangements for the response to a maritime radiation incident involving radiological material which has the potential to impact on Australia, its coastal waters or its Economic Exclusion Zone.

VI. Australian Government Contingency Plan for Space Re-Entry Debris (AUSCONPLAN-SPRED)

AUSCONPLAN-SPRED details the arrangements for the Australian Government to inform States and Territories of any risk posed to Australian interests by the re-entry of space debris. The plan outlines how the Australian Government will support states and territories in the event that space debris should impact within their jurisdictions.

The plan identifies roles and responsibilities for key Australian Government agencies and committees in supporting the response to space debris re-entry.

VII. National Response Plan for Mass Casualty Incidents Involving Australians Overseas (OSMASSCASPLAN)

OSMASSCASPLAN is the national overseas mass casualty response plan. The plan provides an agreed framework for agencies in all Australian jurisdictions to

assess, repatriate and provide care for Australians and other approved persons injured or killed overseas in numbers that exceed the capacity of normal day to day operations of relevant agencies in any incident and is declared a mass casualty event by Ministers.

VIII. Australian Government Overseas Disaster Assistance Plan (AUSASSISTPLAN)

The aim of AUSASSISTPLAN is to detail the coordination arrangements for the provision of Australian emergency assistance, using Commonwealth physical and technical resources, following a disaster or emergency in another country. The Department of Foreign Affairs and Trade may call upon EMA, as the department's agent, to prepare contingency plans. The Department of Foreign Affairs and Trade may also request EMA to coordinate the operational aspects of a post-impact (emergency) response to an overseas disaster employing Australian Government physical or technical resources.

IX. National Catastrophic Disaster Plan (NATCATDISPLAN)

NATCATDISPLAN functions as a contingency plan for the provision of coordinated support by the Australian Government, and state and territory governments, to a jurisdiction where it's government and/or its capacity to manage the response to and recovery from a catastrophic disaster has been significantly incapacitated.

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